

ABSTRACT

Title of Dissertation: OVERCOMING OPIOID STIGMA THROUGH
COMMUNICATION: AN EXTENSION OF
THE MODEL OF STIGMA
COMMUNICATION

Victoria Ann Ledford, Doctor of Philosophy,
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Dissertation directed by: Professor Xiaoli Nan
Department of Communication

This study examines how stigmatizing messages about opioids influence beliefs, emotions, attitudes, and behaviors. Uniting the model of stigma communication (MSC) and intergroup emotions theory (IET) along with persuasion and stigma research, this study proposed a new identity-based model of stigma message effects: the integrative model of identity-based stigma communication (I-MISC). The experimental study among 1,444 U.S. MTurk participants tests the proposed mediators and moderators put forth in the I-MISC and offers theoretical and practical implications related to stigma communication theory and opioids stigma communication.

The I-MISC argues that stigma messages can lead to stigma-related outcomes through dual affective and cognitive pathways. In other words, stigma messages can cause harm because those messages trigger negative emotional reactions or belief-based perceptions. More specifically, the I-MISC situates stigma beliefs and negative affect or emotions as these dual

mediators that can operate in tandem or separately to influence stigma outcomes. Affective mediators explored in this study include negative affect, anger, frustration, fear, disgust, anxiety, sadness, and sympathy. Cognitive mediators explored in this study include stigmatizing beliefs about opioids related to beliefs about dangerousness, immorality, and responsibility. In addition, experience with Opioid Use Disorders (OUDs) was explored as a moderator of the relationship between stigma messages and emotional responses. Five outcomes of the stigma process were considered: attitudes, social distance, behavioral regulation, support for opioid-related policies, and stigma message sharing.

Results of a 4 (stigma message feature: mark, label, responsibility, peril) x 2 (stigma level: high, low) x 3 (opioid context: prescription opioids, fentanyl, heroin) between subjects online experiment offered preliminary support for the I-MISC. Mark and peril messages exerted the strongest effects, with null findings for label and responsibility messages. Mark and peril messages each exerted indirect effects on all five study outcomes, through primarily a combination of cognitive and affective pathways, leading to less positive attitudes, more desired social distance, increased behavioral regulation, less support for helpful opioid-related public policies, and more stigma message sharing. Affective mediation varied based on an individual's experience with OUDs. This research suggests the importance of removing stigmatizing communication about opioids in health and news media messaging.

OVERCOMING OPIOID STIGMA THROUGH COMMUNICATION:
AN EXTENSION OF THE MODEL OF STIGMA COMMUNICATION

by

Victoria Ann Ledford

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Advisory Committee:

Professor Xiaoli Nan, Chair

Professor Anita Atwell Seate

Professor Jiyoun Kim

Professor Kang Namkoong

Professor Tracy Sweet, Dean's Representative

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Dedication

This dissertation is dedicated to my mother, who taught me that people are more than
the sum of their stories.

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So many people made this dissertation and my academic success possible.

This section is my attempt to publicly acknowledge many of those individuals.

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Table of Contents

Dedication	ii
Acknowledgements	iii
Table of Contents	vi
List of Tables	ix
List of Figures	x
Chapter 1: Introduction and Rationale	1
Chapter 2: Stigma Communication Theory	6
Defining Stigma	6
The Model of Stigma Communication (MSC)	9
Opioid Stigma	14
Opioid stigma in the news	19
Opioid stigma and the MSC	21
Chapter 3: Outcomes of Stigma Messages	24
Social Distance	25
Overall Attitudes	27
Behavioral Regulation	29
Support for Opioid-related policies	30
Stigma Message Sharing	32
Chapter 4: Mediation, Moderation, and the I-MISC Model	35
Mediation Pathways	35
Cognitive Pathways	37
Stigma Beliefs	39
Affective Pathways	43
Fear	45
Disgust	47
Anger and Frustration	49
Sympathy	51
Anxiety	52
Sadness	53
Dual Pathway	55
Group Identification as a Moderating Variable	55
Intergroup Emotions Theory	56
The Integrative Model of Identity-Based Stigma Communication (I-MISC)	58
Chapter 5: Hypotheses and Research Questions	61
Direct Effects	61
Indirect Effects	65
Moderation	67
Conditional Indirect Effects	68
Associations	68
Chapter 6: Pilot Study	69
Method	69
MTurk Recruitment	69
Data Cleaning	70

Participants.....	71
Procedures.....	72
Message Pre-Test Measures.....	72
Select Study Variables	74
Results.....	76
Message Variables	76
Qualitative Message Feedback	76
Message Effects	79
Discussion.....	80
Limitations and Lessons Learned	83
Conclusion	84
Chapter 7: Main Study Method.....	85
MTurk Recruitment	85
Participant Characteristics	86
Procedure	87
MTurk Compensation	89
Experimental Stimuli	90
Manipulation checks	91
Measures	92
Dependent Variables	92
Mediators	97
Moderators and Covariates	99
Chapter 8: Main Study Results	100
Analytic Procedures	100
Data Cleaning.....	100
Data Examination.....	101
Factor Analysis	102
PROCESS	103
Stage I: Main Effects Analysis	104
H1.....	104
H2.....	105
H3.....	106
H4.....	107
H5.....	109
H6.....	109
RQ1	112
Outcome Effects.....	113
Stage 2: Indirect Effects Analysis.....	116
H7.....	117
H8.....	117
H9.....	117
RQ2	121
Stage 3: Moderation and Conditional Indirect Effects	126
H10 & RQ3.....	126
H11.....	129
RQ5	131

Chapter 9: Discussion	132
The Different Stigma Message Features	133
Opioid Type	139
Cognitive and Affective Mediation	140
Stigma Beliefs.....	141
Emotions and Affect	145
Group Identification and Intergroup Emotions	150
Study Limitations.....	155
Future Research	156
Conclusion	157
Appendix A: Figures.....	160
Appendix B: MTurk Recruitment Message (Both Studies).....	165
Appendix C: Pilot Study Experimental Stimuli.....	166
Appendix D: Pilot Study Questionnaire	168
Appendix E: Pilot Study Debrief Message	174
Appendix F: Main Study Stimuli.....	175
Appendix G: Main Study Questionnaire.....	177
Appendix H: Main Study Debrief Message.....	185
Appendix I: Main Study Consent Form.....	186
Appendix J: Tables	190
Bibliography	219

List of Tables

Table 1. 1	190
Table 2. 1	190
Table 2. 2	191
Table 2. 3	191
Table 2. 4	192
Table 3. 1	193
Table 3. 2	193
Table 3. 3	194
Table 3. 4	194
Table 3. 5	195
Table 3. 6	195
Table 3. 7	196
Table 3. 8	197
Table 3. 9	198
Table 3. 10	199
Table 3. 11	200
Table 3. 12	201
Table 3. 13	202
Table 3. 14	203
Table 3. 15	204
Table 3. 16	205
Table 3. 17	206
Table 3. 18	207
Table 3. 19	208
Table 3. 20	209
Table 3. 21	210
Table 4. 1	211
Table 4. 2	212
Table 4. 3	213
Table 4. 4	215
Table 4. 5	217

List of Figures

<i>Figure 1. Revised model of stigma communication (MSC; Smith et al., 2019)</i>	160
<i>Figure 2. Integrative Model of Identity-Based Stigma Communication (I-MISC)..</i>	160
<i>Figure 3. Moderation of Opioid Type on Negative Affect in the Mark Conditions.</i>	161
<i>Figure 4. Indirect Effects Model.</i>	161
<i>Figure 5. Dual Mediation of Mark Messages on Attitudes.</i>	162
<i>Figure 6. Mediation of Mark Messages on Social Distance.....</i>	162
<i>Figure 7. Mediation of Mark Messages on Behavioral Regulation.....</i>	163
<i>Figure 8. Mediation of Peril Messages on Behavioral Regulation through Stigma Beliefs and Negative Affect.</i>	163
<i>Figure 9. Mediation of Peril Messages on Attitudes.</i>	163
<i>Figure 10. Mediation of Peril Messages on Behavioral Regulation through Anger and Stigma Beliefs.</i>	164

Chapter 1: Introduction and Rationale

Opioid overdose deaths plague the United States. In 2019, 49,860 U.S. deaths were attributed to opioid overdoses, and opioid overdose deaths increased between 2013 and 2017 at unforeseen rates (Scholl et al., 2018; WONDER, 2020). The rise in opioid overdose deaths prompted the U.S. Department of Health and Human Services (2017) to declare the opioid crisis a national public health emergency in 2017. While federal, state, and local agencies have since sought significant policy changes to aid in opioids addiction prevention, treatment, and recovery (MetroNews, 2020; Purington, 2019), opioid overdoses have failed to wane. In fact, the COVID-19 pandemic has brought with it a surge of opioid-related emergency room visits and overdoses (Rodda, 2020; Slavova et al., 2020). The need for opioid-related public health supports is subsequently ever present. From reducing opioid prescription rates to crafting educational campaigns to increasing access to the life-saving opioid overdose response drug, Naloxone/Narcan, experts and officials across the country must continue their concerted efforts to curb opioid overdose and mortality.

Opioid Use Disorder (OUD) is characterized by a particular set of features that distinguishes it from other types of substance use. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM V) defines OUD as “a problematic pattern of opioid use leading to problems or distress” that includes at least two of twelve disordered behaviors including: using an opioid longer than intended, failure to perform duties at work, and/or developing a tolerance to the opioid (American Psychiatric Association [APA], 2018). Individuals with OUDs may experience these symptoms in relation to any type (or combination) of opioid(s), including prescription pain relievers (such as oxycodone, hydrocodone, and morphine), heroin, or fentanyl—a drug fifty times stronger than heroin and one hundred times

stronger than morphine (APA, 2018). Unlike other substance use disorders, physical dependence to opioids occurs much more rapidly, and the intensity of opioid tolerance and withdrawal symptoms magnifies the risk of overdose and death (Sharma et al., 2017).

The widespread nature of the opioid epidemic has been unfortunately accompanied by heightened levels of stigma toward individuals with OUD. Stigmatizing portrayals of individuals with OUD span various media outlets. Some news coverage has promoted criminal-justice approaches over treatment-oriented approaches to the epidemic (McGinty et al., 2015), and while other news media have uplifted a treatment-focused response (Kennedy-Hendricks et al., 2019), news articles still seem to hyperbolize the drug crisis with exaggerated and stigmatizing language (Dunne, 2017). Individuals who comment on social media news posts have also expressed stigmatizing views toward individuals with OUD, emphasizing that individuals with OUDs are responsible for their circumstances (Russell et al. 2019), and this discourse has extended to conversations on Twitter in recent years related to stigma of medication-assisted treatment options for people with OUDs (Dekeseredy et al., 2021). The prevalence of opioid stigma is not the only problem—it's the impact of this stigma that concerns health experts.

Opioid stigma can negatively impact prevention, treatment, and recovery. As Buchman et al. (2017) argue, “it is the stigma of opioid use, addiction, and historically stigmatizing and criminalizing attitudes toward people who use drugs that has led to societal inaction on opioid-related overdoses for decades” (p. 608). Stigma toward individuals with OUD has been positively associated with less support for policies that can help curb the epidemic, like rehabilitation policies and policies promoting the administration of Naloxone/Narcan (Kennedy-Hendricks et al., 2017; Ledford et al., 2021). Individuals with OUDs who have experienced opioid stigma have also reported experiences with anxiety and depression (Akdag et al., 2018).

Stigma's breadth is far-reaching and debilitating. As one individual with OUD shared: "They look at you like you're a drug addict and then they look at you like they can treat you any way they want. You're a drug addict" (Earnshaw et al., 2012). As federal, state, and local agencies devote financial resources to combating such negative effects of opioid stigma (National Science and Technology Council, 2018; State of Maryland, Office of Governor Larry Hogan, 2017), it becomes increasingly important to understand the nature and mechanisms of how opioid stigma messages influence public beliefs, attitudes, and intentions toward individuals with OUDs.

Intervening in the stigma communication process requires a theoretical understanding of how stigma communication works, and the model of stigma communication (MSC; Smith, 2007; Smith et al., 2019) offers a foundation for examining this process. The MSC argues that four message features characterize stigma communication, and these features negatively impact stigma beliefs, behavioral regulation (how much a person desires the stigmatized group's behavior to be regulated), and social distance through a single key mediator: danger appraisal (Smith et al., 2019). At the same time, the MSC argues that stigma messages lead to greater sharing of the stigma message through two mediators: the shock value of the message and how much common ground a person finds with the message (Smith et al., 2019).

While the MSC provides a strong foundation and direction for communication research, stigma communication theory more broadly is still greatly lacking. Outside of the MSC, stigma communication research has sought to understand the communicative management of stigma from the perspective of the stigmatized (e.g., Meisenbach, 2010) or has incorporated various theories to explain the stigma communication process (e.g., Lewis & Sznitman, 2017). Several studies have also examined stigma-related beliefs or attitudes as an outcome or correlate with other variables, but without a guiding theoretical framework to explain those relationships (e.g.,

Kennedy-Hendricks et al., 2017). While each approach serves a particular research purpose, none offer clarity about the mediating pathways of stigma messages or potential moderators that change those mechanisms. Though preliminary mediation research has been conducted as it relates to the MSC (e.g., Ledford et al., 2021; Smith et al., 2019), a more complex system of effects is likely at play, particularly one that isolates specific stigma message features and each of their effects. Currently, stigma communication research does not offer a comprehensive or systematic approach to examining both the cognitive and affective pathways through which stigma message features influence downstream outcomes such as attitudes and behavioral intentions.

As moderators are concerned, literature is scarce. Some stigma research has found support for demographic moderators such as education (Palamar, 2013) and knowledge (Li et al., 2017), but the exploration of audience characteristics has been largely overlooked. Whereas mediation tests answer the question of *how*, moderation analyses answer the question of *when* (Baron & Kenny, 1986). Both are important endeavors, and as Slater and Gleason (2012) point out in regard to moderation analyses, “often a full grasp of a phenomenon can be characterized as a grasp of the contingent conditions involved—when will something happen and when won’t it?” (p. 225). Investigating mediators and moderators can thus promote theoretical clarity and provide better understandings of the stigma communication process that serve as the basis for stigma interventions.

To address these gaps and advance stigma communication theory, this study proposes an integrative model of identity-based stigma communication (I-MISC) that theorizes dual mediation pathways from stigma messages to stigma-related outcomes related to attitudes (e.g., general attitudes, social distance) and behavioral intentions (stigma message sharing/stigma

message sharing, support for public policies). This model integrates literature from stigma communication theory and stigma literature more broadly to argue that stigma messages can impact stigma-related outcomes through either cognitive or affective pathways, or a combination of both. Moreover, this study examines a key potential moderator of the relationship between stigma messages and affect: personal experience with OUDs. Previous research examining stigma toward a group of people with mental illness found that personal experience with the stigmatized condition can influence attitudes (Hoffner et al., 2017).

In developing this integrative theory of stigma communication, this study unites stigma literatures and offers implications for both communication theory and practice. First, this study is one of the first to systematically and explicitly consider dual cognitive and affective pathways of the stigma communication process. By doing so, this study connects stigma communication literature with important related scholarship. Second, this study is one of the first stigma communication studies to examine potential moderation of the stigma communication process. Examining potential moderators is a key way to advance communication science theory (Slater & Gleason, 2012). Finally, this depth of understanding of the stigma communication process may offer clarity for practitioners crafting stigma interventions, especially for the opioids context. The next chapter of this manuscript examines stigma communication and the MSC, the third chapter explores outcomes of stigma communication, and the fourth chapter examines mediating pathways, explores a potential moderator, and proposes the new I-MISC model of identity-based stigma communication. Chapter 5 presents results of the pilot study, Chapters 6 and 7 discuss the methods and results from the main studies, and Chapter 8 presents the discussion and implications

Chapter 2: Stigma Communication Theory

Defining Stigma

Since the ancient Greeks used the term stigma to physically mark and societally devalue a person who committed what the public classified as an unspeakable act, stigma has communicated an otherness to those possessing it. In Goffman's (1963) foundational work, he called stigma an "attribute that is deeply discrediting" (p. 12) and claimed that stigma is a special type of relationship between an attribute and a stereotype. As scholars have elaborated on Goffman's work, stigma definitions have so transformed. Whereas Smith (2007) defines stigma as a "standardized image of the disgrace of a particular social group," Crocker et al. (1998) define it as "some attribute or characteristic [that] conveys a social identity that is devalued in a particular context." Link and Phelan (2001) further define stigma as a process "when elements of labeling, stereotyping, separation, status loss, and discrimination co-occur in a power situation that allows the components of stigma to unfold." Scholars seem to agree that stigma is negative and has damaging consequences, but there is still vast disagreement about what the term "stigma" truly denotes. Despite continued research about the types, construction, and effects of stigma, it seems that the concept itself remains "both elusive and perplexing" (Ainlay et al., 1986, p. 1).

Part of the difficulty in defining stigma stems from the tendency of using "stigma" as a term representing both the antecedents and effects of discrediting attributes. While Goffman (1963) illuminated stigma as the physical marking of a negative quality, he also referred to a person as "stigmatized" only when social environments recognize and respond to that stigma marking. In this way, Goffman's (1963) conceptualization considered the entire stigma process, from its antecedents to its effects. Since this conceptualization, stigma scholars have wrestled with these same stigma components, attempting to insert the entire stigma process into one

conceptual definition. For example, in Link and Phelan's (2001) definition, they claim that stigma *should* be considered in terms of its interrelated components, and they identify five parts of the stigma process that are enacted by both stigmatizers and the stigmatized. As Katz (1979) argues, few scholars have been successful at independently defining the different parts of the stigmatization process. However, failure to distinguish the parts of the stigma process or the types of stigma (e.g., who enacts the stigma vs. who feels it) hinders theoretical clarity in the study of stigma.

In addition to isolating stigma from its effects, scholars must distinguish the type of stigma at work in a given context. Research has begun to categorize different stigma types based on who experiences the stigma. Scholars have made progress in separating the processes of stigma enactment that is circulated by stigmatizers via *public stigma* (Goffman, 1963; Link & Phelan, 2001; Smith, 2007) and *structural stigma* (Hatzenbuehler, 2016) and the experiences of stigma felt by the stigmatized: *internalized/self-stigma* (Corrigan & Rao, 2012; Lillis et al., 2010) and *stigma consciousness* (Brown & Pinel, 2003). There is also a growing body of evidence about stigma toward close relational others to the stigmatized person, including *courtesy stigma* (Goffman, 1963; Gray, 1993) and the internalization of that stigma for close relational others-*affiliate stigma* (Mak & Cheung, 2008). Evidence has also begun to accumulate about the experience of *residual stigma*, when individuals shed their stigma marker (e.g., lose weight) but still feel stigmatized (Latner et al., 2012; Romo, 2016). It seems that various types of stigmas exist, and the clearest way to delineate the type of stigma is by who is the stigmatizer and who is the stigmatized (Table 1).

Despite their nuances, stigma definitions align in a few key ways that can promote a clear conceptualization of the term. Most stigma definitions agree that an "otherness" is involved in

the process of stigma: to enact stigma upon someone, there must be a degree of differentness, of belonging to a separate group (Goffman, 1963; Jones et al., 1984; Smith, 2007). Stigma definitions also converge when considering issues of threat and responsibility. Many stigma definitions contain threat components (Katz, 1979; Jones et al., 1984; Smith, 2007) concerning how threatening a person believes someone with a stigma to be. The same is true for responsibility: stigma often corresponds to attributions of personal choice and control (Smith, 2007). While levels of responsibility may vary based on the stigma context, individuals often use responsibility attributions to blame individuals for their stigmatized characteristic, as indicated by research on obesity (Puhl & Heuer, 2010), smoking and lung cancer (Luberto et al., 2016), and most relevant to the current study—addiction (van Boekel et al., 2013). These similarities point toward the definition of stigma put forth in this study.

This study relies on Smith's (2007) definition of stigma in the *public* stigma context. Smith (2007) defines stigma as a “simplified, standardized image of the disgrace of a certain people that is held in common by the community at large” (p. 464). Smith's definition is used in the current research for two key reasons. First, this conceptualization largely represents definitional consensus among stigma scholars but still differentiates the parts of the stigma process. As will be illuminated in the next section of this chapter, Smith outlines a model of stigma communication that clearly isolates stigma from its effects. Second, Smith's understanding of stigma is fundamentally communicative. In outlining the features of stigma messages, which will be explored in the next section of this chapter, Smith approaches the study of stigma from a communication perspective and highlights the unique message elements that characterize stigma communication. This perspective is important for studies of persuasion and communication because it can help facilitate more message design research that relies on

intrinsic message features rather than solely relying on audience reactions to messages as a metric of a persuasive message's success (O'Keefe, 2003). With the general definition of stigma as a "simplified, standardized image of the disgrace of a certain people that is held in common by the community at large" (p. 464), the model of stigma communication (MSC, Smith, 2007; Smith et al., 2019) outlines the features and effects of stigma messages.

The Model of Stigma Communication (MSC)

The MSC makes predictions about how features of stigma messages lead to stigma-related beliefs, attitudes, and intentions (Smith, 2007). The MSC is founded on interdisciplinary stigma scholarship and integrates dominant stigma perspectives to create a communication-centric model of stigma. The framework has similarities to other stigma models like the social attribution model of stigma (Corrigan, 2006) and the framework integrating normative influence on stigma (FINIS; Martin et al., 2008). However, the model differs in its parsimonious focus on clearly defined stigma message features, mediators, and effects. The MSC (Smith, 2007; Smith et al., 2019; Figure 1, Appendix A) hypothesizes that four intrinsic, stigma message features lead to negative beliefs, attitudes, and intentions concerning the stigmatized group through three mediators, including danger appraisal, shock, and common ground.

MSC message features are integrative of current stigma definitions and can be segmented into four key features. First, a stigma *mark* represents a visual feature that can easily categorize an individual into the stigma group. For some stigma issues, this visual feature is readily apparent. For example, an individual categorized as morbidly obese or an individual in a wheelchair cannot hide their stigma mark. In other stigma contexts, the mark is concealable. Goffman (1963) distinguishes these two types of stigma conditions as *discredited* (visually apparent) and *discreditable* (concealable). How do people affix marks to individuals with

concealable stigmas, then? The visual cue is associative: individuals conjure an image that they believe is worthy of stigma. For example, stigma research surrounding HIV indicates that people may associate individuals with HIV with intravenous drug use (Chan et al., 2007). This association allows an individual to “see” needles and disease as the image representing individuals with HIV and therefore communicates stigma about the group (i.e., individuals with HIV). As Smith (2007) elaborates, disgust cues are often involved in creating stigma marks. When a visual cue triggers disgust, it triggers avoidance (Lazarus, 1993). It becomes easy, then, to see how disgust cues are at work in the communication of stigma marks. Regardless of whether the mark is a physical or mental image, the process of affixing a mark to a person with a stigmatized identity is one of the four features at play in the stigma communication process.

Second, the stigma *label* communicates an otherness about the individual and reduces an individual to their group identity (Smith, 2007). Like the antithesis to people-first language (Employer Assistance and Resource Network on Disability Inclusion, 2020), labels put the stigma group before the stigma person. For example, a stigma label would call someone with schizophrenia a “schizophrenic” as opposed to the less stigmatizing phrase “a person with schizophrenia.” In the context of opioids, “addict” is often used to enforce a stigma label despite the fact that less stigmatizing language like “individual with opioid use disorder” situates the person first and the OUD second rather than putting the stigmatizing group identity at the forefront.

Third, stigma messages attribute *responsibility* to the individual and group possessing a stigma. As Smith (2007) explains, attributions of responsibility are tightly connected to perceptions of choice and control. Smith et al. (2019) elaborated on this by renaming the “responsibility” message feature “etiology” to consider “why people have a stigmatizing

condition...its causes and people's agency, awareness or opportunity to choose to join or be associated with members of the stigmatized group." Responsibility messages communicate that an individual chose their stigma attribute, therefore implying that the individual has control over eliminating their stigma. For example, research on obesity stigma indicates that people blame individuals who are categorized as obese for their condition (Puhl & Heuer, 2010). For opioid stigma, responsibility attributions seem simultaneously tied to (a) the way the addiction started and (b) the type of opioid the person is taking. As Goodyear et al. (2018) found in an experimental study, individuals perceived a person with opioid addiction as more responsible when the person's addiction began by taking the opioid from a friend as opposed to when it began with a legitimate prescription from a doctor. Responsibility messages enforce stigma by communicating that an individual should not possess a stigma in the first place.

Fourth, stigma messages communicate that the stigmatized individual or group poses some *peril* to "normal" society. Smith (2007) explains that peril messages often come in the form of hazard or warning statements about the danger a stigmatized person or group poses to those outside of the stigmatized group. For example, language surrounding infectious disease transmission often contains actual warning signs and/or explicit messages about "danger." For other conditions, the warning message might be more implicit or coded. Take Autism Spectrum Disorders (ASD), for instance. Underhill et al. (2019) found that students communicated peril stigma messages about their peers with ASD by discussing the ways they felt their peers with ASD would impact their grades or performance in the course. These social peril messages, while more coded, have a similar impact as explicit warning messages: they tell others outside the stigmatized group that associating with the stigmatized group has consequences. For opioids, peril messages may contain warnings about dangerousness or moral peril that could come from

associating with individuals who have an OUD. As Buchman et al. (2017) explain, this moral failure perspective largely dominates the conversation on opioids. Be it the risk of disease transmission, social peril, or moral peril, peril messages are the fourth message feature individuals use to communicate stigma.

The emerging and evolving nature of the MSC makes stigma communication research limited in its exploration of health contexts and its conclusions about the stigma communication process. For example, experimental research surrounding the MSC has been primarily conducted in the context of fictitious infectious disease (Smith, 2012; Smith, 2014; Smith et al., 2019). While one experimental study has examined the MSC in the context of opioids (Ledford et al., 2021), and qualitative studies have been used in other contexts (e.g., Autism Spectrum Disorders; Underhill et al., 2019), investigating the MSC in three new contexts (prescription opioids, heroin, fentanyl) can support theoretical development of the stigma communication literature. Second, the MSC can benefit from additional exploration of affective mediators. While a more detailed discussion of possible mediation pathways is offered in chapter four of this dissertation, a few brief findings are worth noting before moving forward. First, the current MSC (Smith et al., 2019) argues that a sole mediator—danger appraisal—mediates the path from stigma message features to three out of four stigma-related outcomes. Danger appraisal is conceptualized as perceptions of dangerousness about the stigmatized group (cognitive) and how threatened a person feels (affective). In addition, a two-step mediation process, involving danger appraisal, shock, and common ground, has been found to explain the relationship between stigma messages and the fourth outcome of stigma sharing. Despite its parsimony, the current MSC (Smith et al., 2019) does not fully consider the key role of affective mediation, even though past MSC research found evidence for the influence of stigma message features on negative affect

and discrete emotions (Smith, 2012; 2014). As such, one aim of this dissertation is to more wholly consider the cognitive and affective mediation processes that may operate both independently and cooperatively to influence stigma-related outcomes. Incorporating literature from the MSC and beyond, this dissertation presents a revised model of the stigma communication process that may explain some of the mixed findings in MSC research and offer a more comprehensive picture of how stigma communication works.

Finally, the MSC has investigated a variety of stigma-related outcomes but has not investigated the role of beliefs as an antecedent to attitudes, precluding the possibility that stigma beliefs can serve as mediators between stigma message features and outcomes. Smith (2012) examined stigma message features' impact on three outcomes: stigma beliefs, intervention support, and message dissemination likelihood. Stigma beliefs measure an individuals' devaluation of the stigmatized group through their endorsement of negative characteristics about the group, often related to morality, choice, and responsibility. Stigma beliefs also assess people's perceptions of what others think about the stigmatized group. In this way, stigma beliefs have been assessed in two parts—one's own stigma beliefs and one's perceptions of others' stigma beliefs. Intervention support concerns an individual's support for intervening and isolating people in a stigmatized group, and message dissemination is an information-sharing measure that assesses the likelihood an individual would share the stigma message with others. Smith (2014) also examined intervention support (termed "regulation support" in that study) and message dissemination but not stigma beliefs. Smith et al. (2019) examined these same two variables in addition to examining stigma beliefs and social distancing. In all, four key outcomes have been explored in MSC research, including stigma beliefs, regulation/intervention support, social distance, and message dissemination likelihood. Tests of the MSC have found direct

evidence for the impact of stigma message features on stigma beliefs (Smith, 2012), regulation/intervention support (Smith, 2012, 2014), and message dissemination likelihood (Smith, 2012). Smith et al.'s (2019) study also found support for the indirect effects (mediated through danger appraisal) between stigma messages and regulation support, stigma beliefs, and social distancing in addition to indirect effects of danger appraisal on message sharing mediated through shock and common ground. While this evidence suggests that stigma message features can influence three types of stigma-related outcomes (beliefs, attitudes, and behavioral intentions), it does not consider the role of beliefs as a potential antecedent to attitudes, which is a key proposition of belief-based models of attitude (O'Keefe, 2002). This dissertation thus aims to more clearly delineate the types of stigma-related outcomes that stigma message features influence.

In sum, the MSC offers a sound theoretical model for the study of stigma communication but is currently limited by (1) a lack of empirical studies to test the model, (2) a lack of diversity of contexts investigated and (3) little consistency in examining mediation pathways. Subsequently, expanding the MSC and conducting a series of experiments in new stigma contexts with a set of mediators based on existing MSC and additional research can help alleviate these concerns and advance stigma communication theory. As an issue with heightened levels of stigma among the public, opioid use disorder is an ideal scenario for extending the MSC in such a way. What follows next is an examination of the nature of opioid stigma and its relationship to the MSC, specifically the message features discussed in the model.

Opioid Stigma

Opioid stigma is unique from other types of substance use stigmas. For example, Brown (2015) found that among a college student sample, stigma levels toward heroin users were

significantly higher than stigma levels toward marijuana users. There are a variety of reasons for the uniqueness of opioid stigma. First, opioids are one of the most criminalized substances. Health communication scholarship has substantially investigated alcohol and tobacco use, but aside from underage drinking or drunk driving, these substances do not carry with them the same legal ramifications. Opioid stigma is intricately interwoven with issues of criminalization in ways that impact public policy and other outcomes (Buchman et al., 2017; Kennedy-Hendricks et al., 2017). Recent research has even found that people who are less likely to agree that OUD is a medical condition are more likely to view having an OUD as a crime (Taylor et al., 2021). Second, opioids differ from other illegal substances (e.g., marijuana, methamphetamines) because of the controllability of the drug. As Brown (2015) found when comparing stigma about marijuana to stigma about heroin, participants believed that marijuana use was less severe, less rare, and more controllable than heroin. In contrast, Sorsdahl et al. (2012) found that individuals perceived substance use from methamphetamines and heroin as equally negative. While opioid stigma seems to be unique from other substance use disorder stigmas, more research is needed to understand how stigma communication may be different in these different contexts. Still, the uniqueness of the opioids warrants research that examines opioid-specific stigma.

There may also be differences in stigma beliefs and the stigma process within the broader opioid context based on the type of opioid used. Three types of opioids dominate the current conversation on the opioid epidemic—prescription opioids (e.g., Oxycodone), heroin, and fentanyl. Research has begun to illuminate differences in stigma based on factors related to the type of OUD. For example, in a scoping review of opioid stigma research, McCradden et al. (2019) found a theme among stigma studies about heroin. Individuals associated methadone (methadone is a type of medication-assisted, rehabilitative treatment for an OUD) with treatment

for a heroin-related OUD and thus attributed higher levels of stigma to heroin use than other OUDs. As the authors point out, it is quite possible that individuals would attribute more stigma toward OUDs related to heroin than prescription opioids because of the legality of prescription opioids. Even if used illicitly, prescription opioids have “prescription” in their name, making them potentially less stigmatizing than heroin or fentanyl. Perry et al. (2020) even found that when comparing a prescription OUD to other types of mental health disorders, including alcohol use disorders, respondents were less likely to believe a person’s prescription OUD could be attributed to bad character. As Perry et al. point out, this suggests a degree of external responsibility attribution for a prescription OUD specifically. Beyond opioid type, Goodyear et al. (2018) found that participants reported more positive affect toward a hypothetical individual with OUD when the OUD began with a doctor’s prescription compared to when it began by taking an opioid from a friend. This research affirms the suggestion by McCradden et al. that OUDs related to prescription opioid use may be less stigmatizing than other OUDs. Since research is still emerging on how opioid stigma differs based on the type of opioid, investigating these differences is crucial to advance stigma research and offer practical implications for opioid stigma interventions.

Regardless of the type of opioid use disorder, opioid stigma comes in many forms and has many consequences. Opioid stigma is prevalent on social media ((Dekeseredy et al., 2021; Russell et al., 2019), in the news (McGinty et al., 2019), in law enforcement (Wagner et al., 2016), and even in healthcare settings (Lewis & Jarvis, 2019). Several studies have also examined the consequences of internalized stigma among individuals with OUDs (Akdag et al., 2018; Kulesza et al., 2017; von Hippel et al., 2018). In Akdag’s study among individuals with OUDs, internalized stigma was positively associated with depression and anxiety levels and

negatively associated with perceived social support. The average score of internalized stigma was also high, at 81.3 out of 114. Findings from von Hippel et al.'s study also reveal the negative impacts of internalized stigma, as internalized stigma among individuals who injected drugs was associated with greater depression, less comfortability attending needle syringe programs, and even more severe drug dependence. Finally, Kulesza et al. found that higher internalized stigma was associated with more substance use problems. The impacts of internalized opioid stigma (which occurs as a result of public stigma) are far-reaching.

People seeking treatment for OUD also face serious stigma. Much research has explored stigmatized perceptions of OUD specifically related to individuals seeking treatment for their disorder (Bozinoff et al., 2018; Chang et al., 2019; Cooper et al., 2018). Bozinoff et al. found support for the positive association between internalized stigma and depression among individuals seeking treatment for OUD. They also found that among individuals with OUD seeking inpatient detoxification treatment, individuals who had previously entered a detoxification program had significantly higher levels of internalized stigma related to OUD treatment. As Bozinoff et al. argue, this finding could suggest that individuals who have previously sought help experienced stigma from healthcare providers. Among individuals seeking OUD treatment, Chang et al. also found a significant negative association between opioid self-stigma and quality of life. Furthermore, Cooper et al. found that poor mental health, often a co-occurring condition with an OUD, was negatively associated with perceptions of social support. In all, participants with OUDs face internalized stigma that may deter their treatment and recovery.

While the majority of research has focused on internalized stigma and largely used non-experimental methods, recent experimental research has begun to reveal the impact of public

opioid stigma messages on related outcomes. For example, Goodyear et al.'s (2018) study used vignettes about individuals with opioid addiction to examine the impact of gender, language, and uptake of addiction on respondents' stigma attitudes. Goodyear et al. found that when the person in the vignette was labeled as a "drug addict" as opposed to having an "opioid use disorder," participants had higher stigma attitudes toward the individual and more negative affect. In this study, stigma attitudes were measured using the perceived stigma of addiction scale (PSAS; Luoma et al., 2010). While Goodyear et al. (2018) called the measure one of stigma "attitudes," this measure is composed of belief-based items related to the specific, perceived characteristics related to individuals in the stigmatized group. Ashford et al. (2018) manipulated similar stigmatizing language to examine differences between words like "substance abuser" and "addict" compared to "person with a substance use disorder" and found that stigmatizing terms like "addict" led to more implicit negative bias than "person with a substance use disorder." While the authors found significant differences in attitudes using an implicit attitudes measure, those same findings were not found when examining social distance as the stigma-related outcome. Another study found evidence for more explicit relationships between stigma messages and specific stigma beliefs. Similar to Ashford et al., Kelly and Westerhoff (2010) manipulated having a "substance use disorder" compared to being a "substance abuser." Among their sample of clinicians, Kelly and Westerhoff found that individuals who were exposed to the stigmatizing condition ("substance abuser") perceived the individual with the substance use disorder as more responsible for their condition and desired more punitive action against those individuals. Finally, Ledford et al.'s (2021) two studies on stigma messages manipulated various elements of opioid-related stigma communication and found that messages with stigmatizing labels and marks led to greater danger appraisal of individuals with generic OUDs in addition to exerting

a significant indirect effect on behavioral regulation (more desire for regulation), social distance (increased social distance) and support for Narcan (less support for Narcan). Each of these studies manipulated similar message characteristics (e.g., most often a stigma label) and found similar negative impacts of opioid stigma messages.

While scarce, experimental research on opioid stigma points toward the relevance of MSC message features and illuminates the negative impacts of opioid stigma communication. Among the studies that have manipulated opioid stigma message features, it seems that these studies use labels (Smith, 2007) to manipulate stigma message characteristics (Ashford et al., 2018; Goodyear et al., 2018; Kelly & Westerhoff, 2010) or combine stigma message features in ways that don't allow for clear isolation of each feature's unique individual effect (Ledford et al., 2021). Additional research about the content of opioid stigma messages may provide insight into what the other three message features outlined in the MSC might look like in the context of opioids.

Opioid stigma in the news.

News media is a primary source for information, making stigma communicated through the news particularly problematic. Despite increases in social media news consumption in recent years, 49 percent of U.S. adults still use television as a source for news, 33 percent seek out news websites, and 16 percent read print newspapers (Geiger, 2019). News media have been studied as a source of stigma transmission across various stigma contexts including mental health and illness stigma (Frankham, 2019; Wang, 2019), weight-related stigma (Anderson et al., 2017), and of interest to the current study—opioid addiction stigma (e.g., McGinty et al., 2019a). If news media are a primary source of information and continue to transmit stigma related to opioids, understanding how individuals process news articles about opioids is an important endeavor.

Scholars must also investigate what types of stigmatizing content news media portray about the opioid crisis.

Emerging research indicates that opioid stigma is prevalent in the news. McGinty et al. (2019a) conducted a content analysis of opioid-related research from major national and regional newspapers over a 10-year period between 2008 and 2018. Of the more than 6,000 articles included in print and television news coverage, almost half of those articles used stigmatizing language to describe a person with OUD (e.g., addict, drug abuser) or to describe OUD more broadly (e.g., drug abuse). Another large-scale content analysis of national and regional news coverage revealed that news articles about opioids frequently contain criminal depictions of people with OUD (McGinty et al., 2016). Some news articles have even explicitly used stereotypes beyond less implicit media representations. In a content analysis of one month of 2016 news media coverage from the Wall Street Journal, New York Times, and a local New Hampshire newspaper, Dunne (2017) found that news articles or experts quoted in articles often hyperbolized the drug crisis, referring to fentanyl as a “serial killer of drugs” or even talking about people with OUD in this way: “The average opioid abuser is not a pain patient. He or she is a non-patient who pilfers the medication from unsuspecting relatives, buys it on the gray market, or finds a so-called candy man” (p. 32). While Russell et al. (2019) did not intentionally examine local Ohio newspaper coverage for stigmatizing terms, they did find that many newspapers focused on opioid criminalization and legal ramifications. Russell et al. argued that “some of this reporting, especially stories with minimal context or investigative resources may promote stigmatization of opioid use” (p. 707). Results from these four content analyses make it apparent that news media, well-intentioned or not, perpetuate opioid stigma. Though one recent content analysis of national media coverage suggests a trend in more stories covering

medication-assisted treatment for opioids (McGinty et al., 2019b), stigmatizing messages surrounding criminalization are still ever-present. Therefore, examining news as a conduit for stigma communication, and subsequently a point of intervention, is relevant and timely.

Opioid stigma and the MSC.

The stigma features in the MSC may take on unique forms when considered in the context of opioids, and research from news coverage of opioids can provide realistic insights about the content of opioid stigma messages. First, opioid stigma *marks* require a visual portrayal, whether a physical image or a mental image considered only in the minds of participants. Frequent contrasts can be found between news articles that portray individuals with OUD as “addicts” who are “bum-looking street people” compared to “affluent” and “well-dressed” (Day, 2011). It becomes apparent then how a high stigma message about a person with OUD may include a description about an unseemly appearance, or in the specific case of heroin, needle track marks on their arm. Second, opioid stigma *labels* seem to be the most frequently studied message feature in content analyses of opioid stigma in the news and in experimental research. Studies have compared stigmatizing terms like “addict” to less stigmatizing terms like “a person with Opioid Use Disorder” (Ashford et al., 2018; Goodyear et al., 2018; Kelly & Westerhoff, 2010). When situated as an addict as opposed to a person struggling with an opioid use disorder, individuals with OUD are reduced to their addiction and dehumanized. This group-level tactic reifies stigma.

Though marks and labels seem relatively straightforward, thinking about *responsibility* and *peril* messages in the context of opioid stigma requires additional consideration. The MSC has exclusively studied message features for fictitious infectious disease and has thus only studied responsibility messages in terms of contracting the disease. This cannot be done in the

same way for opioids, as disease transmission is not an option. Instead, opioid responsibility messages likely concern more of what Smith (2007) talks about when stating that: “one may also suggest that people had the ability to control their exposure to a stigma-related condition when they chose to associate with those in the stigmatized group” (p. 471). This means that responsibility is tied to choice, particularly in terms of how OUD is perceived as either an internal choice or an external issue (e.g. overprescribing of opioids) (Smith, 2007). Some scholars have manipulated this type of variable in experimental opioid stigma research. For example, Goodyear et al. (2018) manipulated it as “precipitance,” examining to what extent individuals endorsed stigma when a person’s opioid addiction started by taking an opioid from a doctor versus a friend. Results indicated less stigma toward the doctor condition than the friend condition. Given these factors, it seems that situating a person with OUD as “fully in control of” or “entirely responsible” for their disorder would be highly stigmatizing, whereas claiming this person was “*not* entirely responsible” or “fully in control of” their disorder would communicate less stigma.

Finally, *peril* messages about opioids seem to relate to perceptions of criminality and danger about a person with OUD or more broadly the consequences individuals with OUDs face, especially in relation to others. As Russell et al. (2019) found, news articles frequently discuss the crimes committed by individuals with OUD. Danger seems to be a prominent theme in media about the opioid epidemic. Messages that highlight how a person with OUD “may be subject to violent, aggressive, or criminal behavior” would highly stigmatize this person. Alternatively, news articles that claim individuals with OUD can be “normal, calm, law-abiding citizens” would communicate less stigma. At the same time, messages about the perils of OUD may come in another form and discuss the perils of the use disorder on people around the affected

individual. For example, as an NPR article tells the story of a family affected by OUDs, the article notes: “...children whose parents had become addicted to pain pills, heroin and other opioids were becoming the invisible casualties of the crisis” (Corona et al., 2021, para. 2). These strategies of emphasizing the consequences people with OUDs have on those around them may serve to communicate and exacerbate stigmatizing perceptions—a claim the current dissertation tests through its experimental manipulation of peril messages.

Despite research from a sound base of studies, opioid stigma research is greatly lacking (Corrigan & Nieweglowski, 2018). As Corrigan and Nieweglowski conclude when reviewing opioid stigma research, the research has largely been focused on education. While potentially useful, educational interventions for reducing opioid stigma do not always change stigma attitudes. For example, Wagner et al. (2016) tested the impacts of an educational intervention on opioid overdoses and Naloxone training among law enforcement personnel. The 30-minute training session was purely informative, directing officers on how to recognize and respond to an overdose, how to administer Naloxone, and what police department protocols should be taken. Though law enforcement officers reported significantly greater opioid overdose knowledge and competency after the intervention, their attitudes toward victims of opioid overdoses did *not* change. While education can provide relevant information, it seems that stronger, persuasive strategies are needed to change beliefs and attitudes about individuals with OUDs. Opioid stigma communication research can provide the tools needed to change these beliefs and attitudes, and the MSC provides a strong theoretical foundation for such an endeavor.

Chapter 3: Outcomes of Stigma Messages

Current research indicates that public stigma can lead to negative consequences for individuals in the stigmatized group. These consequences can include damaged self-esteem and self-efficacy (Corrigan et al., 2009; Durso et al., 2016), interpersonal struggles with discrimination and isolation (Corrigan & Watson, 2002; Mak et al., 2007), and even physical effects such as lower health related quality of life (Nobre et al., 2017). Stigma scholars have investigated the consequences of stigma among a plethora of circumstances including weight (Lillis et al., 2010), mental illness (Link et al., 2004; Watson et al., 2007), stuttering (Boyle et al., 2017), HIV (Brown et al., 2016), cancer (Vrinten et al., 2019), and even bankruptcy (Chin et al., 2019) to name a few. While stigma research outside the communication discipline illuminates a variety of consequences for the impact of public stigma, the MSC offers insight into how public stigma *messages* influence stigma-related outcomes.

Though the MSC has not clearly delineated belief, attitudinal, or intention-based outcomes, it has the capability of predicting all three outcomes of persuasion. The MSC has successfully predicted four stigma-related variables, including stigma beliefs, social distance, behavioral regulation, and stigma message sharing. Stigma beliefs operate in the belief-sphere of persuasion, social distance is considered an attitude-based measure, as is behavioral regulation, and stigma message sharing is an intention-based outcome. These four dependent variables are common outcomes of stigma communication and offer insight into the three types of persuasion outcomes commonly investigated. However, this study situations stigma beliefs as a mediator rather than outcome based on belief-based models of attitudes (Fishbein & Ajzen, 1975). In addition, this study adds two additional dependent variables to the model—an overall measure of attitudes toward the stigmatized group and support for public health policies related to OUDs.

Therefore, five dependent variables are explored in the current study: overall attitudes, social distance, behavioral regulation, support for opioid-related policies, and stigma message sharing.

Social Distance

Social distance is an attitude-based measure related to how physically close a person is willing to be to another. Park (1923) defined social distance as “an attempt to reduce to something like measurable terms the grades and degrees of understanding and intimacy which characterize personal and social relations generally” (p. 390). When Bogardus (1924) created a measure to assess social distance, he created items to gauge how close an individual would be willing to get to a certain group of people. Items range in distance, from accepting a person as a close relative by marriage to wanting to exclude a person in that group from entering one’s country. Social distance is extensively studied in stigma research and is often a target for stigma interventions (Griffiths et al., 2014; Morgan et al., 2018). Some studies even use social distance as a proxy to measure stigma attitudes (Taylor et al., 2021; Yang & Link, 2015).

Social distance is as a primary attitudinal outcome of stigma communication. While the original conceptualization of the MSC did not consider social distance as a key outcome of stigma communication (Smith, 2007), the updated model (Smith et al., 2019) examined a desire for social distance and found a significant and positive indirect effect between stigma messages and social distancing mediated through danger appraisal. A large and significant proportion of the variance in social distancing was explained by the model ($R^2 = .62$). Studies outside of the MSC affirm the importance of social distance as an outcome of stigma and stigma messages. Social distance is extensively studied in stigma research and targeted in stigma interventions (Morgan et al., 2018; Yang & Link, 2015). Therefore, social distance is an important dependent variable to consider for stigmatized issues like opioids (Taylor et al., 2021).

Evidence surrounding specific types of stigma messages that influence social distance is scarce. For example, as previously noted, Smith et al.'s (2019) study of a hypothetical infectious disease found that high stigma messages led to greater social distance through danger appraisal than low stigma messages. However, the messages in Smith et al.'s study combined all four stigma message features into a single manipulation. Similarly, Ledford et al.'s (2021) study found direct effects of both classification (mark + label) and enactment (responsibility + peril) messages on social distance, in addition to a significant indirect effect from classification messages to social distance. While a significant portion of the variance in social distance ($R^2 = .24$) was explained by the overall model, this study again did not clearly isolate each stigma message feature's effect. Opioid stigma research has illuminated evidence that stigma *labels* can directly influence social distance perceptions (Ashford et al., 2018). Additional empirical work suggests that three other stigma message features can also influence this outcome (Ledford et al., 2021), and theoretical work surrounding stigma offers justification for these relationships. For example, *marks* may have a profound effect on social distance due to their disgust-evoking intention. In creating a negative image of someone with a stigmatizing condition like an OUD, marks may elicit negative feelings such as disgust, which can evoke an avoidance reaction (Lazarus, 1993). *Responsibility* messages may influence social distance because of the way these messages draw a distinct ingroup/outgroup delineation (e.g., by communicating that individuals are responsible for their negative choice/stigma condition). Intergroup communication literature has substantively examined how group membership affects intergroup contact (Pettigrew et al., 2011) It follows, then, that such messages can influence social distance. Final, *peril* messages are designed to directly influence social distance. The goal of a peril message is to warn individuals of the harms a stigmatized group poses to others and thus communicate the need for reduced

interaction with the group (Smith, 2007). In sum, there is empirical and theoretical evidence to suggest that each stigma message feature can influence social distance, be it directly or indirectly.

Overall Attitudes

Empirical studies have largely conflated stigma attitudes with other stigma-related constructs. Attitudes are defined as the overall evaluation of an attitude object with some degree of favor or disfavor, making them distinct from beliefs that concern more specific characteristics about the attitude object (Eagly & Chaiken, 1993). However, studies do not always clearly provide this distinction. For example, Li et al.'s (2017) measure of HIV-related stigma attitudes contained three items, related to participants' willingness to "accept family members with HIV/AIDS," "have their children to study with people with HIV/AIDS," and their willingness to "work with people with HIV/AIDS." While the researchers used these items to measure overall stigma attitudes, this attitude measure is actually a modified measure of social distance—the more specific type of stigma attitude often measured in stigma research. Furthermore, researchers often used belief-based scales when claiming to measure attitudes. For example, Goodyear et al.'s (2018) study used the perceived stigma of addiction scale (PSAS; Luoma et al., 2010) to measure stigma attitudes, despite the fact that Luoma et al. (2010) defined perceived stigma as "beliefs that members of a stigmatized group have about the prevalence of stigmatizing attitudes and actions in society." This conflation of stigma-related constructs is common in research and can lead to theoretical confusion.

Part of the confusion in these studies is the use of "attitude" versus "stigma attitude." Whereas clear definitions of attitudes have been proffered, scholars have yet to clearly explicate stigma attitudes as a construct. Corrigan and Watson (2002) discuss prejudicial attitudes as

involving an evaluative component that is typically negative. This definition aligns with current definitions of the overall attitude construct and presumes that a negative score on an attitude measure would indicate a prejudicial or stigmatizing attitude. However, Corrigan (2006) later defined stigma attitudes *as* stereotypes, contradicting the common conceptualization of stereotypes as beliefs. Stigma literature is rife with confusion about the definition of a stigma attitude. Literature on communication and persuasion can subsequently offer clarity in the study of attitudes that does not necessarily require examining “stigma attitudes” specifically.

Since social distance is a more specialized attitude measure that encapsulates attitudes toward a more specific attitude object (proximity to people with an OUD), measuring general attitudes toward individuals with OUDs provides a way to define attitudes more clearly without needing to fully explicate what a “stigma attitude” is. Using Eagly and Chaiken’s (1993) definition, overall attitudes toward individuals with OUD will be defined as a person’s general tendency to evaluate individuals with OUD to some positive or negative degree. While prior research has studied stigma attitudes under the guise of stigma beliefs or social distance, this study examines attitudes more broadly and argues that stigma beliefs can lead to the formation of an overall negative attitude toward individuals in a stigmatized group. Whereas this variable offers a more general assessment of attitudes, the social distance measure can provide the greater level of specificity concerning “stigma attitudes” toward individuals. In doing so, this study offers theoretical clarity in distinguishing between attitude types.

In addition to stigma beliefs’ natural association with attitudes, stigma message features may also directly affect overall attitudes—given that the function of stigma messages is to generate overall negative perceptions and behaviors toward the stigmatized group (Smith, 2007). Past research has illuminated the direct, negative relationship between stigma *labels* and attitudes

(i.e., more stigma leads to less positive attitudes) (Ashford et al., 2018). Past research has explored how stereotypical portrayals of outgroup members (similar to stigma *marks*) can lead to negative attitudes toward the group (e.g., Puhl et al., 2013). Research also suggests a negative relationship between higher *responsibility* attributions and overall attitudes (Goodyear et al., 2018). Finally, *peril* messages should negatively influence attitudes because of the way that those messages warn individuals of the negative consequences for interaction (Smith, 2007).

Behavioral Regulation

Behavioral regulation, also termed “intervention support” has been measured to determine the degree of social constriction or community monitoring individuals desire for the stigmatized group. In other words, how strongly do individuals believe that the stigmatized group’s behavior should be controlled by an external source (e.g., the community, an institution)? As Smith (2007) explains, social isolation through behavioral regulation is a common consequence of stigma communication. Many stigma studies have assessed behavioral regulation in terms of the desire for punitive action against the stigmatized individual or group (Kelly & Westerhoff, 2010; Kennedy-Hendricks et al., 2017) or a desire for institutionalization (Parcesepe & Cabassa, 2013; Robinson, 2018). For the MSC, social isolation is measured from the perspective of the stigmatizer and is termed either behavioral regulation or intervention support.

The updated MSC (Smith et al., 2019) situates behavioral regulation/intervention support as an outcome of stigma messages, and earlier MSC work validates this relationship. Smith (2012) found that high peril messages led to more behavioral regulation than low peril messages, but no other message feature had an independent impact on behavioral regulation. Mark and peril messages also interacted to influence behavioral regulation such that the low mark and low peril

group expressed significantly less behavioral regulation than the other three mark and peril conditions. While a large, significant portion of the variance in behavioral regulation was explained ($R^2 = .49$), these two message features were not the only significant predictors in the regression equation; perceived dangerousness and negative affect also significantly predicted behavioral regulation. Alternatively, Smith (2014) found that when a hypothetical infectious disease was described as being transmitted via airborne droplets through human-to-human contact (the manipulation of low responsibility in the study), participants desired greater behavioral regulation than when it was described as being transmitted via contact with mouse feces (high responsibility). This result was in the opposite direction as expected from the manipulation, but it still makes intuitive sense. Individuals who believed another human could transmit the disease to them desired regulation of that person. If they believed the disease was transmitted via animal contact, behavioral regulation was not perceived as necessary. Aside from responsibility, no other message feature or interaction of features significantly impacted regulation support. Again, however, perceived dangerousness significantly predicted behavioral regulation, as did sympathy and frustration. In total, a significant portion of the variance was explained in regulation support ($R^2 = .79$). Finally, Smith et al. (2019) found a significant indirect relationship between stigma message and behavioral regulation that was mediated through danger appraisal, and a large, significant proportion of variance in behavioral regulation was explained by the model. ($R^2 = .81$). Consistently, stigma message features and perceived dangerousness have predicted behavioral regulation (Ledford et al., 2021).

Support for Opioid-related policies

Opioid stigma literature and recent stigma communication scholarship has suggested that support for helpful public health policies might be a variable of interest in the stigma

communication process. Indeed, stigma literature outside of the communication field has measured the impact of opioid stigma (i.e., stigmatizing attitudes) on support for opioid-related public policies (e.g., rehabilitation; Kennedy-Hendricks et al., 2017), and a recent experimental study by the author of this dissertation and colleagues found that opioid stigma *messages* can negatively influence supportive for helpful public health policies related to the opioid epidemic (e.g., support for Narcan administration, support for rehabilitation policies, Ledford et al., 2021). Whereas the majority of stigma communication literature has examined the influence of stigma messages on *negatively* valenced outcomes (i.e., social distance, behavioral regulation, and stigma sharing are all negative consequences of stigma messages), there can be immense utility in understanding the impact of stigma messages on a *positively* valenced outcome such as support for helpful public health policies. Public health researchers continue to consider connections between stigma attitudes and support for public policies in the context of substance use and other stigmatized conditions (e.g., Barry et al., 2014), but health communication researchers have not substantially built upon this literature with insights from message design and effects. Such insight about how stigma messages can harm intentions to support opioid-related public health policies can offer critical implications for public health (Pollack Porter et al., 2018).

Opioid stigma messages will likely influence helpful public health policies in the inverse way as opioid stigma messages influence behavioral regulation. Behavioral regulation is an outcome that reflects an individual's desire to quarantine, isolate, or remove stigmatized people from "normal society" (Smith, 2007). A near antithesis of behavioral regulation is helpful public health policies that serve to rehabilitate and support individuals with OUDs. Two of these key

public health policies that are helping to mitigate the opioid epidemic include administration of the lifesaving, opioid-overdose response drug, Naloxone/Narcan and rehabilitation programs (National Academies of Science, Engineering, and Medicine, 2017). These policies stand in stark opposition to more regulatory policies like jail/criminalization (Buchman et al., 2017; Kennedy-Hendricks et al., 2017). Expectedly, then, stigma messages should exert a negative effect on these helpful public health policies in which more stigmatizing opioid messages lead to less intended support for these public health policies. One study has affirmed this relationship (Ledford et al., 2021), and the current dissertation aims to more closely examine *which* stigma message features influence opioid-related public policies.

Stigma Message Sharing

Stigma message sharing, also termed social transmission or dissemination likelihood, results when stigma message content is high. As Smith (2007) argues, sharing stigma messages serves a protective function for non-stigmatized groups: by sharing the stigma message with others in their group, people can differentiate themselves from the stigmatized group and protect their own group identity. Zhu and Smith (2016) elaborate that: “people share rumors to accomplish one or more psychological goals...rumors, or the environment in which rumors circulate, threaten the attainment of a goal, which then motivates people to share rumors in the hope of re-achieving that goal” (p. 1349). Concerning stigma message sharing of stigmatizing messages about a group, stigma messages that contain the MSC’s four features of stigma content would be likely to be shared so that the group can reestablish their identity and avert the threat posed to them by the stigmatized group. While not a lot of work has examined stigma message sharing in the context of stigma, MSC scholarship has begun to reveal some important findings.

While the updated MSC (Smith et al., 2019) effectively predicted stigma message sharing through two new mediators, MSC studies have largely struggled to consistently predict this outcome. Earlier work on the MSC found some preliminary but mixed findings. For example, Smith (2012) found that stigma marks significantly and positively predicted dissemination likelihood of a stigma message, but no other message feature or interaction of features did. Perceived dangerousness, negative affect, and group entitativity also significantly and positively predicted dissemination likelihood; together all of these predictors accounted for a significant, but comparatively (to other dependent variables) small amount of the variance in dissemination likelihood ($R^2 = .15$). On the other hand, Smith (2014) found no significant relationships between any of the four stigma message features and dissemination likelihood. However, perceived dangerousness, frustration, and perceived susceptibility to the infectious disease were all significant positive predictors of dissemination likelihood. These variables significantly explained a larger portion of variance in the outcome ($R^2 = .35$). These mixed findings served as the impetus for Smith et al.'s (2019) revisions to the updated MSC. Smith et al. thus revised their understanding of the mechanisms of stigma message sharing and incorporated two new mediators into the model to explain stigma message sharing: shock and common ground. The authors argued that how shocking a message was and how much common ground a person perceived themselves to have with the message would explain the relationship from danger appraisal to stigma message sharing. Smith et al. did find a positive indirect effect between danger appraisal and stigma message sharing, but this analysis did not examine the indirect effect from the study manipulation: stigma message features. As such, it may be that perceived dangerousness impacts stigma sharing but stigma message content does not, especially considering that the amount of variance predicted in stigma message sharing was notably lower

than for other dependent variables ($R^2 = .11$). While different mediation pathways have been explored to predict the stigma message sharing of stigma messages, the direct impact of stigma message features on stigma sharing has not been consistently supported. More discussion of possible mediating mechanisms is offered in the next chapter of this manuscript.

Stigma communication research points to five dependent variables as key outcomes of stigma communication—social distance, negative attitudes, behavioral regulation, less support for helpful public health policies, and stigma message sharing. Research demonstrates that stigma messages are significantly and positively associated with social distance (Smith et al., 2019), behavioral regulation (Smith, 2012; 2014; Smith et al., 2019), and stigma message sharing (Smith, 2012; Smith et al., 2019). Stigma messages are also likely to influence overall attitudes given that messages can impact social distance, a specific type of attitude, and emerging evidence in the opioid context suggests that stigma messages can negatively influence helpful public health policy support (Ledford et al., 2021). While limited empirical research has validated the effects of distinct stigma message features on these four outcomes, that limited body of evidence provides directions for future research. Furthermore, part of the difficulty in predicting stigma message sharing may stem from a lack of clear mediation or moderation analysis. While Smith et al. (2019) found evidence for shock and common ground as mediators, stigma message sharing still had a great deal of variance left unexplained. Furthermore, there has been no research to uncover the conditions under which these mediators hold. Partaking in this conditional process analysis can help provide clarity about the causal processes of a phenomenon by illuminating key moderators of mediation pathways (Slater & Gleason, 2012). As such, examining key mediators and moderators may help advance the MSC in new directions that better explain these four dependent variables.

Chapter 4: Mediation, Moderation, and the I-MISC Model

Mediation Pathways

The updated MSC (Smith et al., 2019) examines a narrow set of mediators that may not fully explain the stigma communication process. Importantly, Smith et al.'s test of the updated MSC was the first to explicitly test indirect effects and found positive support for proposed mediation pathways involving danger appraisal, shock, and common ground. However, results from prior MSC research and other stigma literature suggest that danger appraisal, shock, and common ground are not the only mediators involved in the stigma communication process. It is also unclear how these mediators connect to the fundamental mental processes guided either by a cognitive or affective system. While Smith et al. found support for the indirect path from danger appraisal to stigma message sharing, mediated by shock and common ground, there was no evidence that the manipulation (stigma message features) had a significant indirect effect on stigma message sharing. As for common ground and shock value, there may be other cognitive explanations for the relationship between stigma messages and stigma message sharing. MSC research indicates that perceptions of dangerousness are a strong outcome of stigma message features and a strong predictor of stigma-related outcomes (Smith, 2012; 2014; Smith et al.). However, perceptions of danger, a cognitive mediator, may not be the only belief-based mediator at work in the stigma process. For example, other elements of stigma beliefs, such as perceptions of responsibility (Goodyear et al., 2018; Kelly & Westerhoff; Russell et al., 2019) and immorality may also be highly relevant. Both Goodyear et al. and Kelly and Westerhoff found experimental evidence for the impact of stigma message content on responsibility beliefs. Moreover, the message features in the MSC are likely to influence responsibility and immorality beliefs, especially since responsibility and peril messages can communicate choice and moral

danger respectively (Smith, 2007). In short, integrating cognitive mediation pathways based on dangerousness, responsibility, and immorality beliefs may provide a more comprehensive picture how stigma message features influence stigma-related outcomes.

The updated MSC's (Smith et al., 2019) integration of affective mediation may also fail to fully represent the ways that stigma messages influence stigma-related outcomes through affect. Despite earlier research suggesting the potential mediating role of negative affect or discrete emotions (Smith, 2012; 2014), the updated MSC (Smith et al.) only considers affect as “feeling threatened”—one of the two factors comprising danger appraisal. Rather than combining cognitive (perceived dangerousness) and affective mediation (feeling threatened) into a single variable (danger appraisal) like the updated MSC (Smith et al.), the model proposed in this study—the integrative model of identity-based stigma communication (I-MISC)—expands the number and types of cognitive and affective mediators that can explain the relationship between stigma message features and stigma-related outcomes.

The I-MISC considers cognitive and affective mediation as separate parallel pathways that can operate in tandem. Furthermore, the I-MISC seeks to understand how these mediators co-inform one another. In all, the I-MISC (Figure 2, Appendix A) argues that stigma message features may influence stigma-related outcomes through cognitive, affective, or a combination of both pathways. The I-MISC considers three cognitive pathways concerning stigma beliefs: dangerousness beliefs, responsibility beliefs, and immorality beliefs. The I-MISC also considers multiple affective pathways, including one pathway involving negative affect and other pathways involving any of five discrete emotions: fear, disgust, anger, frustration, or sympathy. Conceptualizing both cognitive and affective mediators provides a novel extension of MSC research. As Smith (2007) noted in the original explication of the model, the four message

features of stigma communication can lead to cognitive and emotional reactions. Despite preliminary evidence surrounding a series of cognitive and emotional reactions (Smith, 2012; 2014) the revised MSC (Smith et al., 2019) offers a view of the stigma communication process that may veil the complexities of how people process stigma messages.

As such, one aim of this dissertation is to unify the MSC and stigma literature by hypothesizing dual mediation pathways concerning both cognitive and affective processes. The evidence for this conceptualization can be found in the original explication of the MSC (Smith, 2007), but it has not been executed or theoretically developed. As such, I present evidence for these dual mediation pathways and argue that this can contribute to a more integrated model of stigma communication—the I-MISC.

Cognitive Pathways

Persuasion has long explored cognitive mediation of various message variables on outcomes. Social cognition, a concept that originated in social psychology, refers to the process of human reasoning and decision-making that is typically presumed to involve a conscious process of information processing (Bandura, 1999). Whereas earlier psychological studies had considered humans as responders to their environment, cognitive psychology takes a more agentic approach where people are beings that make decisions based on cognitions they have about behavior (Bandura, 1999). Cognition and affect have been positioned as in opposition to one another, as complementary to one another, or as informing one another (Forgas, 2008). This investigation considers the possibilities that cognition and affect can co-occur or inform one another. Ultimately, there is evidence that people use cognition and affect to differentially process messages (Forgas, 2008).

The MSC offers the foundation for incorporating cognitive pathways but has not offered consistent empirical support for cognitive mediators. The updated MSC (Smith et al., 2019) considers three cognitive mediators: perceived dangerousness, message shock value, and common ground with the message. While the relationship between stigma message features and perceived dangerousness has been validated across all MSC studies (Smith, 2012; 2014; Smith et al., 2019), shock and common ground have only been tested two times with no evidence of the direct relationship from stigma message features to these variables. In addition, the overall variance explained in stigma message sharing through these mediators ($R^2 = .11$) was substantively less than the variance explained in all three other dependent variables in Smith et al.'s (2019) study; Smith et al.'s model predicted 60% or more of the variance in all outcomes except stigma message sharing. Ledford et al. (2021) found similar results when examining the relationships to shock and common ground, with stigma message features and danger appraisal together predicting less than 10 % of the variance in either of these mediators; additionally, across two studies, the R^2 value was only significant in Study 2 for shock. Thus, it remains plausible that other cognitive variables could explain stigma sharing—the stigma-related outcome most inconsistently predicted across all MSC studies (Smith, 2012; 2014; Smith et al., 2019).

The consistency with which MSC studies have validated the mediating role of perceived dangerousness suggests that stigma beliefs, including those about dangerousness, might be a more inclusive and predictive cognitive pathway from stigma messages to stigma-related outcomes. In the MSC, stigma beliefs have been studied as an *outcome* of stigma-related messages. Indeed, Smith (2012) found evidence for the relationship between stigma message features and beliefs, and Smith et al. (2019) found evidence for the indirect relationship between

stigma message features and beliefs through danger appraisal. However, these results do not necessarily provide a definitive conclusion about whether stigma messages can lead to stigma beliefs which then influence attitudes and behavioral intentions. Other research *does* provide preliminary support for this hypothesis. Belief-based models of attitude have long considered beliefs as a building block of attitude (Eagly & Chaiken, 1993). Models like the theory of reasoned action are founded on this belief-based model of attitude (Fishbein & Ajzen, 1975). Furthermore, a huge distinction between beliefs and attitudes in research related to stigmatizing topics and prejudice is that *beliefs* concern characteristics about the group (stigma beliefs) and *attitudes* are related to a more generalized evaluation of the attitude object (Eagly & Chaiken, 1993). As such, it seems consistent with persuasion research more broadly to situate beliefs as a mediator rather than an outcome. Beliefs are an important mediator to attitudinal and intention-based outcomes because once beliefs are activated, they then have an impact on other outcome variables.

In sum, the I-MISC considers stigma beliefs as the key cognitive mediator of the relationship between stigma message features and stigma-related outcomes (Figure 2 Appendix A). Stigma beliefs contain endorsements related to dangerousness, responsibility, and immorality. These three factors of stigma beliefs should mediate the relationships between stigma message features and stigma-related outcomes.

Stigma Beliefs

Stigma beliefs surrounding responsibility, dangerousness, and immorality are defined in terms of a person's stigmatizing endorsements about the stigmatized group. First, it is important to distinguish stigma beliefs from personal beliefs. Smith (2007) explains that "the distinction between knowledge of group-supported stereotypes and personal beliefs, as well as common

knowledge of expected behavior toward the stereotyped, also appears within research in prejudice” (p. 467). As Smith further clarifies, stigma beliefs depend on an individual’s knowledge of normative pressures, and when an individual is aware of dominant stigma beliefs about a group, it is increasingly difficult to change their own beliefs because of those social norms. Second, stigma beliefs are stereotypical endorsements about particular characteristics of a group, which distinguishes beliefs from attitudes. This belief-attitude distinction is common in persuasion research (O’Keefe, 2002). Whereas an attitude can be defined as a “psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993), beliefs are based more on the characteristics of that entity. For example, an individual might express an overall negative attitude toward individuals with OUD, but that attitude doesn’t illuminate exactly what the individual thinks about people with OUD. Understanding stigma beliefs, then, can provide helpful information about where an opioid stigma intervention should occur. Targeting beliefs is, after all, one way to change an individual’s attitude (O’Keefe, 2002).

Stigma message features can influence stigma beliefs, and situating stigma beliefs as a mediator may resolve some of the inconsistency in MSC findings. The revised MSC (Smith et al., 2019) considered stigma beliefs as an outcome of stigma messages and found evidence for the indirect of stigma message features on stigma beliefs through danger appraisal. While the revised MSC (Smith et al., 2019) found evidence to support stigma beliefs as an outcome rather than a mediator, this could be because both components of danger appraisal (perceived dangerousness and feeling threatened) are related to stigma beliefs. Perceptions of dangerousness are a type of stigma belief, and feeling threatened is an affective response that may be associated with stigma beliefs. In fact, Smith (2012) found that not only did high stigma peril messages lead

to greater stigma beliefs than low stigma peril messages, but negative affect was significantly and positively associated with stigma beliefs. There are two primary reasons that stigma beliefs may be more appropriate as a mediator than an outcome of stigma messages. First, stigma message features evoke the content associated with stigma beliefs. Perceptions of dangerousness, responsibility, and immorality are all the types of beliefs that stigma message features evoke. After all, responsibility is one of the four stigma message features, and peril messages communicate danger, often in the form of moral danger (Smith, 2007). Second, beliefs are often considered the building blocks of attitude (Fishbein & Ajzen, 1975; O’Keefe, 2002), and disentangling beliefs from attitudes can provide greater clarity in understanding the causal processes of stigma communication. Stigmatizing beliefs pertain to what stigmatizing characteristics people may endorse about a group, and segmenting those more specific beliefs from overall attitudes in the causal process can help illuminate where stigma interventions can and need to occur. Assessing individuals’ stigma beliefs related to dangerousness, responsibility, and immorality can help provide this theoretical clarity.

Dangerousness Beliefs. Stigma beliefs surrounding perceived dangerousness are extensively studied in stigma research within and outside the communication field. Across all three MSC studies (Smith, 2012; 2014, Smith et al., 2019), perceived dangerousness was predicted by stigma message features and predictive of stigma-related outcomes. While perceived dangerousness has been studied as its own construct in MSC studies, beliefs about danger are common components of stigma belief measures (Yang & Link, 2015). For example, Palamar et al.’s (2011) scale that assesses stigma beliefs toward illicit drug users includes items related to the belief that people who use illicit drugs are dangerous. As such, examining danger as a factor of stigma beliefs offers a clearer way to understand the facets of stigma beliefs.

Responsibility Beliefs. Beliefs about responsibility are also a key type of stigma beliefs. In two earlier studies (Smith, 2012; 2014), the MSC examined the impact of message features on perceived responsibility. Smith (2012) found support for the relationship between responsibility messages and peril messages on perceived responsibility, though peril messages influenced responsibility in an unexpected direction. However, Smith (2014) did not find evidence for the role of any message feature in predicting responsibility. Despite these mixed findings, many stigma scales integrate perceptions of responsibility into their measures. For example, Link, et al.'s (1989) scale related to mental illness has items about perceiving a person who enters a mental hospital as a "personal failure." Palamar et al.'s (2011) scale also contains items related to a person being "weak minded." In conceptualizing responsibility stigma messages, Smith (2007) discusses how responsibility is tied with perceptions of choice and control. Since it is apparent that stigma beliefs reflect these perceptions of choice and control as well, situating perceived responsibility as a factor of stigma beliefs is a logical extension of MSC research.

Immorality Beliefs. Stigma beliefs have been tied to perceptions of immorality since the origination of stigma by the ancient Greeks. On the first page of Goffman's (1963) foundational explication of stigma, he stated that the Greeks used stigma "to refer to bodily signs designed to expose something unusual and bad about the moral status of the signifier." The communication of stigma and morality are intricately connected. Smith (2007) elaborates that stigma messages can communicate physical or moral peril, and disgust cues can even trigger moral evaluations. Stigma belief scales have included items related to immorality. For example, Palamar et al.'s stigma beliefs scale (2011) involves items relate to substance use being "morally wrong" and people using substances being "dishonest." Thinking about immorality as a discrete factor of

stigma beliefs thus offers a way to clearly examine the role of immorality beliefs in explaining the relationships between stigma message features and stigma-related outcomes.

Stigmatizing Beliefs about Opioids. Stigma beliefs about opioids have similarly been examined in terms of dangerousness, responsibility, and immorality. Palamar et al. (2011) relied on experts and research to inform the creation of belief scales about multiple types of illicit drug use. For the opioids scale, individual beliefs involved thinking that people who illicitly use opioids were immoral, belonged in prison, were weak-minded, were uneducated and dishonest, have no future, and incited anger in others. The authors also examined perceptions of public stigma beliefs related to the idea that most people wouldn't befriend a person who illicitly uses opioids and would take the opinion of a person who illicitly uses opioids less seriously. Importantly, Palamar et al., studied each illicit drug use scale separately. While similar, each stigma belief scale had slightly different beliefs, and therefore, the authors explain the importance of studying stigma belief scales for specific illicit drugs rather than looking at the drugs more broadly. Like many other stigmatizing conditions, opioid stigma beliefs seem to involve endorsements about an individual's choice, control, and moral failings (Palamar et al., 2011).

Affective Pathways

Affect also plays a significant role when considering stigma messages and their influence on stigma-related outcomes—a role that requires more attention in stigma communication theory. Aside from examining “feeling threatened” as a factor of danger appraisal, affect is not a significant part of the updated MSC (Smith et al., 2019). Though earlier research dabbled in the examination of discrete emotions like sympathy and frustration (Smith, 2014) and found evidence for the impact of stigma message features on negative affect (Smith, 2012), these

variables are missing from the updated MSC and have not been substantially investigated. Additionally, no studies have combined effects of different affective mediators or how affect and cognition can work together. Affect can significantly influence persuasive outcomes, as evidenced by persuasion (e.g., Witte, 1992; Tannenbaum et al., 2015) and decision-making literatures (e.g., Lerner et al., 2007; Lerner & Keltner, 2000) in addition to scholarship on intergroup communication and behaviors, i.e., behaviors from and toward people belonging to different groups (e.g., Smith & Mackie, 2015; Stephan et al., 2009). While some stigma literature has examined the role of negative affect generally, more research is needed to isolate the role of negative affect and discrete emotions in the stigma communication process.

Different theories of emotion and affect reflect different perspectives, and two dominant perspectives are worth noting here concerning valence vs. discrete theories of emotions. While valence theories of affect argue that affect is experienced more broadly and generally (i.e., positive v. negative), appraisal theories argue that each emotion has a specific action tendency that will motivate a certain type of behavior (Dillard & Meijnders, 2002; Lazarus, 1993; Lerner et al., 2007). The appraisal view of emotion can and has been particularly useful for predicting specific behavior types (Lazarus, 1993). For example, one key distinction between the action or appraisal tendency (i.e., the expected behavioral outcome of an emotional state) of sadness and anger is that sadness leads individuals to blame situational factors for an issue whereas anger leads individuals to blame other people within the environment (Lerner et al., 2007). Similarly, while disgust and fear are both negative emotions, the action tendency of fear involves escaping the threatening agent, but disgust more simply promotes avoidance of the disgust-evoking stimuli (Lazarus, 1993). In the context of stigmatizing issues, both affect perspectives are worth exploring—with a particular emphasis on discrete emotions and appraisal theories—and one aim

of this dissertation is to examine the utility of both perspectives. Research indicates that a variety of discrete emotions may be involved in the stigma process, including fear, disgust, anger, anxiety, sadness, sympathy, and frustration—this body of research is explored in this section. While the relationship between stigma message features and negative affect is clearly illuminated by research reviewed thus far (e.g., Smith, 2012; 2014), emotion research, particularly in the intergroup communication literature, suggests that discrete emotions result in specific behavioral outcomes. What follows is an explanation of key discrete emotions that may mediate the relationships between stigma message features and outcomes.

Fear

Fear may be a mediating emotion between stigma messages and stigma-related outcomes because of how stigma messages evoke perceptions of danger. Fear is an emotion experienced when people face a physical danger (Lazarus, 1993). Persuasion research has substantially studied the role of fear in motivating action against a threatening agent (e.g., a health threat), particularly when a fear message is accompanied by a strong statement about a person's ability to avert that threat (efficacy) (Witte, 1992; Tannenbaum et al., 2015). If fear can motivate a person to avoid a threatening health issue, it follows that fear can also motivate a person to avoid another *person* they deem as threatening. Peril is one of the four features of stigma messages, and peril messages communicate warning about interacting with the stigmatized group. While peril messages may not always involve physical danger, but moral or social, it is still logical to expect stigma messages to lead to feelings of fear toward the stigmatized group.

Intergroup communication research also offers insights into how stigmatizing messages can lead to the experiences of fear. Intergroup threat theory (ITT; Stephan & Stephan, 2000) suggests that the experience of fear by an outgroup (e.g., those who do not possess the

stigmatizing characteristic) can be evoked by threat messages that discuss a concern to the individual. For example, threats related to personal safety can evoke feelings of fear. Messages that communicate these threats (e.g., peril messages about the consequences of OUDs) will likely lead to perceptions of fear. For other stigma messages (marks, labels, responsibility messages), it is possible that these messages activate fear without an explicit threat statement. Part of what make stigma messages insidious is their activation of existing thoughts, beliefs, and stereotypes. Marks are designed to activate avoidance by characterizing a stigmatized group as unseemly; while these stigma messages are more obviously connected to disgust cues, it is also worth noting that the categorization of a group as “other” or less than through a stigma mark can evoke fear (Smith, 2007). Labeling someone as an “addict” may also trigger a host of perceptions about people the individual knows are “addicts”—often perceptions based in intergroup threat and danger appeals (Smith, 2007). Responsibility messages, on the other hand may be more likely tied to other emotions like anger as opposed to fear. The goal of a responsibility stigma message is to communicate choice and control—that an individual with a stigma attribute made the conscious choice and should take full responsibility for their actions (Smith, 2007). This type of certainty-focused appraisal can be expected to influence an emotion like anger (Lerner et al., 2007). Fear, on the other hand, is typically associated with uncertainty and situational-based control (Lerner et al., 2007). As such, it remains to be seen if responsibility messages will lead to fear perceptions.

Because fear tends to have an avoidance reaction (Lazarus, 1991), fear should mediate the relationship between stigma messages and associated attitudinal and behavioral outcomes related to avoidance (i.e., social distance, behavioral regulation). Stigma message sharing is likely to be affected by fear as well, given that fear can serve a protective group function by

sharing information with other ingroup members who can then avoid the threat. Research has also found evidence of the relationship between fear and overall negative attitudes, particularly among those with no personal experience with the stigma issue (Hoffner et al., 2017). Finally, there is reason to believe that greater fear surrounding a group can lead to less support for public policies that serve to help that group because these public policies stand in contrast to avoidance behaviors. Namely, supporting opioid-related rehabilitation policies necessitates ultimate inclusion and re-entry of an individual into society; in the same way a fear response should motivate increased desire for behavioral regulation, we can expect it to motivate decreased desire to support helpful opioid-related public health policies.

Disgust

Disgust may be relevant in the stigma context because of the visual depictions, mental or physical, associated with stigmatized groups. Disgust is an emotion evoked when a person finds themselves too close to an indigestible object or idea (Lazarus, 1993). In laying out the foundation for the MSC, Smith (2007) explained that marks, one of the features of stigma messages, involve disgust cues (e.g., in the form of physical or mental images) that allow people to easily experience disgust and subsequently avoid the stigmatized group. While no MSC study has explored the role of disgust as a mediator between stigma messages and outcomes, other research suggests that disgust may operate in this way. For example, Shepherd and Gerend (2014) conducted an experiment to understand the impact of the cause of cervical cancer on beliefs and emotions. When participants read a description of a patient with cervical cancer who was reported to have gotten cancer as a result of contracting the Human Papilloma Virus (HPV), they reported feeling more disgust than participants who read a description of a patient whose cancer was a result of family history. This study suggests the plausibility that responsibility

stigma messages can also lead to disgust. The two remaining stigma message features—labels and peril messages—have a less clear relationship with disgust. Since labels serve a group distinction function, these labels often “include the mark or the peril itself, such as lepers or deserters” (Smith, 2007, p. 469). While not the case for the opioid context, e.g., “addicts,” “addicts” as a stigma label may evoke disgust because of the intergroup differences the label brings to mind—often differences that involve disgusting thoughts or images. Finally, peril messages often warn about consequences, or dangers, that are disgust-evoking. These messages often involve explicit statements of avoidance and discuss the consequences of interacting with a stigmatized group (Smith, 2007), and these consequences may trigger disgust for interacting with the stigmatized group.

Substantive intergroup literature suggests the integral role of disgust in influencing attitudes and behaviors toward members of stigmatized groups (e.g., Smith & Mackie, 2015). Cuddy et al. (2007) argue that the effect of emotions on ingroup/outgroup behaviors can be considered through how active those behaviors are and whether those behaviors are harmful or facilitative. In their BIAS map framework, for example, the authors argue that disgust triggers an active harm response where individuals will intentionally support more efforts to restrain or constrict the behaviors of the outgroup. This might manifest as increased desire for behavioral regulation, negative attitudes, more desire for opioid-related policies that institutionalize rather than rehabilitate, and even desired social distance from the stigmatized group. Disgust may also influence stigma message sharing because group members may seek to protect other group members from experiencing the disgust target (i.e., the stigmatized group). Stigma messages serve this protective group function (Smith, 2007), through disgust, it is possible group members may seek to protect their groups from such an experience. However, it is also possible that

disgust does not influence stigma message sharing because of an individual's avoidance reaction to experiencing disgust. Disgust is subsequently an important variable to examine in the stigma communication process to determine how it will influence stigma-related outcomes, including stigma message sharing.

Given preliminary empirical evidence and substantial theorizing on the impact of stigma messages on disgust, it is reasonable to expect that disgust will mediate the relationship between stigma messages and stigma-related outcomes.

Anger and Frustration

Distinct from fear and disgust, anger and/or frustration may also mediate the influence of stigma messages on stigma-related outcomes. Anger is an emotion experienced when a person feels personally demeaned, either themselves or for their close relational others (Lazarus, 1993). Smith (2014) also examined frustration, which is often considered a specific type of anger related to anger with another person. Smith argued that frustration might be of more interest than anger in the stigma context. As Smith explains, people respond to generalized anger by lashing out against the obstacle, but people may respond to frustration by publicly lashing out (e.g., communicating stigma) or retaliating against the person. Seate and Mastro (2017) explored more specifically the role of contempt—an emotion theorized to contain elements of both disgust and frustration and found evidence for its impact in the media effects to behavioral intention relationship. While unique from anger and frustration, the role of this negative emotion adds to the body of research surrounding emotional experiences based on group membership (e.g., stigmatized group, non-stigmatized group).

A great deal of work has examined the role of anger in mediating the relationship between messages and outcomes. As Stephen et al. (2009) found, intergroup threat perceptions

can lead to increase feelings of anger that subsequently motivate an action tendency related to attack or retaliation (Lazarus, 1991). In Smith's (2014) study, frustration was measured with three items assessing how angry, irritated, and aggravated they were with the specific person mentioned in the article about a hypothetical acquaintance. Two stigma message features (responsibility and peril) significantly predicted frustration. When the message attributed human-to-human disease contraction (as opposed to mouse-to-human contraction) and when the message had greater peril, participants expressed greater frustration toward the person with the hypothetical infectious disease (Smith, 2014). Smith also found that frustration was significantly and positively related to both outcomes in the study: regulation support (behavioral regulation) and dissemination likelihood (stigma message sharing). These findings are in line with the conceptualization that anger's cognitive appraisal dimension includes appraisals of certainty and control (Lerner et al., 2007)—two components clearly connected to stigma responsibility and peril messages (Smith, 2007). It is possible that marks and labels can activate anger given that anger revolves around a theme of a demeaning personal offense (Lazarus, 1991). In this way, we might expect a stigma mark or label to lead to anger particularly when individuals have had experiences with a stigma issue that leads to memory recall of such an offense. Research is needed to determine if this expected relationship would hold true for all individuals, or just those in certain identity categories—a concept further explored in the moderation section of this chapter.

Given this preliminary support, it seems that frustration and anger should mediate the relationship between stigma messages and stigma-related outcomes, predicting negative attitudes, increased social distance, increased behavioral regulation, decreased support for opioid-related policies, and increased stigma message sharing.

Sympathy

While many of the other emotions elicited by stigma messages are fundamentally negative, sympathy can serve a facilitative function (Cuddy et al., 2007). An individual experiences sympathy when they can vicariously experience another's feelings of suffering or sorrow (Haidt, 2003). In terms of how stigma messages might influence a person's experience of sympathy, Smith (2014) found that two stigma message features (label and peril) significantly and positively predicted sympathy. In turn, sympathy was positively and significantly associated with behavioral regulation. Sikorski et al. (2015) similarly found that labeling someone as "overweight" was positively associated with greater feelings of sympathy toward the group. For responsibility messages, it is similarly possible to expect these messages to influence sympathy because feelings of sympathy are associated with deeming a group as low in competence but high in warmth (i.e., sincerity); groups are stereotyped as high warmth when they are not in direct competition with the evaluating group, and groups are stereotyped as low in competence when they are deemed low status groups (Cuddy et al., 2007). Responsibility messages call upon these stereotypes by communicating a lack of competence (e.g., an individual made the wrong choice) and clearly communicating group differences that would demonstrate the group is not a competitor with the stigmatizing/evaluating group. Mark messages may very well work in a similar way by depicting someone through text or visuals as fundamentally different than the stigmatized group. It is possible that affixing a marking or a disgust-evoking cue to a stigmatized group can deem that group as incompetent and not in competition with other groups (i.e., warm), but this relationship requires empirical testing.

The emotional experience of sympathy can lead others to both want to help the group and facilitate a positive outcome (e.g., support for helpful public health policies) but also distance themselves from the stigmatized group (Cuddy et al., 2007). Sympathy can positively influence

behavioral regulation (Smith, 2014), and based on research from the BIAS map (Cuddy et al., 2007), can be expected to lead to more desired social distance, a finding affirmed by stigma scholarship (Ling et al., 2010; Norman et al., 2017; Sikorski et al., 2015). Unlike other emotions explored in this study, sympathy should positively predict support for opioid-related policies. Sympathy can also be expected to influence stigma message sharing because of urgency sympathy creates in promoting active facilitative behaviors (Cuddy et al., 2007). In the same way, sympathy should lead to greater policy support, it follows that sympathy will influence others to share this message to garner greater support and facilitation. Finally, the relationship between sympathy and attitudes may still be negative given that stigma serves to differentiate groups and sympathy would not preclude such effects of this group differentiation effect; past research has affirmed this negative relationship (Norman et al., 2017).

Anxiety

Anxiety is also an important emotion to consider as it relates to stigma messages. Anxiety can arise when a person experiences an existential threat (Lazarus, 1991), particularly when that threat can cause offense or harm to the self or others. This emotion has been explored in depth in intergroup emotion literature, which suggests that interacting with different groups can cause anxiety (Stephan, 2014). In the context of opioids or stigmatized conditions more broadly, it is clear how anxiety could arise from stigma messages—since the goal of a stigma message is to create a perception of difference between the receiver of a stigma message and the target of a stigma message. This is likely to hold true for responsibility and peril messages in particular, which have both led to perceived dangerousness in previous studies (Smith, 2012; 2014). Mark and label messages may also trigger anxiety because each of these implies a group-level threat. Groups can experience intergroup anxiety when they anticipate negative outcomes from

intergroup interaction (Stephan, 2014). Mark messages that affix a disgust-evoking cue to the stigmatized group should lead to this experience of anxiety. Label messages may also lead to this emotion through implicit association with other group stereotypes.

Because a response to anxiety is rooted in a perceive threat, anxiety should lead to stigma outcomes in the same way other threat-responsive emotions do—such as fear. An individual who experiences anxiety will likely respond with a desire for social distance, increased desire for behavioral regulation, and negative overall attitudes. In general, anxiety is expected to lead to offensive action tendencies toward the stigmatized group (Stephan, 2014; Van Zomeren et al., 2007). In the same way this tendency leads to offensive action, anxiety also motivates less contact with the stigmatized group—contact that support for opioid-related policies would lead to; in other words, we can expect anxiety to negatively influence support for opioid-related policies due to the group's desire to cause offensive action and decrease contact with the stigmatized group. Finally, it is reasonable to expect anxiety to influence stigma message sharing because of the desire for a group to avert a threat once experiencing the emotion (anxiety in this case) associated with the threat).

Sadness

Finally, sadness may play a role in stigma message contexts. Sadness, or feelings related to loss (Lazarus, 1991) has been examined in intergroup communication literature. Some research has found no evidence for the role of sadness in affecting intergroup bias (e.g., DeSteno et al., 2004), whereas other studies have found evidence for the role of sadness on prejudice (e.g., Kossowska et al., 2008). Sadness is an emotion associated with appraisals of situational control as opposed to individual control; sadness can lead people to blame situational factors for an issue rather than an individual (Lerner et al., 2007). Stigma responsibility messages then, should be

expected to have a negative relationship with sadness, such that a high responsibility message leads to less sadness. Peril messages, on the other hand, may positively influence feelings of sadness due to the sense of loss (i.e., societal or personal loss accrued by the harm of the stigmatized group) those messages evoke. As for mark and label messages, they are likely to serve a similar purpose as peril messages because they elicit thoughts of group difference. However, these feelings of sadness may only be present for individuals who have personally experienced the stigmatized issue and the personal losses associated with having an OUD—a conjecture examined in the moderation section of this manuscript.

Sadness may influence stigma-related outcomes in ways more similar to sympathy than the other emotions explored in this study. While sadness is a negatively valenced emotion, its appraisal tendency is the desire to seek reward and change circumstances (Lerner et al., 2007). This desire to change circumstances explains why past research has found that experiencing sadness has been associated with greater support for public health policies such as welfare policies (Small & Lerner, 2006). A great deal of the research on sadness and decision-making is rooted in economic or monetary reward literature (Lerner et al., 2007; Raghunathan & Pham, 1999) or alternatively on more general mood states where sad is a negative affective state. Less research has isolated sadness as a discrete emotional experience in response to a message. As such, sadness is hypothesized to positively influence support for opioid-related policies in this study and negatively influence behavioral regulation and overall attitudes (i.e., since sadness is a negatively valenced emotion). Research has also found that feeling sadness can lead to more desire to share information (Lu & Yuan, 2021), suggesting that in this study it will lead to greater stigma message sharing. Finally, sadness should lead to a lower desire for social distance. As Fischer and Manstead (2016) explain, sadness serves a facilitate function that leads individuals to

want to support the other individual through seeking help or facilitation. This pattern of effects is hypothesized in the current study.

Dual Pathway

While affective and cognitive pathways can operate independently, it is also possible that these two pathways operate in tandem, with affect influencing cognition *or* cognitions influencing affect. Associations have been found between beliefs and affect (Forgas, 2008; Smith, 2012). Empirical studies suggest that affect and discrete emotions can influence cognition (Forgas, 1995; Witte, 1992), and cognition can also influence affect (Lazarus, 1993). As such, one aim of this study is to understand the associations between cognitive and affect mediators of the stigma communication process. This reciprocal relationship is reflected in the I-MISC (Figure 2, Appendix A).

Group Identification as a Moderating Variable

Exploring moderation is a key way to advance communication science theory (Slater & Gleason, 2012), but stigma communication literature has not explored individual-level moderators. Various individual-level variables have been associated with stigma. For example, researchers have found evidence that gender, ethnicity, and education are significantly associated with stigmatizing beliefs about drug addiction (Palamar, 2013); education, rurality, and knowledge about HIV misconceptions significantly relate to stigma attitudes toward people living with HIV and AIDS (Li et al., 2017); and education, neighborhood disadvantage (a variable based on a number of factors from employment to median income), and political affiliation are associated with stigmatizing attitudes toward mental illness (Gonzales et al., 2016). Despite these correlational results, it is difficult to find stigma studies that examine individual-level moderators, especially ones beyond demographic factors, of the relationship

between stigma messages and possible mediators. Intergroup emotions theory (IET) offers an explanation for one salient, non-demographic, individual-level moderator.

Intergroup Emotions Theory

Intergroup emotions theory (IET, Mackie et al., 2008) offers insight into a potential moderator—group identification—that may be most relevant to the I-MISC. IET argues that as individuals identify more with a group, they experience emotions *as* a group. In turn, the higher the group identity, the more salient those emotions are. Ingroup members gain more positive evaluations, and outgroup members are subject to more negative affective responses. However, “if a particular group membership is a trivial component of one’s self-definition, intergroup outcomes (emotional or otherwise) are less likely to be pronounced” (Seate & Mastro, 2017, p. 824). Individuals ‘group identity may be salient or made salient in a number of ways. Some individuals have chronically salient group identities, whereas others may require priming or induction through explicit or implicit methods (Mackie & Smith, 2018). In the case of stigma communication research, the activation of group identity comes from the stigmatization presented in a message. Whether high or low, the exposure to an explicit group identity is what activates an individual’s perceptions of group identification.

Important for the opioid stigma context is the premise that being an individual with an OUD is not a chronically salient identity; as such, measuring and understanding group identification may require more nuance than in other intergroup contexts where identity is more chronically salient (e.g., race/ethnicity, national identity). For chronically salient identities, it may be easier to measure group identification through identity importance, e.g., “compared to other characteristics that define you, how much do you value being an American?” as used in Seate and Mastro’s (2017, pp. 827-828) study. However, with an identity that is more fluid and

less chronically salient (e.g., being a person with an OUD), measuring identification is not so straightforward. Rather, experience with an OUD might serve as a useful proxy for measuring group identification. While an imperfect measure, intergroup literature has used experience with a stigmatized condition to assess social identity (e.g., experience with mental illness; Hoffner et al., 2017). The current study adopts a similar procedure, using experience with an OUD as a measure for group identification. Thus, group identification is discussed throughout this dissertation when conceptualizing this variable, and experience with OUDs is used when operationalizing it.

Based on IET, group identification is likely to moderate the relationship between stigma messages and select affective mediators. Seate and Mastro (2017) found support for the moderation of ingroup identity importance (i.e., a measure of group identification) on the relationship between a mediated immigration threat and feelings of contempt. The relationship between ingroup identity importance and contempt was positive among individuals exposed to the mediated threat and with average or high levels of group identity importance, but not among those with low ingroup identity importance. Given that the mediated content used in this manipulation is similar to stigma message features, it seems reasonable to expect this relationship may be similar for the impact of stigma message features on *disgust* and *anger* (i.e., the two components of contempt). The similar appraisal tendency between anger and *frustration* also suggests group identification as measured by experience with OUDs may moderate the relationship between stigma messages and frustration in the same fashion. In terms of the other five discrete emotions explored in this study, intergroup communication literature suggests a similar moderating relationship of group identification may exist for *anxiety* (Moons et al., 2009). For individuals with high group identification (e.g., have experiences with OUDs), these

individuals may be more likely to respond with anger and anxiety to stigmatizing messages about their ingroup (individuals with an OUD). Alternatively, intergroup threat literature suggests that group identity moderates the relationship between representations of outgroups and *fear* in the opposite way—those who have a stronger identification with the group not represented as threatening (i.e., individuals with no OUD experience) are more likely to experience fear. The moderating role of identification to *sadness* is similar, as research suggests that individuals with low group identification are more likely to experience sadness (Crisp et al., 2007). In terms of *sympathy*, there is little work examining this emotion in relation to ingroup identification and moderation, so part of this dissertation aims to understand if there is a moderating relationship between stigma messages and sympathy. As an emotion associated with a lack of perceived control for the target group (Cuddy et al., 2007), it is possible it follows a similar pattern with group identification as sadness—since sadness is similarly associated with situational rather than individual control. Finally, though the IET uses a discrete and intergroup emotions perspective, it is also reasonable to expect this relationship will hold true when examining a person’s overall negative affect.

The Integrative Model of Identity-Based Stigma Communication (I-MISC)

The I-MISC (Figure 2, Appendix A) offers a more comprehensive and systematic picture of the stigma communication process that will hopefully illuminate stronger results regarding mediation and moderation. Founded on the MSC (Smith, 2007; Smith et al., 2019) and IET (Mackie et al., 2008), the I-MISC incorporates stigma and intergroup literature in addition to other stigma scholarship to make predictions about how stigma messages will lead to stigma-related outcomes. The tenets of the I-MISC are presented as follows.

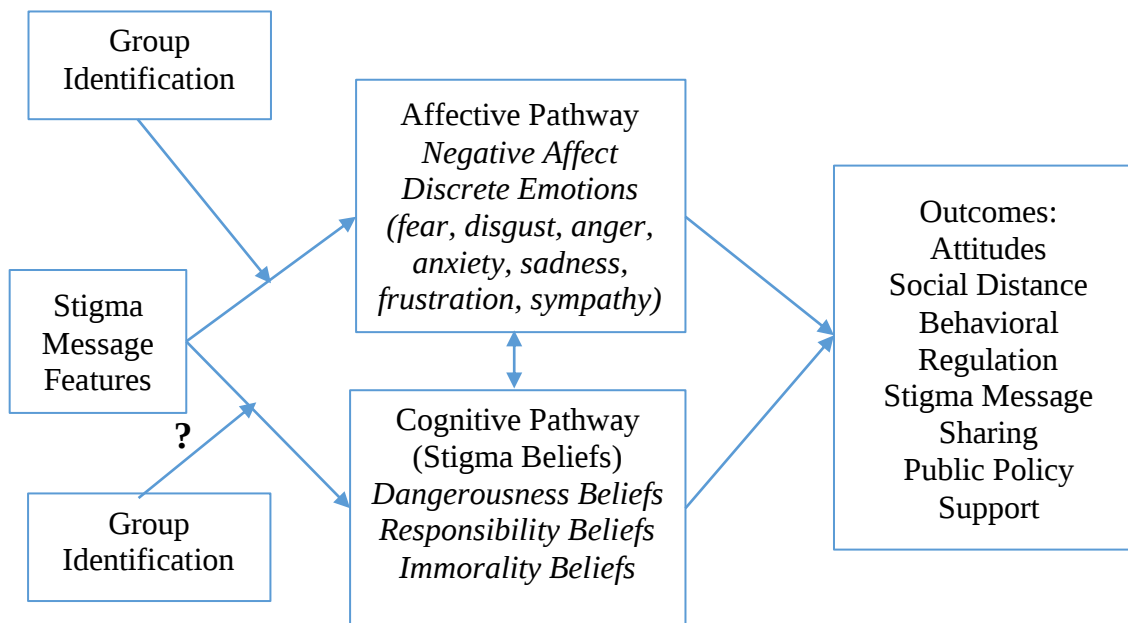


Figure 2. Integrative Model of Identity-Based Stigma Communication (I-MISC)

First, stigma messages can impact stigma-related outcomes through a cognitive, affective, or dual pathway of mediation. While other stigma communication literature has narrowed mediation to primarily cognitive mediators (Smith et al., 2019), research indicates that affect can play a role as well (Smith, 2012). At the same time, it is possible that an individual's affective and cognitive responses to stigmatized groups influence one another and consequently predict stigma-related outcomes. These three possibilities unite stigma and persuasion research more broadly to provide an integrative picture of the stigma communication process.

Second, group identification moderates the relationship between stigma message features and negative affect. While the foundation of this moderation was explained in the previous section, it is still worth noting that this moderation is a key tenet of the model.

Finally, stigma message content is enacted at the group level. While Smith (2014) found support for the MSC in an interpersonal context, stigma is fundamentally a group process. Stigma works in such a way that even when considering an individual in the group, group-level

stigma communication occurs. As such, measurement of variables in the I-MISC should pertain to the group level (e.g., “people who have an OUD”) as opposed to the person level (e.g., “a specific person with an OUD”).

Chapter 5: Hypotheses and Research Questions

The main goal of the current study is to test a new model of stigma communication: the integrative model of identity-based stigma communication (I-MISC) in the context of opioids. In revising the MSC and proposing this newer, more integrative model, this study aims to test dual mediation pathways to stigma-related outcomes. Past tests of the MSC only briefly considered both cognitive and affective mediators, and the updated MSC (Smith et al., 2019) narrows mediators in a way that may be too simplistic to represent what is truly going on in the stigma process. As such, the I-MISC focuses on cognition and affect as two possible pathways to stigma-related outcomes and reorients stigma beliefs as a mediator as opposed to an outcome. What also makes the I-MISC unique is its integration of a key moderator to help explain the relationship between stigma messages and negative affect. Drawing from IET (Mackie et al., 2008), the I-MISC argues that how strongly a person identifies with a group in *opposition* to the stigmatized group will moderate the relationship between stigma messages and affect, particularly making the relationship stronger when group identity is high. Finally, this study aims to test the I-MISC across three different stigmatized opioids contexts: prescription opioids, heroin, and fentanyl, thus providing evidence for the proposed model in more than one health context. Overall, this dissertation is fundamentally a test of the proposed I-MISC and aims to advance stigma communication theory.

The following hypotheses and research questions are advanced to fulfill the aims of the current study.

Direct Effects

The updated MSC (Smith et al., 2019) suggests that stigma messages can exert significant influence on stigma-related outcomes, but MSC research has not clearly illuminated

which message features impact which outcomes and through what mediating processes. The updated MSC (Smith et al.) does not segment stigma features in a way that can comment on these effects, and earlier MSC studies offered mixed results. Marking has only been predictive of a single outcome—stigma message sharing—and in only one of two studies (Smith, 2012). Labeling has not been predictive of any outcomes in either MSC study (Smith, 2012; 2014). Responsibility messages were only predictive of one outcome—regulation support—and only in one of two studies (Smith, 2014), and peril was only predictive in one of the studies for stigma beliefs and intervention support (Smith, 2012). Part of Smith et al.’s justification for situating danger appraisal as the single, full mediator between stigma messages and outcomes was this lack of consistency in relationships between stigma features and outcomes. As such, it seems reasonable that full mediation, rather than partial mediation, could offer an explanation.

Concerning the cognitive pathways related to stigma beliefs, MSC research offers preliminary support. Responsibility and peril messages have significantly and consistently predicted beliefs related to dangerousness (Smith, 2012; 2014; Smith et al., 2019). Moreover, Smith (2012) found that peril messages significantly predicted overall stigma beliefs. No other test of the MSC found direct effects of stigma messages on beliefs, but this is not surprising since the updated MSC (Smith et al., 2019) positions beliefs as an outcome rather than a mediator. Despite this lack of evidence, there is still strong theoretical reasoning to support the idea that messages containing marks, labels, responsibility, and peril would lead to stigma beliefs that reflect that same type of message content (e.g., “people with an OUD are responsible for their condition”). Given empirical evidence and theory pointing to all four message features influencing stigma beliefs surrounding dangerousness, responsibility, and immorality, the following hypothesis is proffered:

H1: The presence of a high stigma message feature (mark, label, responsibility, or peril) will lead to significantly greater stigma beliefs (dangerousness, responsibility, and immorality) compared to the presence of a low stigma message feature.

In turn stigma beliefs should predict all five dependent variables in this study. MSC research has found effects for the relationship between danger appraisal of the stigmatized group and social distance, behavioral regulation, and stigma message sharing of a message (Smith et al., 2019). Given that perceived dangerousness is one type of stigma belief, it is reasonable to expect a similar relationship for the influence of responsibility- and immorality-focused stigma beliefs on stigma-related outcomes. Furthermore, beliefs have been explored as predictors of attitude and behavioral intentions (Fishbein & Ajzen, 1975). As such the following hypothesis is proposed:

H2: Stigma beliefs will be associated with more desired social distance, less positive attitudes, more desired behavioral regulation, less support for opioid-related policies, and more stigma message sharing.

In considering the affective mediation pathways, there is also reason to believe that all stigma message features can influence overall negative affect and discrete emotions. Smith (2012) found direct support for the influence of responsibility and peril messages on negative affect, and evidence from other stigma research suggests that stigma labels can trigger negative associations and affect (Goodyear et al., 2018). As for markers, stigma research points to disgust cues as a direct result of stigma marking, and while Smith (2012) did not find evidence for the influence of marks on negative affect, it could be that there is a difference between the visible type of marking manipulated in those studies on infectious disease (e.g. sores, loud, wet cough) and the invisible, but more morally-situated marker associated with the stigma of addiction. As

such, it is plausible to hypothesize a direct effect of stigma markers on negative affect.

Therefore, the following hypothesis is proffered:

H3: The presence of a high stigma message feature (mark, label, responsibility, or peril) will lead to significantly greater negative affect compared to the presence of a low stigma message feature.

As previously reviewed, preliminary research has also found support for the relationship between stigma message features and specific discrete emotions.

H4: Stigma message features will directly predict discrete emotions such that high stigma messages will lead to greater fear, disgust, anger, anxiety, frustration, and sadness, and less sympathy.

In terms of the influence of negative affect on outcome variables, it is reasonable to expect that negative affect will positively influence behavioral regulation, social distance, and stigma message sharing and negatively influence overall attitudes support for opioid-related policies, especially since research has found significant associations between affect and behavioral regulation (Smith, 2012), and stigma message sharing (Smith, 2012). While social distance was not measured in Smith's (2012; 2014) studies, it is reasonable to expect that a similar relationship between affect and social distance; according to IET, anger and disgust can lead to less contact with the outgroup (Mackie et al., 2008). Moreover, negative attitudes toward a stigmatized group seem like a likely consequence of negative affect. As such, the following hypothesis is proffered:

H5: Negative affect will positively predict social distance, behavioral regulation and stigma message sharing and will negatively predict attitudes and support for opioid-related policies.

Research also offers evidence regarding the relationship between discrete emotions and stigma-related outcomes. This research suggests the following pattern of effects can be expected for the relationships between discrete emotions and stigma-related outcomes.

H6: Discrete emotions will influence dependent variables such that the majority of negatively valenced emotions (fear, anger, frustration, disgust, anxiety) will predict less positive attitudes, more behavioral regulation, more social distance, more stigma sharing, and less support for opioid-related policies. Sadness will predict less positive attitudes, less behavioral regulation, less social distance, more stigma sharing, and more support for opioid related policies. Finally, sympathy will predict less positive attitudes, more behavioral regulation, more social distance, more stigma sharing, and more support for opioid-related policies.

One additional area of interest in the examination of direct effects is whether various stigma messages are more or less powerful at influencing stigma beliefs or negative affect. In essence, which messages are most influential? As such, this study asks:

RQ1: What differences, if any, on stigma beliefs, negative affect, or each of the seven discrete emotions based on stigma message feature (mark, label, responsibility, peril)?

Indirect Effects

Research from the MSC and related literature suggests that stigma message features can impact stigma-related outcomes through stigma beliefs. Perceived dangerousness has consistently been predicted by stigma message features and predictive of all stigma-related outcomes (Smith, 2012; 2014; Smith et al., 2019). Stigma messages have also predicted responsibility beliefs (Goodyear et al., 2019; Kelly & Westerhoff, 2010; Smith, 2012), and stigma theory suggests the plausibility of this relationship for immorality beliefs as well. As such, the following hypothesis is proffered:

H7: There will be a significant indirect effect of each stigma message feature (marking, label, responsibility, peril) on each of the five dependent variables (social distance, overall attitudes, behavioral regulation, support for opioid-related policies, stigma message sharing) through stigma beliefs (including beliefs about dangerousness, responsibility, and immorality). This indirect effect will be positive for behavioral regulation and stigma message sharing and negative for social distance (more desire for social distance), attitudes, and support for opioid-related policies.

MSC research also points to the potential of negative affect as a mediator. MSC research found that stigma message features, specifically responsibility and peril messages, led to negative affect, and negative affect, in turn, significantly and positively influenced stigma beliefs, behavioral regulation, and stigma message sharing (Smith, 2012). While no MSC study has tested the relationships between message features, negative affect, and social distance, it seems plausible that the same relationship would hold since social distance is a similar stigma-related outcome. As such, there is reason to believe that these stigma message features would exhibit an indirect effect on all four stigma-related outcomes through negative affect. As such, the following hypothesis is proffered:

H8: There will be a significant indirect effect of each stigma message feature (marking, label, responsibility, peril) on each of the five dependent variables (social distance, overall attitudes, behavioral regulation, support for opioid-related policies, stigma message sharing) through negative affect. This effect will be in the same direction as the effects of stigma beliefs.

As for the indirect relationships through discrete emotions, this study asks the following research question:

RQ2: What indirect relationships will emerge between each stigma message feature and each stigma-related outcome, mediated through each of the seven discrete emotions: fear, disgust, anger, frustration, sympathy, sadness, and anxiety?

Finally, one argument put forth is that beliefs and affect can work in tandem to affect stigma-related outcomes. As such, the following hypothesis is proffered:

H9: Stigma beliefs and negative affect will dually mediate the relationship between stigma message features and stigma-related outcomes.

Moderation

There is reason to believe that group identification, measured by experience with OUDs, moderates the relationships between stigma message features and affective mediators, including negative affect and discrete emotions. IET argues that when experience with OUDs is high, emotions are experienced more strongly (Mackie et al., 2008). As such, this study predicts the following relationships between stigma message features and emotional responses:

H10: Group identification will moderate the relationship between stigma message features and affective mediators (including negative affect, fear, disgust, anger, frustration, and sympathy) according to the following pattern:

- a. The relationship between relevant stigma messages and disgust, anger, frustration, and anxiety will be stronger among those with high group identification (e.g., individuals with personal experience with OUDs) as opposed to those who are low in group identification (e.g., no experience with OUDs).
- b. The relationship between relevant stigma messages and fear and sadness will be stronger among those low in group identification (e.g., no experience with OUDs) as

opposed to those with high group identification (e.g., individuals with personal experience with OUDs).

This study also seeks to determine if experience with OUDs can moderate any of the other paths in the I-MISC (Figure 2, Appendix A), and therefore asks:

RQ3: What, if any, is the moderating role of group identification on the relationship between stigma message features and (a) negative affect, (b) sympathy, and (c) stigma beliefs?

In addition to group identification, this study also examines the role of opioid type (prescription opioids, fentanyl, heroin) in influencing study outcomes and relationships.

RQ4: What will the direct or moderating effects of opioid type be on study mediators and outcomes?

Conditional Indirect Effects

The current study also examines conditional indirect effects, or the situation in which an indirect effect is moderated by group identification. It is expected that these conditional indirect effects will emerge according to the same pattern of moderated effects outlined in H9.

H11: The same pattern of effects can be expected for conditional indirect effects between related stigma messages and stigma-related outcomes through hypothesized emotions.

Associations

Based on the two-way relationship between cognition and affect, the following research question is also proposed:

RQ5: What relationships will emerge among cognitive and affective mediators in the I-MISC?

Chapter 6: Pilot Study

Method

To vet experimental manipulations and study measures, a between-subjects experimental study was conducted testing the effects of two levels (high, low) of each stigma message feature (mark, label, responsibility, peril). Each message feature a between subjects experiment within itself. In other words, there were four stigma message features tested in the study, and each can be thought of as its own mini-between subjects experiment (i.e., as opposed to testing interactive effects between message features which was not the purpose of this study or justified by prior research, e.g., Smith et al., 2019). The purpose of the pilot study was to first, ensure that messages were readable, clear, and understandable. Second, the pilot study aimed to examine the reliability and factor composition of three key study measures that have yet to be substantially tested in the literature: support for rehabilitation, support for Narcan, and opioid-related stigma beliefs. The pilot study did *not* serve as a preliminary test of study relationships, given that past work offers substantial evidence for several model relationships (Ledford et al., 2021; Smith, 2012; 2014).

An eight-condition between-subjects experiment was conducted to examine participants' reactions to online news messages about prescription opioids. These eight conditions corresponded to each of the four stigma message features in addition to two manipulated levels of each feature, making the eight conditions: High Stigma Mark, Low Stigma Mark, High Stigma Label, Low Stigma Label, High Stigma Responsibility, Low Stigma, Responsibility, High Peril, and Low Peril.

MTurk Recruitment

Participants for the pilot study and main studies were recruited and compensated through Amazon Mechanical Turk (MTurk). MTurk samples are considered more representative of the

average adult population than college student samples and are often used in social scientific research (Burnham et al., 2018). Participants from this study were recruited based on three factors: (1) Being 18 years or older, (2) living in the United States, and (3) being English-speaking. It was important that participants live in the U.S. and speak English because of the context of the experimental stimuli. These stimuli concern common beliefs and norms in the U.S. media landscape. Furthermore, stigma is fundamentally communicated through language. Therefore, non-English speaking populations could have different connotations or understandings of stigma messages than English-speaking populations. The only additional criteria for eligibility were that MTurk workers have at least 100 tasks previously approved on MTurk with a task approval rating higher than 95%. Participants who met these criteria were recruited (see Appendix B for recruitment message) and offered \$1.75 for completing the 15-minute study.

Data Cleaning

After eliminating incomplete responses ($n = 46$), duplicate responses ($n = 10$), and participants who failed the attention checks ($n = 85$), a total of 376 responses remained. Responses were then evaluated for completion time. All respondents completed the survey within the allotted 2-hour time allowed on MTurk, but speeder respondents who completed the survey in less than half of the median (*Median* = 9.5 minutes) completion time were eliminated from the study ($n = 37$). This metric is in line with survey research practices and can help reduce noise within the data (Leiner, 2019). The total pilot study sample was subsequently 342 participants.

Participants

Responses from 342 participants were analyzed. Study participants were an average of 37.72 years old ($SD = 9.93$), with a minimum age of 20 and a maximum age of 71, and six participants selecting “prefer not to answer” for this question. The majority of respondents reported that their ethnicity was Caucasian ($n = 263, 76.9\%$), followed by participants reporting their ethnicity as Black or African American ($n = 39, 11.4\%$), Asian ($n = 9, 2.6\%$), Hispanic or Latino/Latinx ($n = 10, 2.9\%$), multiple ethnicities ($n = 5, 1.5\%$), American Indian or Alaskan Native ($n = 1, 0.3\%$), and Native Hawaiian or Pacific Islander ($n = 1, 0.3\%$). One participant (0.3%) chose to self-report their ethnicity in the “other” category, and 13 (3.8%) indicated they would prefer not to answer this question. Participants were asked to self-report their gender through an open text box. Participants reported a variety of responses included “male,” “man,” “M,” and “female,” and those responses were categorized into two gender categories: self-identifying men ($n = 213, 62.3\%$) and women ($n = 128, 37.4\%$) in addition to one participant who chose not to report their gender. Participants were also asked to report their highest education received. Nearly half of participants ($n = 180, 52.6\%$) possessed a Bachelor’s degree, followed by 73 participants (21.3%) who possessed a Master’s degree, and 23 participants (6.7%) who reported having some college credit but no formal degree. Additionally, 12 participants (3.5%) possessed an Associate’s degree, 11 (3.2%) held a high school graduate diploma or equivalent (e.g., GED), three participants (0.9%) held a professional degree such as a medicine or law degree, two (0.6%) held a doctorate, two (0.6%) reported having trade, technical, or vocational training, and two (0.6%) reported attending high school but not obtaining a diploma. Additionally, 34 participants (9.9%) indicated they would prefer not to answer this question.

Procedures

Participants were recruited to participate in an online study about news messages. Participants were randomly assigned to one of eight conditions (high mark, low mark, high label, low label, high responsibility, low responsibility, high peril, low peril). Prior to stimuli exposure, participants were asked to answer a question about their experiences with OUDs. Then, participants were asked to read a hypothetical news article like something they might read in real life (Appendix C). The news article page was timed to ensure participants could not proceed to the next phase of the study until they had sufficient time to read the article (20 seconds). This was also done to promote attention to the article. Participants then responded to an attention check measure to ensure they read the article. Participants were asked about the name of the person in the article. Participants who failed the attention check was later excluded from the analysis. After completing the first attention check, participants completed message pre-test measures and a select number of key study measures including stigma beliefs, attitudes, and support for opioid-related policies (see Appendix D for complete questionnaire). An additional attention check was embedded in the matrix questions for stigma beliefs, and this question directed participants to select “strongly agree” for the question. Again, participants who failed that attention check were later excluded from study analysis. Finally, participants were thanked for their participation, given a phone number to the National Substance Abuse Hotline, and debriefed about the purpose of the study (Appendix E).

Message Pre-Test Measures

To pre-test the messages, a series of measures were used to ensure the messages were understandable to the participants. Unless otherwise noted, all message pre-test measures were assessed on 7-point Likert scale items where 1 was equal to strongly disagree and 7 was equal to

strongly agree. Negatively worded items were reverse coded for scale reliability. The full pilot study questionnaire is available in Appendix D.

Comprehension. Comprehension was measured to assess how easily understandable the message was to participants. Participants were asked if the article they read was (1) easy to read, (2) easy to follow while reading, and (3) difficult to understand. On average, participants high levels of agreement that the article was easy to read ($M = 6.10$, $SD = 1.05$) and easy to follow while reading ($M = 6.05$, $SD = 1.05$). Participants disagreed that the article was difficult to understand ($M = 3.49$, $SD = 2.16$).

Message derogation. Message derogation was assessed to determine whether participants thought the message was reasonable. Participants were asked if the message was (1) exaggerated, (2) distorted, or (3) overblown. On average, participant responses for each of these items was at or below “neither agree nor disagree,” with slight disagreement that the message was exaggerated ($M = 3.99$, $SD = 1.95$), slight disagreement that the message was distorted ($M = 3.76$, $SD = 1.97$), and neither agreement nor disagreement that the message was overblown ($M = 4.00$, $SD = 2.10$).

Qualitative feedback. Qualitative feedback was gathered to allow participants the chance to express their thoughts about the message. Participants were asked to respond to a single open-ended question: “Please use this space to write down any thoughts you have about the story you just read. Please focus on the words and ideas in the message and provide any feedback you have on how the message can be made to be more relevant or easier to understand.”

Select Study Variables

The pilot study included three main study variables: stigma beliefs, attitudes, and support for opioid-related policies. These variables were selected since they were constructs not preliminarily explored or validated in the stigma communication literature.

Stigma Beliefs. Stigma beliefs was measured to assess participants' stigmatizing beliefs about individuals with OUD related to dangerousness, responsibility, and immorality. An adapted version of the prescription opioid scale created by Palamar et al. (2011) was used and modified for participants in the heroin and fentanyl conditions. While three items were assessed dangerousness beliefs, three responsibility beliefs, and three immorality beliefs, results of an exploratory factor analysis (EFA) suggested that opioid-related stigma beliefs is a unidimensional construct, and one item did not load well onto the factor: "people like Sam with prescription opioid use disorders should take control of their problem." As such, the final eight items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The stigma beliefs scale was reliable ($\alpha = .93$, $M = 4.65$, $SD = 1.35$).

Stigma Beliefs EFA Results. Principal axis factoring (PAF) was used to explore the factor structure of stigma beliefs. First, given the hypothesized multi-dimensionality of stigma beliefs, the researcher requested a 3-factor unrotated solution with a maximum of 25 iterations for convergence. Results indicated that only the first factor had an extracted eigenvalue greater than 1 (Eigenvalue = 5.23) and that factor explained approximately 58% of the variance in the total construct. The requested second and third factors had eigen values less than 0.4. Factor loadings onto this first factor were all greater than 0.7, except for a single item: "People like Sam with prescription opioid use disorders should take control of their problem." This item did not load on any of the other factors, and no item cross loadings were greater than 0.4. Given the results of this three-factor solution, the researcher then proceeded to request a one factor solution

through PAF. The item with a low loading was removed from the factor analysis, and eight items were now subject to PAF. Results of the one factor solution suggested that the first factor explained 63.2 percent of the variance in the construct, with an extracted Eigenvalue of 5.06. Scree plot results affirmed this finding, and factor loadings were all greater than 0.7 (Table 2.1).

Overall Attitudes. Overall attitudes toward individuals with OUDs assessed participants' general evaluation of members of the stigmatized group. Attitudes were assessed on a 7-point semantic different scale with seven bipolar adjective pairs: good/bad, positive/negative, pleasant/unpleasant, kind/cruel, wise/foolish, valuable/worthless, and honorable/shameful. All the items were summed and averaged into a mean scale score to calculate scale reliability using Cronbach's alpha. A higher score on the attitudes scale corresponded to more positive attitudes. The overall attitudes scale was reliable ($\alpha = .85$, $M = 3.96$, $SD = 1.06$).

Support for Opioid-Related Policies. Support for opioid-related policies was originally hypothesized to have two dimensions: support for Narcan administration and support for rehabilitation programs. Results of an EFA suggested a one-factor solution was the preferable fit for the items. One item was subsequently removed due to insufficient loading/no correspondence with the two- or one-factor solutions: "people like Sam belong in jail." The final six items were summed and averaged into a mean scale score to calculate scale reliability using Cronbach's alpha. A higher score on the scale corresponded to greater support for opioid-related policies. The overall support for opioid-related policies scale was reliable ($\alpha = .89$, $M = 5.71$, $SD = 1.00$).

Support for Opioid-Related Policies EFA Results. Principal axis factoring (PAF) was used to explore the factor structure of support for opioid-related policies. First, given the hypothesized multi-dimensionality of this construct, the researcher requested a 2-factor unrotated solution with a maximum of 25 iterations for convergence. Results indicated that only the first

factor had an extracted eigenvalue greater than 1 (Eigenvalue = 3.67) and that factor explained approximately 52% of the variance in the total construct. The requested second and third factors had eigenvalues less than 1.0. Factor loadings onto this first factor were all greater than 0.6, except for one item: “People like Sam belong in jail.” This item did not load onto either factor (both loadings less than 0.4). Notably, this solution was tried with 25 iterations and 50 iterations, and neither allowed for the full extraction of a two-factor solution. Given the results of this two-factor solution, the researcher then proceeded to request a one factor solution through PAF. The item with a low loading was removed from the factor analysis, and six items were now subject to PAF. Results of the one factor solution suggested that the first factor explained 57.57 percent of the variance in the construct, with an extracted Eigenvalue of 3.45. Scree plot results affirmed this finding, and factor loadings were all greater than 0.6 (Table 2.2); this solution was extracted in 5 iterations.

Results

Message Variables

Results indicated that the message was understandable and easy to read. In addition, participants did not believe that the message was exaggerated or overblown. However, additional qualitative feedback was gathered through an open-ended question to provide the researcher with more insight into ways to improve the messages.

Qualitative Message Feedback

Responses to the messages were thematically analyzed using open-ended, qualitative iterative coding. Participants responded to a single question stating: “Please use this space to write down any thoughts you had about the article you read. Please focus on the words and ideas in the message and provide any feedback you have on how the message can be made to be more

relevant or easier to understand.” Following recommendations from qualitative research, the researcher became familiar with the responses to this question, developed initial codes, refined those codes into underlying themes, and then finalized the themes and developed counts of each theme in the responses, identifying exemplar quotes that represented themes (Braun & Clarke, 2006). Themes were mutually exclusive to allow for clear delineation between focus of the response. Five key themes were identified (Table 2.3). Several participants ($n = 69$, 20.2%) also chose not to share additional relevant information.

Message Comprehension and Interest. First, the largest number of responses expressed comprehension and/or interest in the message ($n = 130$, 38.0%). These responses reflect two subthemes: *explicit* and *implicit comprehension*. First, approximately one-fifth of responses ($n = 72$, 21.1%) expressed additional agreement that the article was easy to understand and/or interesting. One participant exposed to the high mark stigma message noted that: “I thought the article itself was very clear and concise. I do not see any ways in which it could be made easier to understand...” Another, exposed to the high label stigma message stated that: “My thoughts about the article are that it was well written and spreads awareness to the opioid crisis's [sic] hitting americans [sic].” Many more participants simply wrote “easy to read” or “interesting” across message conditions. Second, several participants ($n = 57$, 16.7%) focused their reply on paraphrasing or restating the points the article made. While these participants did not offer any additional thoughts about the messages, their responses are instead interpreted as following the study instructions by clearly reading and processing and understanding the messages.

Message Relevance. Approximately one-quarter of participants ($n = 87$, 25.4%) shared knowledge, beliefs, thoughts, or experiences related to opioids that indicated their perceived

relevance of the message. These responses pertained to an array of topics, be it a personal connection to the topic like one participant exposed to the high stigma label condition:

“This article rang true for me. I have 2 close friends who I know struggled with opiate addiction for quite awhile[sic], and still sort of do to this day. I think they now take something else that is supposed to combat opiate addiction,” or acquired knowledge about or relating to the topic, like this response from a participant in the low stigma mark condition: “The article re-inforced[sic] my belief that the opioid crisis in the US is real and has grown to epidemic-proportions. What the article did bring home to me is that the stereotypical "drug abuser" does not always apply to those struggling with opioid addiction. They often appear to look just like everyone else, which suggests that more people than we recognize could be addicted to opioids.”

Individuals added these experiences, thoughts, and belief statements in response to the article, which suggest an engagement and processing of the article due to its relevance.

Needed Context. Some participants ($n = 31$, 9.1%) expressed a desire for more context about the message or Sam’s story. A few participants desired more statistical information about the opioid epidemic, like this participant exposed to the high peril stigma message:

“The story could only be made more attention grabbing if it actually contained more over all statistics. I would have liked to have been able to read more specifics about Sam's story to actually give concreteness to the article. It was slightly vague.”

Others expressed a desire to know more about Sam generally, such as one participant in the high peril stigma condition that stated: “I think expanding on Sam's story would help get the message across better. The article talks about the consequences of his choices but fails to say what those choices were. We could infer but telling his story would allow others to realize the true effects of using opioids.”

This additional requested context suggested that this smaller group of participants needed more cohesion in the news article and its composition.

Message Confusion or Derogation. A small number of participants ($n = 13$, 3.8%) expressed confusion, disagreement, or discontent surrounding the message. All but three of these responses were from individuals exposed to the high or low responsibility stigma messages and largely concerned confusion or disagreement about the level of control and responsibility attributed to Sam in the article. One participant exposed to the low responsibility stigma message stated: “I would agree that Sam is not the only person that is in charge of making sure he gets better, but by stating he isn't responsible for his recovery is just allowing him to continue to say he doesn't have a problem and to not get help. I was irritated by the wording of the article.” Meanwhile, an individual exposed to a high responsibility message noted: “I thought it was hard on the individual, Sam, in that it is up to him if he overcomes his addiction. I think it would be better to say he needs help and guidance.” These comments suggest that the responsibility manipulation did not make clear the degree of control or choice for some individuals.

Negative Emotions. Finally, a small number of participants ($n = 12$, 3.5%) expressed negative emotions in their responses citing fear, sympathy, sadness, or general negativity in response, such as a participant in the low stigma label condition who noted: “I feel bad for this guy. I hope he can get treatment, I feel sorry.”

Message Effects

In line with O’Keefe’s (2003) intrinsic message effects paradigm, manipulation checks were not used in the pilot study to evaluate message effects. Rather, messages were hypothesized to affect study mediators, and an affirmed relationship between message manipulations and mediators were used to determine message effectiveness. Again, the pilot study was not treated

as a full test of message effects given past research affirming similar messages effectiveness (Ledford et al., 2021). Rather, the key purpose of pilot study was to determine the readability of messages. In addition, the low sample size in the pilot study inhibits comprehensive interpretation of any message effects. Still, the researcher ran a series of two-tailed, independent samples *t*-tests for each of the messages on each of the three study outcomes (stigma beliefs, attitudes, support for opioid-related policies) examined in the pilot study. Prior to this analysis, the researcher conducted a series of independent samples *t*-tests and chi-square tests to examine whether there were differences in demographic variables between participants. No differences emerged, so the researcher proceeded with the *t*-test approach, incorporating no covariates into the analysis. Results revealed only two significant effects: the effect of peril messages on attitudes and the effect of responsibility messages on support for opioid-related policies. High peril messages led to significantly less positive attitudes ($M = 3.55$) than low peril messages ($M = 4.19$), $t(82) = 2.57$, $p < .05$, Cohen's $d = .57$. High responsibility messages led to significantly greater support for opioid-related policies ($M = 5.97$) than low responsibility messages ($M = 5.48$), $t(83) = -2.30$, $p < .05$, Cohen's $d = -.51$. This effect of responsibility messages was in the direction opposite of what was expected. Results for all *t*-test results are reported in Table 2.4.

Discussion

The pilot study in this dissertation project was primarily used to evaluate the readability of experimental messages and determine the factor structure of two previously unvalidated measures: opioid-related stigma beliefs and support for opioid-related policies. Results of the pilot study provide insight into what elements of the experimental messages required improvement for the main study in this dissertation project. While preliminary message effects were examined, no conclusions can be drawn due to extremely low sample sizes. Instead, the

discussion of the pilot study focuses on the qualitative feedback gathered about the study messages.

Qualitative feedback offered insight into three key improvement areas for messages. First, participants needed additional context about Sam or the opioid epidemic. Though suggested by participants to add more narrative information about Sam, the researcher elected not to add more detail about Sam's life or story. While these details could be equalized across groups, they could disrupt the stigma manipulation by adding additional details that would counteract the influence of such stigma (i.e., narratives can serve a de-stigmatizing function; Heley et al., 2021). Second, in terms of statistics, the researcher avoided the addition of statistics because then those statistics would need to be attributed to a source, and the source may become the primary focus of the article. To respond to participants' concerns, the researcher instead added context in two ways—through additional information about the opioid epidemic and additional details about Sam, though not specifics. For example, the pilot study message introduction was consistent across all groups but did not provide context about the type of opioid. The main study introductory message was altered such that each opioid message contained information about that opioid type. In addition, the messages that were shorter with less context were given more substance. For example, the pilot study *peril* message only discussed “the consequences of Sam's choices” broadly, so the main study *peril* message was altered to include: “the physical, social, and mental consequences of Sam's opioid-related problem.”

The third key area of confusion for participants stemmed from the responsibility manipulation in the pilot study. While these messages were internally valid, participant responses to these items suggested a lack of ecological validity. The pilot study *responsibility* messages

discussed whether Sam “ultimately has control” and is “entirely” responsible (high) or “does not have control” (low) and “is not entirely responsible” for his opioid use disorder and seeking help. As participants noted, it was difficult to determine what “no control” meant. Accordingly, the main study responsibility message was altered to compare “Sam’s personal responsibility” (low) to “our collective responsibility” to help Sam. Similar manipulations of responsibility based on internal or external control have been implemented in prior literature, including attributing responsibility to the stigma condition (Lueck, & Yzer, 2018), comparing this disease responsibility message to attributed responsibility of the stigmatized group (McGlynn & McGlone, 2019), and various causal attributions of stigmatized conditions that communicate responsibility (Lewis & Sznitman, 2017). This change was made to alleviate the confusion among participants, confusion that may help explain the significant relationship between responsibility messages and support for opioid-related policies occurring in the direction opposite as expected.

Finally, while participants did not draw strong attention to the *peril* message manipulation in their feedback, the researcher recognized that the peril message was again internally valid but low in ecological validity. As the researcher reviewed the peril manipulation, it became evident that the difference between “You should take Sam’s story as a warning” (high) and “You should not take Sam’s story as a warning” (low) was not entirely clear. As such, the researcher altered main study peril messages to focus on *who* the consequences of Sam’s actions affect and more specifically manipulate the inverse of a warning message in the low peril message. As such, the main study message manipulated peril through noting that “The people in Sam’s life are affected” (high) or “Sam is personally affected” (low) by the consequences of his OUD. In addition, the message stated that either “Sam’s story should serve as a warning to us

all” (high) or “Sam’s story should serve as an invitation to us all to support Sam through his recovery.” This distinction offered more clarity in terms of who is affected by Sam’s OUD and whether a warning message should be sent. Given that peril messages are designed to provoke fear of interaction, the natural opposite to that manipulation (low peril) is an invitation to interact/support Sam.

Limitations and Lessons Learned

An obvious limitation of the current pilot study is sample size. A larger sample size would have allowed the researcher to more systematically examine the effects of stigma messages on the explored study variables, but the limited nature of the current sample prevented drawing causal conclusions from this analysis. One of the key reasons the sample size was lower than expected in the pilot study was the high number of participants who failed the attention checks or did not complete the study. While these participants were excluded from the analysis, the researcher did not set up mechanisms in the Qualtrics survey programming to reroute them out of the study prior to study completion nor did the researcher use that information to inform compensation of the MTurk workers who were enrolled in the study. Rather, all workers were approved, regardless of the quality of their response. To improve this in the main studies, the researcher made several changes. These changes included (1) revising the study consent form to explicitly tell participants that they would only receive compensation if they answered questions in the ways directed; participants were explicitly told about questions checking for their attention. (2) The researcher also re-programmed the Qualtrics survey to immediately route participants out of the survey after either failed attention check and inform them that they failed the attention check. This way, participants would not spend time advancing through the remainder of the survey after failing an attention check question nor would they be entirely

surprised if they were denied compensation. Finally, (3) the researcher changed the tasks approval requirement on MTurk from 95% total approved tasks to 98% total approved tasks—thus increasing the quality of MTurk workers that would enroll in the main studies.

Second, the sample in the pilot study was primarily composed of men, college-educated, and white participants. This is an obvious limitation, and no generalizable conclusions should be applied to more diverse samples or populations.

Conclusion

Results of the pilot study suggested necessary edits to experimental stimuli and offered insight into the reliability and factor structure of two key study measures: opioid-related stigma beliefs and support for opioid-related policies. This information was subsequently used to revise experimental stimuli and further evaluate the factor structure of those two study variables in the main studies.

Chapter 7: Main Study Method

A between-subjects experiment was conducted to examine the main study objectives, a 4 (stigma type: mark, label, responsibility, peril) x 2 (low, high) x 3 (opioid type: prescription opioids, heroin, fentanyl) between subjects online experiment (Table 3.1). The goal of the experiment was to independently examine the effects and mediation pathways of each of the four stigma message features while also considering the role of opioids context in the analysis.¹ The mediators examined include stigma beliefs, negative affect, and seven discrete emotions. The outcomes examined in the analysis included overall attitudes, behavioral regulation, social distance, support for opioid-related policies, and stigma message sharing.

MTurk Recruitment

MTurk samples are considered more representative of an average adult sample than college student samples and are often used in social scientific research (Burnham et al., 2018). Participants from this study were recruited based on the same three factors used in the pilot study recruitment: (1) Being 18 years or older, (2) living in the United States, and (3) being English-speaking. It is important for participants to live in the U.S. and speak English because of the context of the experimental stimuli. These stimuli concern common beliefs and norms in the U.S. media landscape. Furthermore, stigma is fundamentally communicated through language. Therefore, non-English speaking populations may have different connotations or understandings of stigma messages than English-speaking populations. The only additional criteria for eligibility were that MTurk workers have at least 100 tasks previously approved on MTurk with a task

¹ In this project, opioids context is entered as a second factor but not substantially explored in terms of significance due to the sample size recruited in the study. A larger sample size would be needed to fully examine the moderating role of opioids context and comment on the significance and effect size of that variable and its interaction effects. The results section offers more information about this decision and findings.

approval rating higher than 98%. Participants who met these criteria were recruited (see Appendix B for recruitment message) and offered \$2.00 for completing the 20-minute study.

Participant Characteristics

Study participants were an average age of 41.70 ($SD = 12.29$), with a minimum age of 18, and a maximum age of 78. The majority of respondents reported that their ethnicity was Caucasian ($n = 1,032$, 71.5%), followed by participants reporting their ethnicity as Black or African American ($n = 113$, 7.8%), Asian ($n = 86$, 6.0%), Hispanic or Latino/Latinx ($n = 54$, 3.7%), multiple ethnicities ($n = 71$, 4.9%), American Indian or Alaskan Native ($n = 12$, 0.8%), Middle Eastern ($n = 3$, 0.2%), or Native Hawaiian or Pacific Islander ($n = 1$, 0.1%). Some participants ($n = 12$, 0.8%) chose to self-report their ethnicity in the “other” category, and 60 (4.2%) either did not answer or indicated they would prefer not to answer this question. Participants were asked to self-report their gender through an open text box. As such, participants reported a variety of responses, including “male,” “Female,” “man,” “woman,” “cisgender female,” “cisgender male,” “transgender female,” “transmasculine,” and “non-binary,” in addition to those that did not report or preferred not to answer. Nearly half of respondents identified as “male” or “man” ($n = 706$, 48.9%), including two participants who noted they were cisgender². A similar number of participants identified as “female” or “woman” ($n = 675$, 46.7%), including two participants who noted they were cisgender. Three participants (0.2%) reported they were gender non-binary, two participants (0.1%) reported they were transgender female, and one participant ($< 0.01\%$) reported their gender as “transmasculine.” A number of participants ($n = 57$, 3.9%) either preferred not to answer or did not report their gender. Participants were also asked to report their highest education received. Nearly half of

² It is not possible to determine whether participants who *only* reported being male, men, female, or women were cisgender or transgender.

participants ($n = 682$, 47.2%) possessed a Bachelor's degree, followed by 207 participants (14.3%) who possessed a Master's degree, and 162 participants (11.2%) who reported having some college credit but no formal degree. Additionally, 132 participants (9.3%) possessed an Associate's degree, 119 (8.2%) held a high school graduate diploma or equivalent (e.g., GED), 33 (2.3%) reported having trade, technical, or vocational training, 25 held a doctorate degree (1.7%), 22 (1.5%) held a professional degree such as a medicine or law degree, seven participants (0.5%) reported attending high school but not obtaining a diploma, and two participants (0.1%) reported that they had finished primary and secondary school up to Grade 8. Additionally, 53 participants (3.7%) either did not answer or indicate they would prefer not to answer this question.

Procedure

After obtaining Institutional Review Board approval, the researcher posted the study advertisement (Appendix B) to the MTurk platform. Participants were invited to participate in an online survey about news media articles about opioids. Upon accepting the task in MTurk, participants were given the Qualtrics link to the study. After consenting to participate in the 20-minute study for \$2 U.S. dollars, participants were first asked four questions related to their experiences with OUDs. They were given a definition of an OUD and asked if they, their friends, or their family members have had an OUD. Then, they were provided space to elaborate on any additional experiences with OUDs they may have. These experiences ranged from narratives about close others who had OUD-related issues to work experiences that exposed participants to OUDs, like one participant who worked in healthcare to facts that users had absorbed or found about opioids.

Participants were then randomly assigned to one of the 24 experimental conditions, representing 4 stigma message features (mark, label, responsibility, peril) x 2 stigma levels (stigma level: high, low) x 3 types of opioids (opioid type: prescription opioids, fentanyl, heroin) (see Table 3.1 for a full list of all experimental groups). Upon random assignment to an experimental condition, participants were told that they would be shown a news story and should carefully read the article (see Appendix F for study manipulations). Once the article appeared on the screen, participants, an embedded timer (unseen to participants) ensured that could not advance to the next page until 20 seconds had passed. This was done to promote true reading and processing of the experimental stimuli. After reading the article, participants were first asked to identify the name of the person in the article and given four answer options: Alex, Sam, Barb, and Susan. Sam, the correct answer, was not listed first in the response options. This attention check question offered a quality check to verify message processing. Participants who failed the first attention check were routed out of the survey and told that they did not answer questions correctly and were thus ineligible to complete the survey. Participants who passed the attention check were then exposed to the key study measures, including mediators—stigma beliefs, negative affect, seven discrete emotions—and outcomes: attitudes, social distance, behavioral regulation, support for opioid-related policies, and stigma message sharing (see Appendix G for main study questionnaire). Within the matrix-style question for the behavioral regulation questions, a second attention check was embedded that asked participants to “select strongly agree for this question.” Again, participants who failed the attention check were routed out of the survey. All remaining participants proceeded to complete the remaining study measures and demographic questions, including gender, ethnicity, and education level.

Finally, participants were thanked for their participation, given a phone number to the National Substance Abuse Hotline, and debriefed about the purpose of the study (Appendix H). Participants who completed the survey and passed the attention checks were then compensated \$2.00 for completing the 20-minute study.

MTurk Compensation

Data was downloaded from Qualtrics and carefully reviewed for quality control. The following process was undertaken to ensure ethical standards with MTurk workers and rigorous standards for data quality. First, data was downloaded and crosschecked with MTurk worker assignment completion codes. Only 13 workers were denied compensation, and the reasons for rejection of compensation included failing one or both attention checks or not completing the survey, as stated in the consent form. In the instance that an MTurk worker failed one of the attention checks and then realized their error (upon being routed out of the survey and told that they failed the attention check), many workers proceeded to retake the survey³. When this was the case, the MTurk worker was still compensated, given that the consent form and project instructions did not clearly state that the survey could not be taken multiple times. However, the researcher did not include these responses in the final data set due to the internal validity concern a duplicate response would cause (i.e., after being exposed to the experimental stimuli already).

1,560 MTurk workers were paid \$2 to complete the 20-minute study. In line with MTurk ethics, workers were given a 2-hour window to complete the study, but the average completion time was 14.85 minutes. Data cleaning mechanisms were put into place to ensure speeder

³ While the researcher disabled survey retakes in Qualtrics, MTurk workers can paste the survey link in a new browser window or incognito window to retake the survey. Since their MTurk ID is tracked for survey completion, the researcher was able to identify and remove these duplicate responses from the sample.

responses were not included in the sample nor were outliers for respondents who took far greater time to complete the survey.

Experimental Stimuli

Experimental stimuli were developed by the researcher and based on the results of the pilot study. Results of the pilot study primarily suggested that participants desired more information about the scope of the opioid epidemic and about the character in the article, Sam. As such, the researcher expanded the introductory paragraph about opioids to (1) define the type of opioid referenced and (2) explicitly discuss rising rates of overdose deaths as an “epidemic.” The researcher also added more information about Sam by adding more content to the experimental messages that talked about Sam’s relationships. Though some participants in the pilot study desired more narrative information, the researcher did not add such details given that narrative information may introduce an entirely new type of information. It would have been difficult to add objective narrative summary and maintain consistency across conditions without interfering with the stigma message manipulation. Each of the messages were checked for consistency in length, specifically in relation to the stigma message feature. Across the two levels (high, low) and three types of opioids (prescription opioids, heroin, fentanyl), mark messages ranged from 128 to 150 words; label messages ranged from 137 to 168 words; responsibility messages ranged from 131 to 156 words; and peril messages ranged from 124 to 150 words. The researcher also took care to ensure no other message component aside from the experimental manipulations (stigma message feature, stigma level, opioid type) was different between conditions. Experimental stimuli can be found in Appendix F.

Manipulation checks

Manipulation checks were not used as a central measure of message effectiveness in this study. According to O’Keefe (2003), communication research can eliminate this need for manipulation checks by utilizing intrinsic message features that fundamentally alter the content of messages rather than altering only the effect they have. In this way, what becomes more important for researchers is whether hypothesized relationships to relevant mediators are confirmed, and these mediators often take the place of what could have been a manipulation check. This study aligns with that perspective and instead situates stigma beliefs and negative affect as the mediators that stigma message features should affect.

However, given the newness of research isolating individual message features, the researcher did include two manipulation check measures to determine if *mark* and *label* messages were effective at marking and labeling attributions from participants’ perspectives. While it is theoretically clear how messages of *responsibility* can influence stigma beliefs (which include beliefs about responsibility) and how *peril* messages can influence stigma beliefs (which include beliefs about dangerousness) and negative affect (because of perceived fear), it is less clear how marks and labels function in this way. As such, two manipulation checks are reported here to offer additional insight for the discussion of those two message features’ effects.

Mark messages significantly impacted participants attributions of how “marked” or visibly different individuals were based on the message. Three items measured marking, and these items were summed and averaged into a marking scale that was moderately reliable ($\alpha = .77$, $M = 3.57$, $SD = 1.48$). A one-way ANOVA between high and low mark messages indicated that high mark messages led to greater perceptions of marking ($M = 4.64$) than low mark messages ($M = 2.15$), $F(1,369) = 311.43$, $p < .001$, partial $\eta^2 = .46$.

Label messages did not significantly impact participants perceptions of labeling an individual as an “addict.” Three items measured labeling, and these items were summed and averaged into a labeling scale that was moderately reliable ($\alpha = .70$, $M = 5.53$, $SD = 1.12$). A one-way ANOVA indicated that there was no significant difference in labeling perceptions between participants exposed to high ($M = 5.81$) and low (5.69) label stigma messages, $F(1,358) = 1.13$, $p = .29$. The implication of this finding is explored in the discussion section of this dissertation.

Measures

Dependent Variables

Unless otherwise noted, all scales were measured on 7-point Likert scales where 1 was equal to strongly disagree, and 7 was equal to strongly agree. Negatively worded items were reverse coded for scale reliability. A full list of scale items can be found in Appendix G.

Factor Analysis. Exploratory factor analysis (EFA) and confirmatory factory analysis (CFA) were conducted among study variables which had not been substantially tested in prior literature. Two variables were examined through factor analysis: stigma beliefs and support for opioid-related policies.

Stigma Beliefs Factor Analysis. Pilot study results from an EFA suggested that stigma beliefs is a unidimensional construct rather than multi-dimensional with three factors. Another EFA using PAF was conducted using main study data to test this finding, and the results similarly suggested that stigma beliefs is unidimensional. First, a one factor solution among all nine items was extracted in four iterations, and all items had factor loadings greater than 0.75 except for a single item with a loading of 0.41: “People like Sam with prescription opioid use disorders should take control of their problem.” This item, the same one removed during the pilot

study, was subsequently deleted from the opioid stigma beliefs scale, and a second EFA was run with a one-factor solution to produce the final EFA results, indicating a one-factor solution explaining 63 percent of the total variance, with an eigenvalue of 5.01, in the stigma beliefs scale. Scree plot results affirmed this finding, and factor loadings were all greater than 0.7. The final eight-item scale was thus subject to a CFA conducted using MPlus Statistical Software with Maximum Likelihood (ML) estimation which affirmed the factor loadings of the construct (all > 0.7). The CFA exhibited satisfactory model fit according to the *SRMR* index (*SRMR* = 0.05), of which less than 0.08 is considered good fit (Hu & Bentler, 1999). The *RMSEA* and χ^2 value did not indicate good fit (*RMSEA* = 0.19, 90% CI [.18, .20]; $\chi^2_{df=20} = 1006.24, p < .001$). The *CFI* index was not quite satisfactory (*CFI* = 0.89) according to current metrics that recommend 0.95 as an ideal fit (Hu & Bentler, 1999). These contradictory findings regarding model fit indices led the researcher to request modification indices from MPlus to determine what suggestions, if any, were suggested to improve the model fit. Using the sequential method and examining only modification indices larger than 10, the researcher first allowed the error variances of two belief items with the largest modification index (*M.I.* = 209.236) to covary with one another given their similar wording: “People like Sam with a [fentanyl/heroin/prescription opioid]-related problem are dishonest,” and “People like Sam with a [fentanyl/heroin/prescription opioid]-related problem cannot be trusted.” Then, the researcher allowed a second set of error variances to covary for two similarly worded items with the next highest modification index (*M. I.* = 437.711): “People like Sam with a [fentanyl/heroin/prescription opioid]-related problem are weak minded,” and “When people like Sam develop a [fentanyl/heroin/prescription opioid]-related problem, that is a sign of personal failure.” The remaining modification indices were not examined for potential CFA changes because they were substantively smaller (highest remaining

$M. I. = 53.55$) and because there were no theoretical (i.e., similar item wording) justifications for such modifications. These modifications resulted in an improvement of model fit, ($CFI = .96$, $SRMR = .04$, $\chi^2_{df=18} 328.17$, $p < .001$; $RMSEA = .11$, 90% $CI [.10, .120]$, $p < .001$). While the researcher did not use structural equation modeling (SEM) in this study, these modifications are reported here to support future researchers' investigation of the opioid-related stigma beliefs construct. These modifications could improve the measurement model in ways that support interpretability of the structural model for researchers using SEM. Even so, future researchers should assess the validity of the stigma beliefs scale using alternative methods (e.g., qualitative research, cognitive response interviewing, measurement validity studies) before concluding that this opioid-related stigma beliefs scale is the most comprehensive and valid measure. Table 3.4 contains the final factor loadings from the CFA.

Support for Opioid-Related Policies Factor Analysis. Pilot study results suggested that support for opioid-related policies is also a unidimensional construct. Another EFA was conducted using main study data to test this finding, and the results similarly suggested that support for opioid-related policies is unidimensional. First, a one factor solution among all seven items was extracted in five iterations, and all items had factor loadings greater than 0.6 except for a single item with a loading of $-.47$: "People like Sam belong in jail." This item, the same one removed during the pilot study, was subsequently deleted from the opioid stigma beliefs scale, and a second EFA was run with a one-factor solution to produce the final EFA results, indicating a one-factor solution explaining 66 percent of the total variance, with an eigenvalue of 3.93, in the support for opioid-related policies scale. Scree plot results affirmed this finding, and factor loadings were all greater than 0.6, with the exception of one additional item with a loading of 0.58. This item was retained given results from the pilot and main studies. The final eight-item

scale was thus subject to a CFA conducted using MPlus Statistical Software with Maximum Likelihood (ML) estimation. First, the researcher examined a one-factor model, as suggested by the EFA results. This model, while demonstrating a degree of satisfactory fit ($CFI = .95$, $SRMR = .06$, $\chi^2_{df=9} 355.06$, $p < .001$, $RMSEA = .16$, 90% CI [.15, .18], $p < .05$), did not demonstrate strong loadings for the two items related to support for rehabilitation (both loadings < 0.6) (Table 3.5) As such, the researcher examined a two-factor model where support for opioid-related policies had two dimensions: support for Narcan administration and support for rehabilitation. Four items corresponded to the support for Narcan factor, and two to the rehabilitation factor. This CFA demonstrated substantially greater model fit ($CFI = .99$, $SRMR = .02$, $\chi^2_{df=12} 76.55$, $p < .001$, $RMSEA = .061$, 90% CI [.05, .08], $p = .07$), and item loadings were all satisfactory ($> 0.7^4$) (Table 3.6) Thus, while the EFA suggested a one-factor structure, the follow-up two-factor structure using CFA was preferred. The discrepant findings between the EFA and CFA methods suggests the need for follow-up measurement analysis that expands both proposed subconstructs in this scale with additional items and further evaluates a one- or two-factor solution.

Social Distance. Social distance was measured to determine the degree of closeness participants express toward individuals with OUD. The modified social distance scale created by Link et al. (1987) was tailored to the specific type of opioid participants were exposed to in the manipulation. This was done through the prompt listed prior to the matrix questions: “Thinking of individuals like Sam with a [opioid type]-related problem, please indicate how strongly you would be willing to engage in the following actions.” Seven items assessed participants desire for social distance from individuals with an OUD, and these items were assessed on a 7-point

⁴ “People like Sam belong in jail” was retained in the CFA to avoid modifications that should be made when a construct has only two items. While this loading was expectedly low, it is not considered one of the final items of the scale.

Likert scale from extremely unwilling to extremely willing. Importantly, a higher score on the social distance scale means less desired social distance. All the items were summed and averaged into a mean scale score to calculate scale reliability using Cronbach's alpha. The social distance scale was reliable ($\alpha = .95$, $M = 3.24$, $SD = 1.70$).

Overall Attitudes. Overall attitudes toward individuals with OUDs assessed participants' general evaluation of members of the stigmatized group. Attitudes were assessed on a 7-point semantic different scale with seven bipolar adjective pairs: good/bad, positive/negative, pleasant/unpleasant, kind/cruel, wise/foolish, valuable/worthless, and honorable/shameful. All the items were summed and averaged into a mean scale score to calculate scale reliability using Cronbach's alpha. A higher score on the attitudes scale corresponded to more positive attitudes. The overall attitudes scale was reliable ($\alpha = .89$, $M = 3.62$, $SD = 1.04$).

Behavioral Regulation. Behavioral regulation was measured using Smith's (2012) scale to assess how much intervention participants desired for people with an OUD. The regulation scale used three items to assess general behavioral intervention. All the items were summed and averaged into a mean scale score to calculate scale reliability using Cronbach's alpha. A higher score on the behavioral regulation scale corresponded to a greater desire for behavioral regulation. The behavioral regulation scale was reliable ($\alpha = .76$, $M = 4.15$, $SD = 1.54$).

Support for Opioid-Related Policies. Support for opioid-related policies was measured to assess participants' support for two key opioid-related policies: rehabilitation and Narcan administration. Using the items from Ledford et al.'s (2021) study, the opioid-related policies scale included 6 items, including four that pertained to Narcan and two related to rehabilitation. All the items were summed and averaged into a mean scale score to calculate scale reliability

using Cronbach's alpha. The support for opioid-related policies scale was reliable ($\alpha = .91$, $M = 6.22$, $SD = 1.01$).

Stigma Message Sharing. Stigma message sharing of the message as assessed to determine how likely it is that participants would share this message with others. Lee and Jin's (2019) crisis information seeking and sharing (CISS) scale was used to assess stigma message sharing. Six items were summed and averaged into a mean scale score to calculate scale reliability using Cronbach's alpha. The stigma message sharing scale was reliable ($\alpha = .95$, $M = 3.80$, $SD = 1.83$).

Mediators

Stigma Beliefs. Stigma beliefs was measured to assess participants' stigmatizing beliefs about individuals with OUD related to dangerousness, responsibility, and immorality. An adapted version of the prescription opioid scale created by Palamar et al. (2011) was used and modified for participants in the heroin and fentanyl conditions. While three items assessed dangerousness beliefs, three responsibility beliefs, and three immorality beliefs, results from the Pilot Study exploratory factor analysis revealed that opioid-related stigma beliefs is a unidimensional construct. As such, these nine items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The stigma beliefs scale was reliable ($\alpha = .92$, $M = 4.27$, $SD = 1.35$).

Negative Affect. Negative affect was used to measure participants' overall positive or negative feelings toward individuals with an OUD. Negative affect was assessed using a 7-point semantic differential scale was used to assess participants' positive (1) and negative (7) affect with adjective pairs of good/bad, afraid/unafraid, worried/unworried, fearful/unfearful, pleasant/unpleasant, and negative/positive. These items were summed and average into a mean

scale score to calculate scale reliability using Cronbach's alpha. The negative affect scale was moderately reliable ($\alpha = .76$, $M = 4.52$, $SD = 1.07$).

Discrete Emotions. Seven discrete emotions were measured to assess participants' levels of fear, disgust, anger, frustration, anxiety, sadness, and sympathy after reading the article. Scales from Harmon-Jones, Bastian, and Harmon-Jones (2016) and from Smith (2014) were used to measure these emotions. Participants were asked to indicate how much they felt an emotion while reading the article, where 1 was "not at all" and 7 was "an extreme amount." Each emotion was measured on its own scale.

Fear. Fear was measured using four feelings, including panic, scared, terror, and fear. These four items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The fear scale was reliable ($\alpha = .94$, $M = 2.43$, $SD = 1.71$).

Anger. Anger was measured using four feelings, including anger, rage, pissed off, and mad. These four items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The anger scale was reliable ($\alpha = .95$, $M = 2.34$, $SD = 1.69$).

Disgust. Disgust was measured using four feelings, including grossed out, sickened, revulsion, and nausea. These four items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The disgust scale was reliable ($\alpha = .95$, $M = 2.32$, $SD = 1.69$).

Frustration. Frustration was measured using three feelings, including irritated, aggravated, and angry. These three items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The frustration scale was reliable ($\alpha = .93$, $M = 2.51$, $SD = 1.73$).

Sympathy. Sympathy was measured using three sympathy, pity, and concern. These three items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The sympathy scale was reliable ($\alpha = .83$, $M = 4.40$, $SD = 1.53$).

Sadness. Sadness was measured using four feelings, including lonely, sad, empty, and grief. These four items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The sadness scale was reliable ($\alpha = .81$, $M = 2.97$, $SD = 1.48$).

Anxiety. Anxiety was measured using four feelings, including worry, anxiety, dread, and nervous. These four items were summed and average into a mean scale score to calculate scale reliability using Cronbach's alpha. The anxiety scale was reliable ($\alpha = .88$, $M = 3.06$, $SD = 1.60$).

Moderators and Covariates

Personal Experience with Opioids. Personal experience with opioids was measured using three yes/no questions to determine individuals' level of experience based on whether they or a family member or close friend had struggled with an Opioid Use Disorder. This method was modeled after Hoffner et al.'s (2017) measure for personal experience with mental illness. The personal experience moderator had three levels: no experience, self-experience, or affiliate experience (i.e., through a close friend or family member).

Opioid Context. The type of opioid (prescription opioids, fentanyl, heroin) manipulated in the experimental stimuli was examined as a covariate in the analysis. The size of the sample in each experiment did not permit an examination of an interaction effect.

Chapter 8: Main Study Results

Analytic Procedures

Data Cleaning

First, the researcher downloaded the raw data ($n = 2,128$) from Qualtrics and eliminated incomplete responses ($n = 329$) where the participant only entered their MTurk ID, the first question in the survey participants saw prior to being exposed to the experimental stimuli. Then, the researcher deleted participants who failed the attention check questions ($n = 220$). Most of these attention check failures ($n = 185$) occurred after the first attention check immediately after exposure to the experimental stimuli. Participants were asked to identify the name of the person mentioned in the article. An additional 36 participants failed the second attention check, which was a question embedded in a matrix question shortly after the experimental stimuli that stated, “Please select strongly agree for this statement.” The study programming did not allow participants to advance to questions beyond the attention check if they selected the incorrect response. This made for ease of data cleaning. However, as previously noted, several MTurk workers proceeded to retake the survey after a failed attention check question routed them out of the survey. While these workers were compensated, their data was excluded from the analysis for quality control, with a total of 33 additional responses falling into this duplicate category. In addition, the researcher deleted one response after receiving an email from a participant requesting their data be withdrawn. This participant was still compensated, but their data was not included in the final analysis. An additional 13 duplicates (with no failed attention checks) were identified and deleted as well. Then, to ensure that participants read the experimental message, the researcher examined remaining responses to ensure all participants selected “yes” they were able to read the entire message. One participant selected “no,” and two participants left open-

ended comments derogating the message. These three participants were all excluded from the analysis. After this process, 1,529 responses were remaining in the survey.⁵

Finally, after deleting incomplete, inattentive, duplicate, and other ineligible responses, the researcher examined survey completion time to verify a realistic survey completion time. Research on survey completion time suggests that speeder responses, or responses that complete the survey substantially quicker than the majority of respondents by a set metric, can affect data quality (Leiner, 2019). While these responses are typically likely to attenuate the size of statistical effects, they may rarely affect the overall significance (Greski et al., 2015). Still, removing speeder responses will inevitably promote cleaner data. As such, the median completion time of the survey was calculated and was equal to 10.23 minutes. Per recommendations from survey research (Leiner, 2019), respondents who completed the survey in less than half of the median time, less than 5.12 minutes, were excluded from the analysis. This resulted in the exclusion of 83 responses. Beyond speeders, the data was also examined for outliers related to survey completion time. Two outliers were present, with an outlier being defined as someone who completed the survey outside of the allotted time on MTurk (2 hours). These two responses were excluded from the analysis. After eliminating speeders and outliers, the minimum survey completion time was 5.12 minutes, and the maximum time was 98.35 minutes. Table 3.2 depicts the data cleaning process.

Data Examination

Prior to analyses, all study variables were closely examined for distribution, spread, linearity—so that the researcher could ensure that data met the assumptions for ANOVA

⁵ It is important to note that the raw data count ($n = 2,218$) far exceeded the paid data count ($n = 1,560$). This is due to duplicate responses and inattentive responses where participants proceeded not to finish the survey and submit their response through MTurk. Only 1,560 true participants were recruited and compensated for study completion.

analyses. First, the assumption of independence of observations was met due to the between subjects study design and the elimination of any duplicate responses during data cleaning. Second, homogeneity of groups was assessed during Phase I: Main Effects Analysis through Levene's homogeneity of variances tests. For each conducted ANOVA, results from Levene's test were requested; no results were significant, suggesting homogenous distribution of study variables between the groups in each experiment. Third, the assumption of normality was examined by evaluating histograms of each mediator and outcome variable and calculating skewness and kurtosis values in SPSS. Using a standard range of acceptability between +2 and -2 for both metrics, only one variable was highly platykurtic: support for opioid-related policies. A log transformation was conducted to attempt to transform this variable, but it only exacerbated the effects.⁶

In addition to examining the assumptions underlying the study outcomes, the researcher also examined differences between experimental groups by demographic variables, including gender, ethnicity, education, and age. Chi-square tests were used to test for significant differences between 24 experimental conditions regarding gender, ethnicity, and education. A one-way ANOVA was used to test for any differences by age. No significant differences emerged, and thus no demographic covariates were included in the analysis. Table 3.3 depicts the number of participants assigned to each experimental group.

Factor Analysis

Prior to analyses, all measures not previously validated were examined using exploratory factor analysis (EFA) through principal axis factoring to assess scale dimensionality and then

⁶ This distribution is a limitation of the current measurement, and future work should seek measurement that addresses this concern.

confirmatory factor analysis (CFA) to confirm scale composition. This was done for stigma beliefs and support for opioid-related policies.

PROCESS

PROCESS is a macro that can be used in SPSS Statistical software to analyze mediation effects (Hayes, 2013). A regression-based method, PROCESS uses Ordinary Least Squares to estimate the paths needed to demonstrate mediation. Beyond those simple functions, the advantage of using PROCESS to estimate mediation effects lies in its programming of two key components: (1) bootstrapping and (2) moderated mediation. First, PROCESS is programmed to estimate bootstrapped indirect effects, already integrating the statistical calculations needed for such effects such that the researcher need not learn such programming. Second, and important in particular for the current study, PROCESS allows for the inference across multiple regression equations—an inference needed when examining conditional indirect effects, or indirect effects that only hold true for certain levels of a moderator—W (Hayes et al., 2017). In short, the SPSS PROCESS macro (Hayes, 2013) offers a strong statistical method for assessing moderated mediation and parallel mediation. While structural equation modeling (SEM) can also model the mediated relationships investigated in this study, PROCESS offers the advantage of requiring a smaller sample size and of independently estimating parameters rather than simultaneously estimating all parameters like in maximum likelihood SEM (Hayes et al., 2017). Ultimately, either method could be used for analyzing the data presented here, but PROCESS was selected for its utility given the study sample size and its estimation of indirect effects using bootstrapping. PROCESS models also offer the ability to estimate parallel mediation (cognitive and affective pathways), moderated mediation (through personal experience), and covariates (opioid type) examined in this study.

Stage I: Main Effects Analysis

Before examining indirect effects, the researcher ran a series of two-way analyses of variance tests (ANOVAs) to determine if the experimental stimuli had significant effects on all the mediators and outcomes of interest. In addition, the researcher analyzed the relationship between mediators and outcomes. While results of the manipulated covariate (opioid type) variable are reported in ANOVA tables, those results are not explored statistically due to low observed power for detecting a true interaction effect. Implications are explored in the discussion section.

H1

The first hypothesis predicted that the presence of a high stigma message feature would lead to significantly greater stigma beliefs compared to the low stigma message feature. Research Question 4 about the role of opioid type was answered throughout study hypotheses, including H1 that examined main and interactive effects of opioid type.

Mark. Results of a two-way ANOVA indicated a significant statistical effect of a stigma *mark* on stigma beliefs, $F(1, 365) = 7.801, p < .01$. with the presence of a high stigma mark leading to greater stigma beliefs ($M = 4.35$) than low stigma mark ($M = 3.96$) across all opioid types. Neither opioid type nor the interaction effect was significant (Table 3.7).

Label. Results of a two-way ANOVA indicated no significant statistical effect of a stigma *label* on stigma beliefs, $F(1, 354) = .554, p = .46$. Neither opioid type nor the interaction effect was significant (Table 3.7).

Responsibility. Results of a two-way ANOVA indicated no significant statistical effect of a stigma *responsibility* message on stigma beliefs, $F(1, 343) = 1.36, p = .42$. However, opioid type did exert a significant effect on stigma beliefs, $F(2, 343) = 5.45, p < .01$, with heroin messages exhibiting the highest stigma beliefs ($M_{highresponsibility} = 4.37, M_{lowresponsibility} = 4.01$),

followed by fentanyl messages ($M_{highresponsibility} = 4.29$, $M_{lowresponsibility} = 4.14$), and prescription opioid messages ($M_{highresponsibility} = 3.79$, $M_{lowresponsibility} = 3.68$). Post-hoc Tukey tests suggested a significant difference between prescription opioid messages and heroin messages ($difference = -.58$, $p < .01$) and prescription opioid messages and fentanyl messages ($difference = -.48$, $p < .01$). Notably, participants exposed to the *low* responsibility message in the fentanyl conditions still reported higher stigma beliefs than individuals in the *high* responsibility in the prescription opioid conditions (Table 3.7)

Peril. Results of a two-way ANOVA indicated a significant statistical effect of a stigma *peril* message on stigma beliefs, $F(1, 358) = 12.00$, $p < .05$. with the presence of a high stigma *peril* message leading to greater stigma beliefs ($M = 4.32$) than a low stigma *peril* message ($M = 3.97$) across all opioid types. Opioid type also exerted a significant main effect on stigma beliefs, $F(2, 358) = 7.63$, $p < .05$, with a similar pattern emerging as in responsibility messages. Heroin messages predicted the highest stigma beliefs ($M_{highperil} = 4.54$, $M_{lowperil} = 4.23$), followed by fentanyl messages ($M_{highperil} = 4.32$, $M_{lowperil} = 3.96$), and prescription opioid messages ($M_{highperil} = 4.10$, $M_{lowperil} = 3.68$). Post-hoc Tukey tests indicated a significant difference between prescription opioids and heroin conditions ($difference = -.49$, $p < .05$) (Table 3.7).

As such, Hypothesis 1 was confirmed for mark and peril messages, but not for label or responsibility messages.

H2

The second hypothesis predicted that stigma beliefs would be positively associated with social distance, behavioral regulation, and stigma message sharing and negatively associated with support for attitudes and opioid-related policies. This hypothesis was tested by examining a simple correlation table (Table 3.21) of all study outcomes, which revealed that stigma beliefs

were significantly and negatively associated with attitudes ($r = -.54, p < .001$), significantly and positively associated with a desire for behavioral regulation ($r = .75, p < .001$), significantly and negatively associated with support for opioid-related policies ($r = -.36, p < .001$), and significantly and positively associated with stigma message sharing ($r = .28, p < .01$). These relationships were all in the expected direction. However, stigma beliefs were not significantly associated with social distance ($r = -.09, p = .74$). Therefore, Hypothesis 2 was mostly supported except for social distance.

H3

The third hypothesis predicted that the presence of a high stigma message feature would lead to significantly greater negative affect compared to the presence of a low stigma message.

Mark. Results of a two-way ANOVA indicated a significant statistical effect of a stigma mark on negative affect $F(1, 365) = 11.60, p < .001$, with the presence of a high stigma mark leading to greater negative affect ($M = 4.85$) than a low stigma mark ($M = 4.51$) across all opioid types. Opioid type also exerted a significant statistical effect on negative affect, $F(2, 365) = 4.10, p < .05$, with follow up post-hoc Tukey comparisons indicated a significant difference between the prescription opioids and fentanyl conditions, (*Mean difference* = .35, $p < .05$). The interaction effect between opioid type and stigma mark was also significant such that high mark messages led to greater attributions of negative affect for individuals in prescription opioids and fentanyl conditions but not for the heroin condition. Table 3.8 depicts this effect, and Figure 3 (Appendix A) displays the pattern for qualitative interpretation. The low sample size in this study prevents full interpretation of this effect. Notably, prescription opioids and fentanyl messages follow the same pattern with greater stigma leading to greater negative affect. For heroin messages, this

relationship appears to dissipate, with low and high marking messages leading to nearly identical levels of negative affect (Table 3.8).

Label. Results of a two-way ANOVA indicated no significant statistical effect of a stigma *label* on stigma beliefs, $F(1, 354) = 2.37, p = .12$. Neither opioid type nor the interaction effect was significant (Table 3.8).

Responsibility. Results of a two-way ANOVA indicated no significant statistical effect of a stigma *responsibility* message on negative affect, $F(1, 343) = .06, p = .81$. Neither opioid type nor the interaction effect was significant (Table 3.8).

Peril. Results of a two-way ANOVA indicated a significant statistical effect of a stigma *peril* message on negative affect, $F(1, 358) = 4.77, p < .05$, with the presence of a high peril message leading to greater negative affect ($M = 4.65$) than a low peril message ($M = 4.42$) across all opioid types. Neither opioid type nor the interaction effect was significant (Table 3.8).

As such, Hypothesis 3 was confirmed for mark and peril messages, but not for label or responsibility messages.

H4

The fourth hypothesis predicted a series of relationships between stigma message features and discrete emotions. These results were examined using two-way ANOVAs separately for each message feature and each discrete emotion, with opioid type as the second factor in the ANOVAs. Results are reported by stigma message feature. Results are depicted in Tables 3.9 through 3.15.

Mark. Results of a series of two-way ANOVAs indicated no statistically significant effect of mark messages on any of the 7 discrete emotions explored in the study.

Label. Results of a series of two-way ANOVAs indicated no statistically significant effect of label messages on any of the 7 discrete emotions explored in the study.

Responsibility. Results of a series of two-way ANOVAs indicated no statistically significant effect of responsibility messages on any of the 7 discrete emotions explored in the study. However, a statistically significant effect did emerge for the effect of opioid type on fear: $F(2, 343) = 3.42, p < .05$, partial $\eta^2 = .02$). Post-hoc Tukey tests indicated a significant difference between the prescription opioids ($M = 2.15$) and heroin ($M = 2.75$) conditions, with individuals in the heroin conditions expressing more fear. The mean difference of .60 was significant, $p < .05$.

Peril. Results of a series of two-way ANOVAs indicated some statistically significant effects of peril messages on three emotions. The effect of peril messages on anger was significant and positive, $F(1, 358) = 4.64, p < .05$, partial $\eta^2 = .013$. The effect of peril messages on disgust was significant and positive, $F(1, 358) = 6.36, p < .05$, partial $\eta^2 = .017$. In examining the effect on disgust, opioid type also exerted significant effect on disgust, $F(2, 358) = 4.36, p < .05$, partial $\eta^2 = .024$. Post-hoc Tukey tests indicated a significant difference between prescription opioids ($M = 2.03$) and fentanyl ($M = 2.62$) conditions, with individuals in the fentanyl conditions expressing more disgust. The mean difference of .59 was significant, $p < .05$. The effect of peril messages on frustration was significant and positive, $F(1, 358) = 17.36, p < .05$, partial $\eta^2 = .016$. No statistically significant effects were found for the other emotions of fear, sympathy, sadness, or anxiety.

In sum, Hypothesis 4 was only supported for the effect of peril messages on frustration, anger, and disgust.

H5

Hypothesis 5 predicted that negative affect would be predict greater desired social distance, behavioral regulation, and stigma message sharing and less positive attitudes and support for opioid-related policies. This hypothesis was tested by examining a simple two-tailed Pearson correlation between study variables, which revealed a significant and negative association with attitudes ($r = -.53, p < .001$), a significant and negative relationship with social distance ($r = -.55, p < .001$), a significant and positive relationship with behavioral regulation ($r = .24, p < .001$), a significant and negative relationship with stigma message sharing ($r = -.10, p < .001$). However, no significant relationship was observed between negative affect and support for opioid-related policies ($r = .003, p = .92$). Therefore, Hypothesis 5 was mostly supported except for opioid-related policies.

H6

The sixth hypothesis predicted a series of relationships between discrete emotions and all five dependent variables.

Anger. Anger was correlated with all five study outcomes. Anger demonstrated a significant and negative relationship with attitudes ($r = -.18, p < .001$), a significant and positive relationship with social distance ($r = .43, p < .001$), a significant positive relationship with behavioral regulation ($r = .51, p < .001$), a significant negative relationship with support for opioid related policies ($r = -.35, p < .001$), and a significant positive relationship with stigma message sharing ($r = .53, p < .001$). The strongest relationships were with behavioral regulation and stigma message sharing, followed by social distance, opioid-related policies, and attitudes.

Anxiety. Anxiety was also correlated with all five study outcomes. Anxiety demonstrated a significant and negative relationship with attitudes ($r = -.11, p < .001$), a significant and positive relationship with social distance ($r = .37, p < .001$), a significant positive relationship

with behavioral regulation ($r = .37, p < .001$), a significant negative relationship with support for opioid related policies ($r = -.16, p < .001$), and a significant positive relationship with stigma message sharing ($r = .51, p < .001$). The strongest relationships were with stigma message sharing, social distance, and behavioral regulation, followed by opioid-related policies and attitudes.

Disgust. Disgust was also correlated with all five study outcomes. Disgust demonstrated a significant and negative relationship with attitudes ($r = -.20, p < .001$), a significant and positive relationship with social distance ($r = .43, p < .001$), a significant positive relationship with behavioral regulation ($r = .54, p < .001$), a significant negative relationship with support for opioid related policies ($r = -.33, p < .001$), and a significant positive relationship with stigma message sharing ($r = .50, p < .001$). The strongest relationships were with behavioral regulation and stigma message sharing followed by social distance, support for opioid-related policies, and attitudes.

Fear. Fear was also correlated with all five study outcomes. Fear demonstrated a significant and negative relationship with attitudes ($r = -.12, p < .001$), a significant and positive relationship with social distance ($r = .47, p < .001$), a significant positive relationship with behavioral regulation ($r = .47, p < .001$), a significant negative relationship with support for opioid related policies ($r = -.29, p < .001$), and a significant positive relationship with stigma message sharing ($r = .55, p < .001$). The strongest relationships were with stigma message sharing, behavioral regulation, and social distance followed by support for opioid-related policies and attitudes.

Frustration. Frustration was also correlated with all five study outcomes. Frustration demonstrated a significant and negative relationship with attitudes ($r = -.22, p < .001$), a

significant and positive relationship with social distance ($r = .36, p < .001$), a significant positive relationship with behavioral regulation ($r = .53, p < .001$), a significant negative relationship with support for opioid related policies ($r = -.33, p < .001$), and a significant positive relationship with stigma message sharing ($r = .49, p < .001$). The strongest relationships were with behavioral regulation and stigma message sharing followed by social distance, support for opioid-related policies, and attitudes.

Sadness. Sadness was correlated with four of five study outcomes. There was no significant relationship between sadness and attitudes ($r = -.02, p = .46$). Sadness did demonstrate significant relationships with the other four study outcomes, including a significant and positive relationship with social distance ($r = .46, p < .001$), a significant positive relationship with behavioral regulation ($r = .34, p < .001$), a significant negative relationship with support for opioid related policies ($r = -.13, p < .001$), and a significant positive relationship with stigma message sharing ($r = .53, p < .001$). The strongest relationships were with stigma message sharing and social distance followed by behavioral regulation and support for opioid-related policies.

Sympathy. Sympathy was correlated with four of five study outcomes. There was no significant relationship between sympathy and behavioral regulation ($r = -.03, p = .20$). Sadness did demonstrate significant relationships with the other four study outcomes, including a significant and positive relationship with attitudes ($r = .16, p < .001$), a significant and positive relationship with social distance ($r = .25, p < .001$), a significant positive relationship with support for opioid related policies ($r = .25, p < .001$), and a significant positive relationship with stigma message sharing ($r = .36, p < .001$). The strongest relationship was with stigma message sharing followed by social distance, support for opioid-related policies, and attitudes.

In sum, five of the seven discrete emotions (anger, anxiety, disgust, fear, frustration) in this study were correlated with all five study outcomes. Those five emotions exhibited negative relationships to attitudes, negative relationships to social distance (such that increased emotional experiences led to more desire for social distance), positive relationships to behavioral regulation, negative relationships to support for opioid-related policies, and positive relationships to stigma message sharing. Sadness followed this pattern as well, with the exception that sadness was not correlated with attitudes. Finally, sympathy was correlated with all study outcomes except for behavioral regulation. Importantly, sympathy's association to study outcomes was not always in the same direction as the other discrete emotions. Similar to the other emotions, sympathy was positively correlated with social distance and stigma message sharing. Opposite the other emotions, sympathy was positively associated with support for opioid-related policies and attitudes, such that more sympathy led to more support for these policies and more positive attitudes. Hypothesis 6 was partially supported, with unexpected findings for sadness and sympathy.

RQ1

To answer the first research question comparing stigma messages to one another a series of analyses of covariance (ANCOVAs) were run to compare stigma messages. Stigma message feature (mark, label, responsibility, peril) was entered as the independent variable, with stigma level (high, low) and opioid type both as covariates to control for these variables. Separate ANCOVAs were conducted for stigma beliefs, negative affect, and each of the seven discrete emotions. The only significant ANCOVA that emerged was for the influence of stigma type on *negative affect*, $F(3, 1438) = 5.91, p < .001$, partial $\eta^2 = .012$. While Tukey tests did not allow for pairwise comparisons due to the covariates in the model, the general pattern of affects appeared

such that mark messages led to the greatest negative affect ($M = 4.69$), followed by peril messages ($M = 4.52$), label messages ($M = 4.48$), and responsibility messages ($M = 4.36$).

The ANCOVA for *stigma beliefs* was not significant, $F(3, 1438) = .21, p = .89$, partial $\eta^2 = .00$), nor was the ANCOVA for *anger* ($F(3, 1438) = .95, p = .41$, partial $\eta^2 = .00$), *disgust* ($F(3, 1438) = .46, p = .71$, partial $\eta^2 = .00$), *fear* ($F(3, 1438) = .40, p = .75$, partial $\eta^2 = .00$), *frustration* ($F(3, 1438) = .11, p = .96$, partial $\eta^2 = .00$), *sympathy* ($F(3, 1438) = .22, p = .88$, partial $\eta^2 = .00$) *sadness* ($F(3, 1438) = .94, p = .42$, partial $\eta^2 = .00$), or *anxiety* ($F(3, 1438) = .15, p = .93$, partial $\eta^2 = .00$).

Outcome Effects

To determine what effect, if any, stigma messages have directly on study outcomes before proceeding with indirect effects analyses, a series of two-way ANOVAs, with stigma message feature and opioid type as the independent variables, were conducted for each stigma message feature on each of the five dependent variables: attitudes, social distance, behavioral regulation, support for opioid-related policies, and stigma message sharing. These results are reported in Tables 3.16 through 3.20.

Mark. Mark messages significantly predicted three of five study outcomes: attitudes, social distance and behavioral regulation. First, mark messages were a significant predictor of attitudes, $F(1, 365) = 8.71, p < .01$, partial $\eta^2 = .023$. Mark messages also significantly predicted social distance ($F(1, 365) = 13.23, p < .001$, partial $\eta^2 = .035$) and behavioral regulation ($F(1, 365) = 12.61, p < .001$, partial $\eta^2 = .033$). However, mark messages did not significantly predict support for opioid-related policies ($F(1, 365) = .09, p = .76$) or stigma message sharing ($F(1, 365) = .10, p = .75$).

Label. Label messages did not significantly predict any of the five study outcomes.

Responsibility. Responsibility messages significantly predicted a single outcome: stigma message sharing. High responsibility messages led to less stigma message sharing ($M = 3.66$) than low responsibility messages ($M = 4.13$), $F(1, 343) = 5.12$, $p < .05$, $\eta^2 = .015$. This relationship was observed in the opposite direction as expected. Additionally, for two of the five two-way ANOVAs, opioid type did exert a significant main effect on relevant outcomes. First, opioid type exerted a main effect on attitudes, $F(1, 343) = 3.15$, $p < .05$, partial $\eta^2 = .018$. Post-hoc Tukey tests revealed a significant difference in attitudes between prescription opioids messages ($M = 3.93$) and heroin messages ($M = 4.01$). This mean difference of .32 was significant, $p < .05$. Second, the same pattern emerged for behavioral regulation, with opioid type significantly affecting this outcome, $F(1, 343) = 4.81$, $p < .01$, partial $\eta^2 = .027$. Post-hoc Tukey tests revealed a significant difference in behavioral regulation between prescription opioids messages ($M = 3.68$) and heroin messages ($M = 4.27$). This mean difference of .59 was significant, $p < .01$.

Peril. Peril messages significantly predicted two of five study outcomes, including attitudes and support for opioid-related policies. High peril messages led to less positive attitudes ($M = 3.42$) than low peril messages ($M = 3.66$), $F(1, 358) = 4.81$, $p < .05$, $\eta^2 = .013$. High peril messages also led to less support for opioid-related policies ($M = 6.10$) than low peril messages ($M = 6.33$), $F(1, 357) = 4.74$, $p < .03$, $\eta^2 = .013$.

Message Comparisons. Finally, to examine what differential effects stigma messages features may have had on outcomes, another series of ANCOVAs were conducted with stigma message feature (mark, label, responsibility, and peril) as the independent variable in each, with stigma level (high, low) and opioid type as covariates. Results revealed two significant results, for attitudes ($F(3, 1438) = 6.43$, $p < .001$, partial $\eta^2 = .013$) and social distance ($F(3, 1438) =$

10.23, $p < .001$, partial $\eta^2 = .021$). While no post-hoc Tukey tests could be conducted, descriptive statistics suggested that mark messages led to the least positive attitudes ($M = 3.48$), followed by peril messages ($M = 3.54$), label messages ($M = 3.66$), and responsibility messages ($M = 3.79$). The pattern for social distance was similar, with mark messages leading to the most desire for social distance ($M = 2.85$), followed by label messages ($M = 3.30$), peril messages ($M = 3.32$), and responsibility messages ($M = 3.52$).

No significant results emerged when comparing the effects of stigma message features on behavioral regulation ($F(3, 1436) = 1.86$, $p = .13$, partial $\eta^2 = .00$), support for opioid-related policies ($F(3, 1436) = 1.49$, $p = .22$, partial $\eta^2 = .00$), or stigma message sharing ($F(3, 1435) = 1.47$, $p = .22$, partial $\eta^2 = .00$).

Summary of Main Effect Results. Preliminary results from main effects analyses revealed that mark and peril messages exhibit the strongest effects on both key mediators – stigma beliefs and negative affect. Peril messages also directly influenced three discrete emotions: anger, disgust, and frustration. Alternatively, label and responsibility messages did not exert an effect on any of these mediators. When examining stigma message effects directly on dependent variables, mark messages significantly affected attitudes, social distance, and behavioral regulation. Responsibility messages only influenced stigma message sharing. Peril messages influenced attitudes and support for opioid-related policies. Label messages demonstrated no effect on any dependent variables.

In terms of mediator relationships, simple correlations suggest that stigma beliefs were related in the expected direction to all dependent variables except for social distance, for which no relationship emerged. Negative affect was related in the expected direction to four of five dependent variables, as negative affect was not significantly related to support for opioid-related

policies. Discrete emotions were all correlated with all five outcomes, except for sympathy and behavioral regulation. Negative emotions (anger, disgust, frustration, fear, sadness, anxiety) all harmed behavioral outcomes and social distance (i.e., led to greater desire for social distance, more desire for behavioral regulation, less support for policies, and more stigma message sharing), but notably (and unexpectedly) were associated with more positive overall attitudes. Sympathy was associated with more positive attitudes, more desire for social distance, more support for opioid-related policies, and more stigma message sharing.

Stage 2: Indirect Effects Analysis

The results of the analyses in Stage 1 offered insight into the needed types of indirect effects to be examined. In the situation where a message predicted *no* mediating variables and *no* dependent variables, that relationship was not further assessed using a test of indirect effects.⁷ This applied to labeling and responsibility messages specifically, as those messages exhibited zero effects on any examined study variables with the exception of responsibility's effect on stigma message sharing. This relationship is subsequently explored through mediation pathways in the current results section. Mediation analyses were assessed using parallel mediation via Hayes PROCESS Model 4 in SPSS, with bootstrapping ($n = 5,000$) to produce 95% confidence intervals for the estimation of effects. H7, H8, RQ2, H9 are all examined through parallel mediation since these analyses control for the effect of the other mediator when examining them through dual pathways. Hypotheses 7, 8, and 9 were tested simultaneously using parallel mediation with stigma beliefs and negative affect as the dual mediators on each relevant outcome, and RQ2 was answered using a similar method with each discrete emotion in its own

⁷ To confirm this assumption, the researcher conducted indirect analyses for those relationships and found no significant findings. Results are subsequently not reported.

parallel mediation model with stigma beliefs. The base level regression equations for each of these hypotheses is also pictured below, where Y is equal to the outcome variable, i is equal to the relevant intercept, U_1 and U_2 represent values of the covariate (opioid type) entered as dummy variables (e.g., for two of the three levels), and e represents an error term.

$$Y = i_y + c'X + b_1M_1 + b_2M_2 + b_3U_1 + b_4U_2 + e$$

$$M = i_M + a_1X + a_2X + a_3U_1 + a_4U_2 + e$$

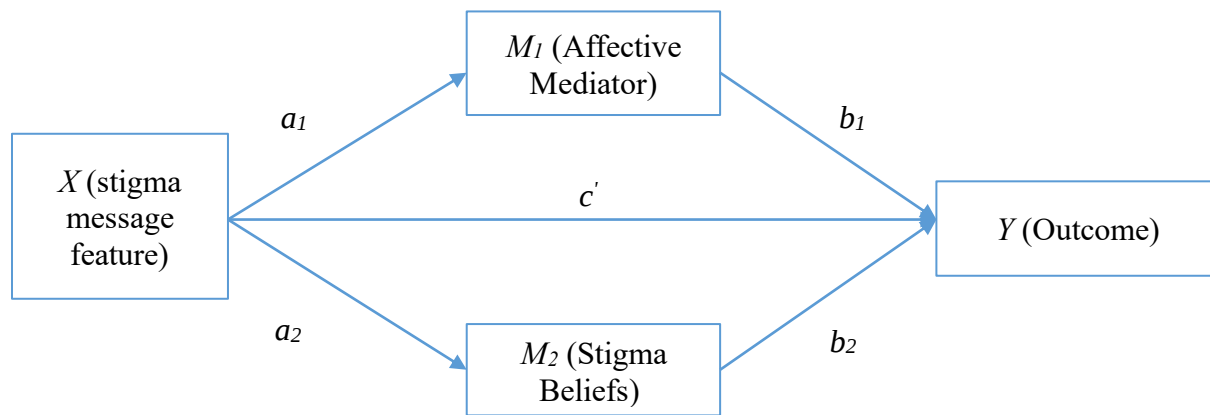


Figure 4. Indirect Effects Model

H7

Hypothesis 7 predicted that each stigma message feature would have a significant indirect effect on each of the five dependent variables through stigma beliefs.

H8

Hypothesis 8 predicted that each stigma message feature would have a significant indirect effect on each of the five dependent variables through negative affect.

H9

The next hypothesis predicted dual belief and affective pathways.

Mark. Mark messages were subjected to five analyses, one for each study outcome. In these analyses, opioid type was added as a covariate given Phase I Results suggesting the significance of opioid type in predicting negative affect. First, the indirect effects of mark messages on attitudes were assessed. Results suggested that mark messages exerted a significant total indirect effect on attitudes, $b = -.26$, $p < .05$, and that the indirect effect through both stigma beliefs, $b = -.13$, and negative affect, $b = -.13$, were significant, $p < .05$. Mark messages did not exert a significant direct effect on attitudes in this model, $b = -.05$, $p = .58$. The total model explained a significant portion of the variance in attitudes ($R^2 = .44$, $p < .001$).

The second model examined mediation of social distance. Results suggested that mark messages exerted a significant total indirect effect on attitudes, $b = -.27$, $p < .05$, and that the indirect effect through both stigma beliefs, $b = .06$, and negative affect, $b = -.33$, were significant. Mark messages also exerted a significant direct effect on social distance, $b = -.33$, $p < .05$. The total model explained a significant portion of the variance in social distance ($R^2 = .38$, $p < .001$).

The third model examined dual mediation of behavioral regulation. Results suggested that mark messages exerted a significant total indirect effect on behavioral regulation, $b = .33$, $p < .05$, and that the indirect effect through stigma beliefs was significant, $b = .29$, $p < .05$. However, the indirect through negative affect was no longer significant in this dual mediation model, $b = .03$, $p > .05$, though it was significant when examined only in a single mediation model. Mark messages also exerted a significant direct effect on behavioral regulation, $b = .23$, $p < .05$. The total model explained a significant portion of the variance in behavioral regulation ($R^2 = .53$, $p < .001$).

The fourth model examined support for opioid-related policies. Results suggested that the total indirect effect of mark messages on support for opioid-related policies was not significant, $b = -.07, p > .05$. The indirect through stigma beliefs was significant, $b = -.10, p < .05$, but the indirect effect through negative affect was not, $b = .03, p > .05$. Mark messages did not exert a significant direct effect on support for opioid-related policies, $b = .11, p = .28$. The total model explained a significant portion of the variance in support for opioid-related policies ($R^2 = .13, p < .001$).

The fifth model examined stigma message sharing. Results suggested that the total indirect effect of mark messages on stigma message sharing was not significant, $b = .08, p > .05$. The indirect through stigma beliefs was significant, $b = .14, p < .05$, but the indirect effect through negative affect was not, $b = -.06, p > .05$. Mark messages did not exert a significant direct effect on stigma message sharing, $b = -.14, p = .46$. The total model explained a significant, but comparatively small, portion of the variance in stigma message sharing ($R^2 = .08, p < .001$).

Peril. The same series of dual pathways analyses were conducted with peril messages, entering opioid type as a covariate to control for its effects. First, the indirect effects of peril messages on attitudes were assessed. Results suggested that peril messages exerted a significant total indirect effect on attitudes, $b = -.21, p < .05$, and that the indirect effect through both stigma beliefs, $b = -.12$, and negative affect, $b = -.09$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on attitudes in this model, $b = -.04, p = .66$. The total model explained a significant portion of the variance in attitudes ($R^2 = .50, p < .001$).

Second, the indirect effects of peril messages on social distance were assessed. Results suggested that the total indirect effect for peril messages on social distance was not significant,

$b = -.18, p > .05$. However, the indirect effect through both stigma beliefs, $b = .06$, and negative affect, $b = -.14$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on social distance in this model, $b = -.02, p = .91$. The total model explained a significant portion of the variance in social distance ($R^2 = .34, p < .001$).

Third, the indirect effects of peril messages on behavioral regulation were assessed. Results suggested that peril messages exerted a significant total indirect effect on behavioral regulation, $b = .31, p < .05$. The indirect effect through stigma beliefs, $b = .31$ was also significant, but the indirect effect through negative affect was not, $b = .004, p < .05$. Peril messages did not exert a significant direct effect on behavioral regulation in this model, $b = .01, p = .96$. The total model explained a significant portion of the variance in behavioral regulation ($R^2 = .63, p < .001$).

Fourth, the indirect effects of peril messages on support for opioid-related policies were assessed. Results suggested that the total indirect effect of peril messages on support for opioid-related policies was not significant, $b = -.06, p > .05$, but that the indirect effect through both stigma beliefs, $b = -.10$, and negative affect, $b = .04$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on support for opioid-related policies in this model, $b = -.16, p = .10$. The total model explained a significant portion of the variance in support for opioid-related policies ($R^2 = .15, p < .001$).

Fifth, the indirect effects of peril messages on stigma message sharing were assessed. Results suggested that the total indirect effect of peril messages on stigma message sharing was not significant, $b = .04, p > .05$, but that the indirect effect through both stigma beliefs, $b = .14$, and negative affect, $b = -.10$, were significant, $p < .05$. Peril messages did not exert a significant

direct effect on stigma message sharing in this model, $b = .06$, $p = .74$. The total model explained a significant but small portion of the variance in stigma message sharing ($R^2 = .03$, $p < .01$).

Results suggested partial support for Hypothesis 7, indicating that stigma beliefs mediated the relationship between mark messages and all five outcomes and between peril messages and all outcomes aside from behavioral regulation. For Hypothesis 8, results also indicated partial support, suggesting that negative affected mediated only the relationship from mark messages to attitudes and social distance and from peril messages to all outcomes aside from behavioral regulation. Results from testing Hypothesis 9 suggested dual mediation for mark messages on attitudes and social distance and dual mediation for peril messages on attitudes, social distance, support for opioid-related policies, and stigma message sharing.

RQ2

The second research question inquired about the indirect effects between each of the stigma message features and outcomes based on discrete emotions. Since preliminary ANOVA analyses revealed no effect of mark, label, or responsibility messages on discrete emotions, those follow up mediation analyses were not conducted. Only peril messages were subject to an indirect effects analysis with anger, disgust, and frustration—the three significant emotions from Phase I Analysis—entered as parallel mediators alongside stigma beliefs.

Anger. First, the indirect effects of peril messages on *attitudes* were assessed through anger and stigma beliefs. Results suggested that peril messages did not exert a total indirect effect on attitudes, $b = -.13$, $p > .05$, but that the indirect effect through both stigma beliefs, $b = -.20$, and anger, $b = .06$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on attitudes in this model, $b = -.11$, $p = .20$. The total model explained a significant portion of the variance in attitudes ($R^2 = .44$, $p < .001$).

Second, the indirect effects of peril messages on social distance were assessed through anger and stigma beliefs. Results suggested that peril messages did not exert a significant total indirect effect on social distance, $b = .06, p > .05$, but that the indirect effect through both stigma beliefs, $b = -.24$, and anger, $b = .30$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on social distance in this model, $b = -.26, p = .66$. The total model explained a significant portion of the variance in social distance ($R^2 = .41, p < .001$).

Third, the indirect effects of peril messages on behavioral regulation were assessed through anger and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on behavioral regulation, $b = .32, p < .05$, and that the indirect effect through both stigma beliefs, $b = .28$, and anger, $b = .04$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on behavioral regulation in this model, $b = -.01, p = .95$. The total model explained a significant portion of the variance in behavioral regulation ($R^2 = .64, p < .001$).

Fourth, the indirect effects of peril messages on support for opioid-related policies were assessed through anger and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on support for opioid-related policies, $b = -.10, p < .05$, and that the indirect effect through both stigma beliefs, $b = -.05$, and anger, $b = -.05$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on support for opioid-related policies in this model, $b = -.12, p = .22$. The total model explained a significant portion of the variance in support for opioid-related policies ($R^2 = .17, p < .001$).

Finally, the indirect effects of peril messages on stigma message sharing were assessed through anger and stigma beliefs. Results suggested that peril messages did not exert a significant total indirect effect on stigma message sharing, $b = .19, p > .05$, but that the indirect

effect through anger, $b = .25$, was significant, $p < .05$. The indirect effect through stigma beliefs was not significant, $b = -.06$, $p > .05$. Peril messages did not exert a significant direct effect on stigma message sharing in this model, $b = .10$, $p = .59$. The total model explained a significant portion of the variance in stigma message sharing ($R^2 = .28$, $p < .001$).

Disgust. First, the indirect effects of peril messages on *attitudes* were assessed through disgust and stigma beliefs. Results suggested that peril messages did not exert a total indirect effect on attitudes, $b = -.12$, $p > .05$, but that the indirect effect through both stigma beliefs, $b = -.21$, and disgust, $b = .09$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on attitudes in this model, $b = -.13$, $p = .14$. The total model explained a significant portion of the variance in attitudes ($R^2 = .45$, $p < .001$).

Second, the indirect effects of peril messages on social distance were assessed through disgust and stigma beliefs. Results suggested that peril messages did not exert a significant total indirect effect on social distance, $b = .12$, $p > .05$, but that the indirect effect through both stigma beliefs, $b = -.27$, and disgust, $b = .39$, were significant, $p < .05$. Peril messages also exerted a significant direct effect on social distance in this model, $b = -.31$, $p < .05$. The total model explained a significant portion of the variance in social distance ($R^2 = .44$, $p < .001$).

Third, the indirect effects of peril messages on behavioral regulation were assessed through disgust and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on behavioral regulation, $b = .33$, $p < .05$, and that the indirect effect through both stigma beliefs, $b = .28$, and disgust, $b = .05$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on behavioral regulation in this model, $b = -.01$, $p = .90$. The total model explained a significant portion of the variance in behavioral regulation ($R^2 = .64$, $p < .001$).

Fourth, the indirect effects of peril messages on support for opioid-related policies were assessed through disgust and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on support for opioid-related policies, $b = -.10$, $p < .05$, and that the indirect effect through both stigma beliefs, $b = -.06$, and disgust, $b = -.49$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on support for opioid-related policies in this model, $b = -.12$, $p = .22$. The total model explained a significant portion of the variance in support for opioid-related policies ($R^2 = .15$, $p < .001$).

Finally, the indirect effects of peril messages on stigma message sharing were assessed through disgust and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on stigma message sharing, $b = .22$, $p < .05$, and that the indirect effect through disgust, $b = .30$ and stigma beliefs, $b = -.08$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on stigma message sharing in this model, $b = -.12$, $p = .47$. The total model explained a significant portion of the variance in stigma message sharing ($R^2 = .29$, $p < .001$).

Frustration. First, the indirect effects of peril messages on *attitudes* were assessed through frustration and stigma beliefs. Results suggested that peril messages did not exert a total indirect effect on attitudes, $b = -.13$, $p > .05$, but that the indirect effect through both stigma beliefs, $b = -.20$, and frustration, $b = .06$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on attitudes in this model, $b = -.11$, $p = .20$. The total model explained a significant portion of the variance in attitudes ($R^2 = .42$, $p < .001$).

Second, the indirect effects of peril messages on social distance were assessed through frustration and stigma beliefs. Results suggested that peril messages did not exert a significant total indirect effect on social distance, $b = .08$, $p > .05$, but that the indirect effect through both

stigma beliefs, $b = -.22$, and frustration, $b = .30$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on social distance in this model, $b = -.28$, $p > .05$. The total model explained a significant portion of the variance in social distance ($R^2 = .32$, $p < .001$).

Third, the indirect effects of peril messages on behavioral regulation were assessed through frustration and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on behavioral regulation, $b = .33$, $p < .05$, and that the indirect effect through both stigma beliefs, $b = .28$, and disgust, $b = .05$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on behavioral regulation in this model, $b = -.01$, $p = .90$. The total model explained a significant portion of the variance in behavioral regulation ($R^2 = .64$, $p < .001$).

Fourth, the indirect effects of peril messages on support for opioid-related policies were assessed through frustration and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on support for opioid-related policies, $b = -.11$, $p < .05$, and that the indirect effect through both stigma beliefs, $b = -.05$, and frustration, $b = -.06$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on support for opioid-related policies in this model, $b = -.11$, $p = .24$. The total model explained a significant portion of the variance in support for opioid-related policies ($R^2 = .17$, $p < .001$).

Finally, the indirect effects of peril messages on stigma message sharing were assessed through frustration and stigma beliefs. Results suggested that peril messages exerted a significant total indirect effect on stigma message sharing, $b = .20$, $p < .05$, and that the indirect effect through frustration, $b = .25$ and stigma beliefs, $b = -.05$, were significant, $p < .05$. Peril messages did not exert a significant direct effect on stigma message sharing in this model, $b = -.10$, $p = .58$.

The total model explained a significant portion of the variance in stigma message sharing ($R^2 = .24, p < .001$).

Figures 5 through 10 depict the indirect effects that were significant in models where the total indirect effect of the model was also significant.

Stage 3: Moderation and Conditional Indirect Effects

Before examining moderation and conditional indirect effects of the moderator, a series of one-way ANOVAs were conducted to gain preliminary insight into whether group experience affected study mediators and dependent variables. Results indicated that an individual's experience directly affected *every single* mediator and dependent variable explored in this study, and group differences emerged between all 3 groups of the variable: personal experience (i.e., the respondent reports having had an OUD), affiliate experience (i.e., a family member or close friend has had an OUD), and no experience. Results are reported in Table 4.1.

H10 & RQ3

First, to examine the role of group identification in moderating the relationship between stigma messages and discrete emotions, a series of two-way ANCOVAs, with opioid type as the covariate, were conducted with group identification and the stigma message feature as the two factors, opioid type as a covariate, and the relevant discrete emotion as the outcome. These findings are reported by the relevant discrete emotion. Hypothesis 10 argued for a moderating role of group identification between each stigma message feature and each discrete emotion with the exception of sympathy. For disgust, anger, frustration, and anxiety, it was hypothesized that stigma messages would lead to more emotional experiences among these feelings for individuals with personal experience with OUDs and less emotions among those with no OUD experiences. RQ3 sought to determine (a) if group identification moderated the relationship between each

stigma message feature and sympathy, (b) if group identification moderated the relationship between each stigma message feature and negative affect, and (c) if group identification moderated the relationship between each stigma message feature and stigma beliefs.

Anger. First, the relationship between mark messages and anger moderated by group identification was examined. This relationship was predicted such that individuals with experience with OUDs would experience greater anger when exposed to the high stigma mark message. Results revealed no significant moderation, $F(2, 364) = .76, p = 0.47$. The same relationship was hypothesized between label messages and anger. This relationship was also nonsignificant, $F(2, 353) = .07, p = .93$. No significant moderation effects were found either for responsibility ($F(2, 342) = .81, p = .45$) or peril messages ($F(2, 357) = 4.96$).

Disgust. The same four ANCOVAs were conducted with disgust as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = 1.51, p = .22$), label messages ($F(2, 353) = .25, p = .78$), responsibility messages ($F(2, 342) = .74, p = .48$), or peril messages ($F(2, 357) = .98, p = .34$).

Frustration. The same four ANCOVAs were conducted with frustration as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = .78, p = .46$), label messages ($F(2, 353) = .24, p = .79$), responsibility messages ($F(2, 342) = .64, p = .53$), or peril messages ($F(2, 357) = 2.80, p = .06$).

Anxiety. The same four ANCOVAs were conducted with anxiety as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = 1.90, p = .15$), label messages ($F(2, 353) = .39, p = .68$), responsibility messages ($F(2, 342) = .13, p = .87$), or peril messages ($F(2, 357) = 1.95, p = .14$).

Fear. The same four ANCOVAs were conducted with fear as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = 1.18, p = .31$), label messages ($F(2, 353) = 1.32, p = .27$), responsibility messages ($F(2, 342) = .29, p = .75$), or peril messages ($F(2, 357) = 2.23, p = .11$).

Sadness. The same four ANCOVAs were conducted with sadness as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = 2.98, p = .052$), label messages ($F(2, 353) = .98, p = .38$), responsibility messages ($F(2, 342) = .49, p = .61$), or peril messages ($F(2, 357) = 1.38, p = .25$).

Negative Affect. The same four ANCOVAs were conducted with negative affect as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = .38, p = .68$), label messages ($F(2, 353) = .14, p = .87$), responsibility messages ($F(2, 342) = .55, p = .58$), or peril messages ($F(2, 357) = 1.16, p = .32$).

Stigma Beliefs. The same four ANCOVAs were conducted with stigma beliefs as the outcome. There were no significant moderation effects for mark messages ($F(2, 364) = .24, p = .79$), label messages ($F(2, 353) = .37, p = .69$), responsibility messages ($F(2, 342) = 1.93, p = .15$), or peril messages ($F(2, 357) = .25, p = .78$).

Hypothesis 10 was subsequently unsupported, and Research Question 3 revealed no additional interactive effects of group identification on sympathy, negative affect, or stigma beliefs.

Finally, a series of conditional indirect effects analyses were conducted to determine the impact of experience with opioids on the mediated relationships found in the indirect effects analysis. Conditional effects were examined using PROCESS Model 7 and parallel mediation. Given that the sample size of each experiment is not ideal for power analyses, where a sample

size of 500 would be desired (Preacher et al., 2007), the researcher provides implications and limitations of this analysis in the discussion section.

H11

Personal experience with opioids was hypothesized to moderate the indirect effect between stigma message features and study outcomes, mediated by negative affect and each of the 7 discrete emotions, such that indirect effect will be more pronounced among individuals who have personal experience with an OUD as opposed to those with no experience with OUDs.

Mark. Mark messages were subject to conditional indirect analyses for each study outcome in a series of models, including dual mediation through negative affect and belief where experience was run as a moderator between the message and negative affect only. In all of these models, no significant conditional indirect effects emerged (Table 4.2) The researcher also examined the model to see if any conditional indirect effects existed for the relationship between stigma messages and stigma beliefs. No effects emerged from these analyses either (Table 4.2). No dual mediation analyses with discrete emotions were subject to conditional effects analysis because of the lack of significance of the single mediation analyses.

Peril. Peril messages were subject to conditional indirect effects analyses through the same series of models as mark messages with the addition of three discrete emotion models: frustration, anger, and disgust since those mediation models were significant in Phase 2. No significant conditional indirect effects emerged for the mediation models with negative affect and stigma beliefs. However, the discrete emotion analyses did illuminate a pattern of conditional indirect effects that was significant for specific emotions and outcomes.

First, anger was run through dual mediation analyses with each of the five outcomes. The overall conditional indirect effect was significant for all five study outcomes. Opioid type was a

covariate in all models, and dual mediation was run to allow for maximum understanding of any possible effects. Overall results did not change when single mediation was run (these results are not reported due to similarity of findings). When examining anger as a mediator and attitudes as an outcome, a significant conditional indirect effect emerged between peril and attitudes through anger; the indirect effect was significant and *positive* ($b = .14, p < .05$) only for individuals with affiliate experience with OUDs (i.e., through a family member or close friend). This overall positive effect was in the opposite direction as would be expected such that for these individuals who have had a friend or family member have an OUD, high peril messages led to more positive attitudes through increased feelings of anger. The same pattern emerged for the second attitudinal outcome: social distance. This indirect effect was only significant for people with affiliate experience with OUDs, $b = .62, p < .05$. Third, the conditional indirect effect was similarly significant in the behavioral regulation model, emerging as significant only for individuals with affiliate experience with OUDs ($b = .08, p < .05$), such that individuals with a friend or family with an OUD expressed greater desire for behavioral regulation when exposed to peril messages through feelings of anger. Fourth, the conditional indirect effect for support for opioid-related policies was significant only for individuals with a friend or family member who has had an OUD ($b = -.11, p < .05$) such that among these individuals, high peril messages led to less support for opioid-related policies through increased feelings of anger. Finally, the conditional indirect effect to stigma message sharing was significant only for this same group. For individuals with affiliate experience with an OUD, high peril messages led to a greater likelihood stigma message sharing of the message through increased feelings of anger ($b = .50, p < .05$). All results for these analyses are reported in Table 4.3.

The same analyses were run with disgust in a dual mediation model with stigma beliefs, and no significant moderated mediation effects were observed. While the same pattern occurred for individuals with affiliate experience with OUDs (Table 4.4), the overall conditional effect was insignificant.

Finally, these analyses were conducted through dual mediation with frustration alongside beliefs as the mediator. The same pattern emerged for frustration that had emerged for anger, with group experience with OUDs repeating the same pattern of conditional effects. This effect consistently and significantly ($p < .05$) emerged only for individuals with affiliate experience with OUDs, for all five outcomes, including attitudes ($b = .13$), social distance ($b = .65$), behavioral regulation ($b = .11$), support for opioid-related policies ($b = -.13$), and stigma message sharing ($b = .55$). Table 4.5 includes all statistical information.

RQ5

Finally, the correlation table answers RQ5, suggesting that all negatively valenced emotions, including negative affect, were positively related to stigma beliefs, whereas sympathy was negatively associated with stigma beliefs.

Chapter 9: Discussion

Opioid stigma continues to deter health efforts (Buchman et al., 2017). As rates of overdose and death continually rise (WONDER, 2020), the communication we use to talk about opioid use disorders remains crucial. While stigmatizing news articles about OUDs have varied in number over the last two decades (McGinty et al., 2015 2019b), the effects stigma messages have on individuals with OUDs have not. Stigma toward people with OUDs has been connected to greater anxiety and depression and lower help-seeking and health behaviors (Akdag et al., 2018; Kulesza et al., 2017; von Hippel et al., 2018) These effects grow more worrisome as the media landscape becomes more saturated and the possibility of stigma spread grows. Researchers must subsequently study the mechanisms and outcomes of stigma message effects.

The current study investigated an identity-based dual process model of stigma message effects (the I-MISC) wherein stigma messages influence stigma-related outcomes through affective and/or cognitive mediators. The pilot study was used to inform the main study, and only the main study results are discussed in this section. The study also examined the role of group identification, measured by an individual's experience with OUDs, and the type of OUD (e.g., prescription opioids, fentanyl, heroin) as influential factors in the stigma message effects model. Results of a between subjects online experiment indicated that mark and peril stigma messages exerted the strongest influence on stigma-related mediators and outcomes. Stigma marks, messages that visualize a person as having an OUD, and stigma peril messages, messages that discuss an OUD's consequences on others, exerted direct and indirect effects on stigma-related outcomes. Tests of moderated mediation also revealed that the mediated effect through anger of peril messages on all five study outcomes was conditional based on an individual's experience with OUDs. Additional conditional effects were observed for peril's mediated path to

specific outcomes through frustration and disgust. Finally, a preliminary investigation of the role of opioid type on stigma message effects did not reveal interactive effects but did suggest significant differences among levels of study variables based on the type of opioid investigated in the experiment. Detailed results, implications, limitations, and future directions are discussed in the current section.

The Different Stigma Message Features

Results suggest that mark messages exerted a strong influence on stigma-related outcomes, primarily through stigma beliefs and negative affect. First, without a consideration of mediation, mark messages directly influenced beliefs, negative affect, attitudes, social distance, and behavioral regulation – meaning these messages exerted significant direct effects on three of five study outcomes when examining only the outcomes. Mediation analyses further revealed that mark messages exerted significant indirect effects on all five study outcomes, through stigma beliefs and/or negative affect. First, both stigma beliefs and negative affect dually mediated the effects of mark messages on attitudinal outcomes—including overall attitudes and social distance. Even when controlling for the other mediator through the parallel mediation analyses, each of these variables were responsible for indirect effects to these attitudinal outcomes. This finding is not surprising given past research suggesting that stigmatizing portrayals of groups can lead to the development of stigma beliefs (Smith, 2014) and overall negative affect toward the group (Puhl et al., 2013). In addition, mark messages *still* exerted a direct effect on social distance even in the dual pathways analyses. This speaks to the power of such stigmatizing portrayals in creating desired distance from the stigmatized group and affirms past research finding this direct effect (Ledford et al., 2021).

Mark messages also indirectly influenced behavioral regulation through stigma beliefs exclusively. While mark messages also exerted a significant indirect effect through beliefs on support for opioid-related policies and stigma message sharing, the total indirect effect in these models was ultimately insignificant. For behavioral regulation, however, this finding is interesting given that no affective mediators influenced such a relationship. The desire for behavioral intervention or isolation has been examined extensively in past MSC research (Smith, 2012; 2014; Smith et al., 2019, Smith et al., 2020). The goal of a mark is to lead to removal and isolation (Smith et al., 2020). Theoretically, this process has been considered to occur through disgust-evoking visual cues (Jones et al., 1984). This study, however, demonstrates that visual cues can be communicated textually without inducing disgust and still lead to those isolation effects. The experimental manipulation in this study used “unkempt” and “unclean” to describe the individual with an OUD in the high stigma mark condition. While stigmatizing, these depictions are not obviously disgust-evoking, and the statistical results of the experiment affirm this finding. What this finding offers for stigma communication theory, then, is an observation that stigma marks can use subtle markers to signify differences that still lead to isolation. These differences may be tied to larger stigma beliefs people hold (e.g., socioeconomic class stigma), and future research should investigate the ways that stigma marks can influence stigma beliefs and behavioral regulation through different types of stigma marks—namely visible, subtle, or those requiring disclosure. The ultimate practical implication of this finding speaks to the power of mental images. With only words at its disposal, the news article’s use of the words “unkempt” and “unclean” triggered a stigmatizing belief-based and behavioral response among study participants. Health journalists, practitioners, and other stakeholders should therefore exert great care with the images and words they use to portray people with OUDs.

Label messages demonstrated no significance in the current study, a finding contrary to prior literature and perplexing upon initial examination. Labels, or stigma messages that group an individual with those like them and dehumanize in the process, are a commonly manipulated feature in opioid stigma research and stigma research more broadly (Goodyear et al., 2018; Kelly & Westerhoff, 2010). The manipulation of this feature is incredibly straightforward in the opioid context: an “addict” (high stigma) versus “a person with an Opioid Use Disorder” (low stigma). Previous opioid stigma message studies have found that stigma labels do affect emotions and cognitions (Ashford et al., 2018; Goodyear et al., 2018; Kelly & Westerhoff, 2010). Still yet, the present study found no evidence. There are a number of possible explanations for this finding. First, of primary importance is the failed manipulation check of the label message. Though high stigma labels called the character in the news story, Sam, an “addict,” and low stigma labels named him a “person with an Opioid Use Disorder,” levels of perceived labeling across both high and low stigma conditions were not significantly different and were well above the midpoint of the labeling scale. While the failed manipulation check is an obvious explanation for this finding, the reason for this failed check is important. Particularly considering past research that demonstrated no difficulty in manipulating this feature, including the researcher’s own past work (Ledford et al., 2021) and a systematic review of opioid stigma label’s effects (Werder et al., 2022), two possible explanations are offered.

Initially, it could be possible that differences in group identification led to such a null effect. Indeed, past research has suggested that individuals with OUDs prefer terms considered publicly stigmatizing like “addict,” whereas outgroup members should use person-first language (see Werder et al., 2022). The researcher ran a series of follow-up analyses to test this hypothesis, including a series of one-way ANCOVAs with label messages as the independent

variable, experience with OUDs as the covariate, and each mediator and outcome in separate models. None of these was significant, suggesting that experience with OUDs was not suppressing any potential findings. Some recent research may help dissect this surprising lack of result through a different explanation. In a recent study, Smith et al. (2020) found evidence that label messages, while exerting no direct effects on behavioral regulation or affect or beliefs, did interact with mark messages and responsibility messages (separately) to influence perceptions of dangerousness. The authors comment on the relative strength of etiology (responsibility) and peril messages in the study and note that the interaction with other message features (i.e., marks, labels) points to the fact that intrinsic stigma message features can work together to influence an outcome (Smith et al., 2020, p. 289). This finding aligns with Ledford et al.'s (2021) work since the authors combined mark and label messages into one message feature that found significant effects. These emerging findings may suggest that stigma labels are one but not the most impactful stigma message feature. While organizations should still seek to abandon such stigmatizing labels (e.g., “addict”), they would also be wise to also turn their attention to other types of stigmatizing portrayals that have profound effects on stigma-related outcomes.

Despite this explanation, the null findings for label messages do not resolve the discrepancy between prior labeling research in the opioid context (see Werder et al., 2022 for a review) and findings in the current study. It is possible that the message itself was not strong enough to examine the effects of labels, and that more than a single label message would have demonstrated stronger influence. Indeed, persuasion research has criticized the use of a “one-shot” message in messages effects research. Regardless of the reason for this finding, it should *not* be taken as conclusive evidence regarding the use of opioid stigma labels. Rather, it should be considered in line with Smith et al.'s (2020) work and in context of the broader opioid stigma

literature (Werder et al., 2022). Given the failed manipulation check of label messages, this finding should primarily be seen as a call to further investigate the impact and influence of stigma labels and other stigma message features across different populations and in different stigma contexts.

Responsibility messages also exerted negligible effects on study outcomes, a finding that warrants theoretical and practical consideration. First, one of the reasons responsibility messages may not have influence expected variables could be due to participants' base level of responsibility beliefs about OUDs. The choice element involved in OUD discourse is widely controversial; even the medical community has devoted significant resources in the last several years to discussing the degree of choice attributed to the individual (Kuorikoski & Uusitalo, 2018). This discussion about addiction through a brain-disease model continues to spark controversy. Since medical professionals express disagreement about the appropriate degree of responsibility to attribute to individuals with OUDs, it is no wonder that this confusion extends to the current study sample. Add to this equation recent national news media coverage surrounding OUD lawsuits (e.g., Purdue Pharma), and it is no surprise that even participants in the pilot study expressed confusion about what degree of responsibility was appropriate to attribute to the person in the news article. While the experimental design of the current study reduces group differences in this vein (i.e., through random assignment), ascertaining participants' base level attributions of responsibility about the opioid epidemic and OUDs more broadly could provide a needed control for experimental research manipulating responsibility in this context. Researchers may consider implementing more complex study designs that measure stigma beliefs prior to experimental exposure.

Another important consideration for the near null findings regarding responsibility messages is the role of opioid type in influencing responsibility-related attributions. Though no interaction effect emerged between responsibility messages and opioid type, opioid type did exert a significant effect on mediators and outcomes among participants in the responsibility stigma conditions. This effect was significant in direct effect analyses on beliefs, fear, attitudes, and behavioral regulation, and post-hoc analyses suggested that individuals who read heroin-related stigma messages expressed greater stigma beliefs, more fear, less positive attitudes, and more desired behavioral regulation than individuals exposed to prescription opioids stigma-related messages. This finding affirms past research suggesting that individuals attribute more stigma to illicit drugs (Brown, 2015). While prescription opioids when developed through an OUD are also an illicit substance, some prior work suggests that individuals are less likely to attribute personal responsibility attributions when an OUD began with a doctor's prescription (Goodyear et al., 2018). Given that the experimental message did not provide enough narrative detail for the reader to draw a strong conclusion about the origin of the OUD, participants could have made an inference that led to their lower overall negative perceptions for prescription opioids compared to heroin.

The strong influence of peril messages in this study affirms recent research surrounding the power of threat and consequence messages in influencing stigma (Smith et al., 2020). Peril messages in this study demonstrated the most notable and persistent affects through all study analyses. These messages significantly directly and indirectly influenced several mediators and study outcomes in addition to exerting conditional indirect effects for individuals with affiliate OUD experience through a family member or close friend. First, dual mediation analyses suggested that both stigma beliefs and negative affect work in tandem to predict attitudes. On the

other hand, peril messages affected behavioral regulation through beliefs only—a mirrored finding from the experiment on mark messages in the current study. These findings align with past research. In communicating consequences about the stigmatized groups, peril messages are designed to evoke beliefs about dangerousness and in turn persuade the stigmatized group to isolate the group (Smith, 2007). The fact that negative affect was not a significant mediator in this equation speaks to the role of stigma beliefs in the behavioral regulation framework and suggests a discrete emotions perspective may be more suitable for examining how groups respond to stigma messages through emotional pathways. This implication is discussed in detail in a later section of the discussion.

Opioid Type

Current study results suggest that opioid type does play a role in stigma perceptions surrounding OUDs, and that role may concern the perceived illicitness or severity of opioid type. In examining the effect of opioid type, the current experiments used a series of two-way ANOVAs to test for main or interactive effects of opioid type. The common main effect observed for opioid type is that negative perceptions were elevated in the heroin conditions, especially compared to the prescription opioid conditions. This effect was true within responsibility and peril messages and their effects on beliefs, fear, attitudes, behavioral regulation and beliefs, negative affect, and disgust, respectively. Even when the same pattern was observed across opioid-related conditions, individuals in the low heroin stigma condition often expressed greater negative perceptions than individuals in the high prescription opioid stigma condition for that same message. This finding is not surprising given past research suggesting heightened stigma toward substance use disorders from explicitly illicit drug use (i.e.,

compared to prescription opioids that could be from a doctor's prescription; McCradden et al., 2019).

While limited in statistical power to draw full conclusions about the sole interaction effect found between opioid type and mark messages, this effect is worth noting. The interaction emerged such that high stigma mark messages led to greater negative affect for individuals in the prescription opioids condition and the fentanyl conditions but not for the heroin conditions (Figure 3, Appendix A). What is interesting about this finding is that there was essentially no difference between the high and low mark messages for the heroin condition, and the level of negative affect experienced for the low mark heroin condition was nearly above the level of negative affect expressed for the *high* mark prescription opioids condition. While only one interaction effect and limited in its conclusiveness, this finding does suggest a need for future work investigating specific opioid contexts with unique media landscapes and associated stigma beliefs.

Cognitive and Affective Mediation

The current studies suggest the plausibility of dual mediation pathways in the stigma communication process, but only for specific outcomes. For example, dual mediation analyses of mark messages suggest the possibility of both negative affect and stigma beliefs to simultaneously predict attitudes and social distance, and for peril messages to influence attitudes through both negative affect and stigma beliefs. While peril messages also influenced policy support and stigma messages having through negative affect and stigma beliefs, the total indirect effects in such analyses were not significant. Together, these findings are informative for future stigma research and health communication practice.

Stigma Beliefs

Results of this study suggest that stigma beliefs are a powerful mediator between mark and peril messages and the majority of stigma of stigma-related outcomes. In examining both mark and peril messages, stigma beliefs fully mediated the relationship between those messages and attitudes, as mark messages did not exert a significant direct effect on these outcomes. Alternatively, stigma beliefs partially mediated the relationship between mark messages and behavioral regulation, as these messages still exerted a direct positive effect on behavioral regulation but fully mediated the relationship between peril messages and behavioral regulation. These findings have a few specific implications. First, the belief-attitude mediation is in line with broader attitude literature on the relationship between beliefs and attitudes (Fishbein & Ajzen; 1975; O’Keefe, 2002). These models postulate that beliefs are the building blocks of attitudes and will lead to attitudinal outcomes. An important distinction between a belief-based attitudinal approach and a functional approach, however, is that a functional approach prioritizes the content of beliefs rather than only the strength and the evaluation of those beliefs (O’Keefe, 2002). The current study suggests the importance of a functional approach in stigma communication contexts, where specific stigma beliefs (e.g., about dangerousness, responsibility, and immorality) are what lead to negative attitudinal outcomes. While past stigma research outside the field has examined specific belief types and general attitudes, this study is one of the first to explicitly operationalize opioid-related stigma beliefs and find a connection between those beliefs and overall attitudes. This finding offers practical implications for health communicators and suggests specific belief targets that influence negative attitudes, e.g., perceptions of dangerousness, responsibility, and immorality. The logical next step is thus for opioid-related health interventions, especially those attempting to target and change stigmatizing beliefs and attitudes, to investigate strategies for adding new, positive beliefs (O’Keefe, 2002)

that counter these stigmatizing perceptions and evaluate the ways that health messaging can remove stigmatizing language that creates such beliefs. Theoretically, this finding is useful because it draws a bridge from stigma communication literature to persuasion literature more broadly. Persuasion research has long studied efforts for positively change behavior. These findings can and should be used to inform *how* and *why* stigma communication is negatively persuasive. In other words, if communication scholars can apply lessons from persuasion to the stigma communication context, they can become a step closer to understanding, changing, and intervening in the stigma communication process that creates negative beliefs, attitudes, and behaviors in relation to the stigmatized group.

The mediation of stigma beliefs to behavioral regulation suggests how influential stigma beliefs can be in directly influencing behavioral outcomes. Past stigma research has found that stigmatizing beliefs can directly lead to discriminatory behaviors (Corrigan & Watson, 2002)—a finding similarly reflected in the current study. This finding indicates the importance of separating stigma attributes from stigma beliefs from the outcomes of stigma (attitudes). Whereas past research on stigma has at times conflated beliefs, attitudes, and even stigma attributes or the communication of stigma itself, the findings of the current study reinforce the need to delineate between stigma messages, stigma beliefs, and stigma outcomes. This clear explication can support health communication interventions in not only isolating which stigma beliefs to target but what types of stigma messages influence those beliefs. In this case, mark messages that affixed a visually unclean cue to individuals with OUDs and peril messages that discussed the consequences of an OUD on others led to greater stigma beliefs about dangerousness, responsibility, and immorality among individuals with OUD. In turn, stigma beliefs either partially or fully explained the relationship from these mark messages to an

individual's desire to regulate the behavior of people with OUDs. Theoretically, this finding suggests a need to further evaluate the belief-attitude-behavior relationship. Beliefs in this study affected both attitudinal and behavioral level outcomes, and research in health communication suggests that both of these mechanisms are plausible; for example, the health belief model poses a direct relationship from health-related beliefs to health behaviors (Rosenstock, 1960). As such, a next step in this line of research would be to design more complex mediation studies that can examine sequential mediation from messages to beliefs, attitudes, and behaviors. While difficult to truly test sequential mediation (Pirlott & MacKinnon, 2016), complex longitudinal designs and other experimental methods could be used to examine these relationships and advance this body of research.

The consistent prediction of overall attitudes from both mark and peril messages is in line with broader persuasion literatures and suggests the utility of a generalized attitude measure in stigma studies. Attitudes were consistently predicted through both negative affect and stigma beliefs for both mark and peril messages. While stigma studies have historically measured social distance or other variables as proxies for stigmatizing attitudes (Taylor et al., 2021; Yang & Link, 2015), measuring overall attitudes in stigma studies connects stigma literature to a broader base of persuasion literature. The current model did not examine sequential mediation from attitudes to behaviors, but future work should seek to examine this connection, particularly ensuring that measurement of beliefs, attitudes, and outcomes align with the same attitude object (O'Keefe, 2002). This could be done, for example, by examining how and if beliefs about dangerousness (stigma beliefs) predict social distance (specific attitude measure) and subsequently behavioral regulation (isolation of the group based on dangerousness beliefs).

Finally, the peril to stigma message sharing relationship mediated through stigma beliefs reinforces research findings about the role of threat in shaping stigma message sharing. Peril messages serve to fundamentally to warn members of the non-stigmatized group of the consequences the stigmatized group poses to others (Smith, 2007). These messages share a message about danger and consequence – often those interwoven with perceptions of immorality and responsibility. It makes sense then why peril messages lead to greater stigma beliefs because those messages are designed to create such beliefs. The interesting piece of the equation is that stigma beliefs explain the mechanism through which peril messages influence the sharing of stigma message—a fully mediated relationship in this study. While little research has formally examined the mediated process from stigma messages to stigma message sharing, recent stigma work incorporating lessons from rumor transmission (Zhu & Smith, 2016) affirms the reasoning behind this finding. People are motivated to share rumors, of which stigma messages that discuss negative characteristics of a group can be considered a type, for a host of reasons. Primary among these reasons is relationship enhancement (DiFonzo & Bordia, 2007); in the context of group-based communication and behavior, this relationship enhancement may coincide with the desire not only to enhance ingroup relationships but to protect members of the non-stigmatized group from harm (Smith, 2007).

This finding regarding the stigmatizing function of consequence communication (peril messages) should concern health and persuasion scholars and practitioners. Indeed, risk and consequence have largely been seen as a motivator of positive health-related behavioral change (Witte, 1992; Rimal & Real, 2003; Rosenstock, 1974). However, the line between sharing consequences about a health condition (e.g., an OUD) and about a group who has that condition (e.g., people who have OUDs) is tenuous at best. Risk may be a motivator for health-related

behavioral change, but a needed future direction for threat- and risk-related research is the understanding of how to motivate positive behavioral change without inducing stigma in the process.

Emotions and Affect

The current study illuminates the integral roles of anger, disgust, and frustration in stigma communication about people with OUDs. While several other emotions were explored in this study, these three discrete emotions emerged as the only significant emotions for opioid stigma communication. Peril messages led to the experiences of each of these three emotions, and anger, disgust, and frustration each mediated the relationship between peril messages and all five key study outcomes.

The mediating effects of anger and frustration between peril messages and stigma-related outcomes is in line with expectations from intergroup and stigma literatures. Feelings of anger involve feeling demanded, either personally or for those close to a person (Lazarus, 1993). Feelings of frustration call upon a specific type of anger related to anger with another person (Smith 2014). In this study, frustration and anger each mediated the relationship between peril messages and all five study outcomes. These findings make sense given that retaliation, attack, and lashing out correspond to the action tendency of anger (Lazarus, 1993). A natural outcome of this tendency is the development of negative attitudes and the desire to regulate a person's behavior. Lashing out may also be carried out through desiring social distance from the stigma group; this type of social harm can dampen a group's chance for societal inclusion. Similar reasoning explains the mediated relationship to stigma message sharing; as groups desire to protect their own (Smith, 2007), stigma message sharing can spread the stigma and social attack further. Finally, the negative mediated relationship between peril messages and support for

opioid-related policies suggests that social retaliation can extend to the policy level of decision-making—a finding that has pertinent implications for public health.

These relationships also make sense in the context of frustration. Previously, Smith (2014) argued that frustration may be more notable a feeling in the stigma context since people may publicly lash out as opposed to lashing out against the obstacle that causes the feeling (what anger usually elicits). Evidence from this study suggests the feasibility of both experiences—that individuals who read stigma messages about the consequences individuals with OUDs have on others will experience both anger and frustration, and each can motivate them to respond in harmful ways toward the stigmatized group.

Disgust similarly mediated the relationship between peril messages and study outcomes, but not between mark messages and outcomes. In the current study, disgust mediated the relationship between peril messages and each of the five study outcomes. This finding remained true when disgust was examined as a parallel mediator to stigma beliefs in each of the mediation models. It makes sense that disgust would predict harming behaviors toward members of the stigmatized group; after all, intergroup literature has revealed the integral role of disgust in influencing attitudes and harming behaviors that restrict the behaviors of an outgroup (i.e., a stigmatized group; Cuddy et al., 2007; Smith & Mackie, 2015). This explains why disgust can lead to increased behavioral regulation, decreased support for helpful opioid-related policies (e.g., those that promote societal reentry and behavioral freedom), negative attitudes, and a desire for social distance. The role of disgust in influencing stigma message sharing may also be due to the fact that group members seek to protect others from stigmatized group interaction (Smith, 2007). What is interesting about this finding is that the strongest indirect effect of peril messages through disgust was on stigma message sharing. This finding suggests the importance of

examining disgust in stigma contexts, particularly when talking about stigma-related consequences. The peril messages in this study did not evoke obviously disgust-laden cues and yet still led to such feelings. While disgust has largely been explored in the literal sense (i.e., physically indigestible objects), it seems that disgust can also be triggered about people when considering how those people exert consequences on those around them. Such a finding should provoke future research and again urge health practitioners to avoid opioid prevention appeals that discuss such consequences.

What is surprising is that disgust was not a significant mediator in response to stigma mark messages. While research suggests these messages should lead to feelings of disgust (Smith, 2007), the message manipulations for marks in this study were perhaps more subtle than most disgust literature, as such literature often relies on physically disturbing visuals to evoke disgust. Instead, the person with an OUD in this study was described as “wearing unclean clothes” and appearing “not put together.” Future research should consider the ways to study this relationship between marks and emotional responses in the opioid context, particularly given the ethical consideration of portraying a disgust-evoking image of an OUD. It might be more suitable to explore this relationship through other research methods, such as survey methods or qualitative research, rather than by manipulating disgust and unintentionally introducing participants to disgusting images of people with OUDs.

The lack of findings for other emotions in response to stigma messages is also worthy of future investigation. Contrary to expectations, neither marks nor peril messages influenced fear, anxiety, or sympathy. It is again possible this is due to the message manipulation, as the messages did not use words like “danger” to describe the person with an OUD in order to avoid any negative lasting effects on participants. That may explain why participants did not

experience fear as a result of these stigma messages. The lack of findings related to anxiety also contradicts expectation, especially since intergroup literature suggests that interacting with outgroups can induce feelings of anxiety (Stephan, 2014). Despite the fact that peril messages in particular implied a group-level threat (e.g., “Sam’s actions affect others”), no such relationship was found with anxiety. One reason for this finding could be that participants’ group identities were not readily activated. While intergroup research suggests that identities can be chronically salient, sometimes those identities require priming or induction (Smith & Mackie, 2018). In this study, it is possible that participants connecting feelings of frustration, anger, and disgust to a broader group of “individuals without an OUD” but that to feel anxiety, participants would need to be primed to consider themselves in relation to the person with an OUD claimed to pose a threat. In essence, a second-person story priming participants to consider a person in their lives who developed an OUD might create such feelings. Nevertheless, future research should again exert caution with the methods used to study intergroup emotions surrounding stigmatized issues like OUDs. Qualitative research among family members or friends of those with OUDs might more clearly illuminate the relationship from peril messages to anxiety and reveal a maladaptive relationship or none at all.

Finally, more work is needed to understand how stigma messages can induce sympathy—which has complex and contradictory stigma-related outcomes (Cuddy et al., 2007). For example, while sympathy can lead to facilitative attitudes and behaviors (e.g., tolerance; Norman et al., 2009), it can also still lead to passive harming behaviors like a desire for social distance from the group (Cuddy et al., 2007). Corrigan (2017) offers a reason for this complexity, that even though pity may insinuate victimization, the use of pity “exacerbates the power hierarchy between those with illness and their healthy family, friends, and health care providers,” and

“while seductive...the more insidious message [of pity] remains: people with illness are less than us, different from us. And difference is the base on which stigma rests” (pp. 81-82). Perhaps the lesson from the current work is not to continue understanding how to induce sympathy through stigma messages (a finding not found by the current work), but rather what additional emotions can be facilitative in reducing stigma perceptions. This next step following this dissertation is an important one—to understand not what stigma communication *does*, but what can *undo* stigma communication. Health researchers and practitioners can respond to this next step by responding to Corrigan’s (2017) call to:

“1. Stay rooted to the recurring call for person-first language...Objectifying and distancing them as patients adds to the difference. 2. Nothing about them without them. The potent message that beats stigma rests with the people who are the victims of the stigma. It is much easier to evoke pity when speaking about ‘those people’ rather than having individuals speak for themselves, who, by the way, are more likely to demand parity than ask for pity. 3. Promote a 50-50 personal story of recovery...Personal stories should not deny the challenges of health. But they need to be balanced, if not superseded, by on-the-way up narratives that demonstrate that, despite the challenges of symptoms and disabilities, I have achievable goals that I pursue like everyone else” (p. 82).

The mediation potential of negative affect broadly is in line with valence-based theories of emotions and does offer insight into negative and positive feeling states in the persuasion process. In the current study, negative affect worked alongside stigma beliefs to mediate the relationship between mark messages and social distance and attitudes and peril messages and attitudes. While disgust, anger, and frustration also served as dual mediators for peril messages, none of these emotions mediated relationships between mark messages and study outcomes. As such, it may be useful for stigma communication scholars to examine discrete emotions in addition to negative affect more broadly to understand how people may or may not attribute a feeling state to specific emotions. Furthermore, negative affect as a broad conceptualization can support future work in understanding the flow of emotions. For example, Nabi and Green (2015)

have argued that the emotional flow through a narrative, rather than the main emotion experienced after message exposure, can influence persuasive outcomes. This flow is defined as the shift from a positive to negative or negative to positive affect, a change in a specific emotion's intensity, or a shift between discrete emotions sharing the same valence (Nabi, 2015). In studying general affective emotional flow, Alam and So (2020) found that when a story used an affective shift, participants felt more identification with the characters in the story, and in turn, expressed more positive health-related attitudes and behavioral intentions. This work may provide a starting point for stigma reduction interventions, in which an emotional shift from negative to positive affect could substantially improve attitudes and behaviors toward members of stigmatized groups. Whether or not scholars conduct studies in this direction, the results of the current study minimally suggest that health communicators should be wary of using stigma marks and peril messages in health prevention or promotion communication because of the role those messages play in influencing negative emotional states and subsequently attitudinal and behavioral outcomes.

While the current study focused on dual cognitive and affective pathways, it is also possible that other dual processing models could be fruitful for future research. For example, models of dual information processing like the elaboration likelihood model (Booth-Butterfield & Welbourne, 2002) and the heuristic-systematic model (Chaiken, 1980) may offer insight into the circumstances under which individuals process stigma messages through particular routes.

Group Identification and Intergroup Emotions

Results of these studies suggest that having a close friend or family member with an OUD can change the emotional reaction of individuals reading stigma messages. The final analysis conducted for this dissertation involved a series of conditional effects analyses, or

moderated mediation tests, that examined the role of experience with OUDs (a measure of group identification) in changing the indirect relationship between stigma message features outcomes explained by discrete emotions. Results of these analyses revealed similar effects for two discrete emotions—anger and frustration—on key study outcomes.

The conditional indirect effects of peril messages on attitudes through both anger and frustration for individuals with affiliate OUD experiences suggests that anger and frustration can have complex overall interpersonal effects for those who have had a friend or family member with an OUD. For people with friends and family members with OUD, peril messages led to more positive attitudes but also more desire for social distance through heightened feelings of anger. At first glance, these findings are counterintuitive, and indeed, contrary to the researcher's hypothesis. Experience with OUDs research offers some explanation related to identity membership. Most stigma and group membership scholarship has examined an ingroup/outgroup experience, e.g., people with OUDs versus people without OUDs. For those who are closely connected to the stigmatized group, but not quite belonging to it, group identity becomes more fluid. These individuals may also be susceptible to more levels of stigma based on such associations—like courtesy stigma, or endorsement of public stigma toward close relational others by association (Gray, 1993), and affiliate stigma, or the internalization of public stigma based on close association to a stigmatized group (Mak & Cheung, 2008). Herein lies the complexity between anger and frustration and positive attitudes for individuals with affiliate experience with OUDs. Anger positively mediated the relationship to attitudes, but negatively mediated the relationship to behavioral outcomes from peril messages.

Three possible, and non-exclusive, explanations exist. First, it is possible that participants were less willing to report explicitly negative attitudes toward individuals with OUDs. Past

research has criticized explicit attitude measures for this reason, and while implicit attitude tests face their share of criticism as well, the nature of self-report for positive attitudes toward a stigmatized group does open up the possibility of a social desirability bias. A second explanation exists within the cognitive dissonance literature. Cognitive dissonance, or the discrepancy between thoughts and behaviors, has been substantively explored in persuasion literature (Harmon-Jones & Mills, 1999). In the case of individuals who have had friends or family members with an OUD, it is possible that negative emotions like anger and frustration trigger memories of family or friends that ultimately positively affect their reported attitudes toward the group. Still yet, those attitudes do not correspond to behaviors because of cognitive dissonance.

Finally, intergroup emotions theory may provide the most relevant explanation of the salience of this conditional indirect effect among individuals with affiliate OUD experience. When considering how affiliate stigma may function (Mak & Cheung, 2008), it is possible that individuals who have had family members or friend with an OUD categorize their group identity as an ingroup member of the stigmatized group. Such a feeling should exacerbate the role of emotions in predicting the relationship between stigmatizing messages about the group and related outcomes (Mackie et al., 2008). What this theory does not explain is why the relationship does not hold true for the individuals in the study who had an OUD, as we would expect these individuals to be at the highest end of ingroup identification. It is possible this is due to self-stigma or other mechanisms wherein distancing oneself from those with OUDs is a coping mechanism for those who have experienced an OUD in the past. Denial of the existence of a stigma is one coping strategy individuals belonging to a stigmatized group can use to manage or cope with stigma experiences (Meisenbach, 2010), but it remains to be seen how people who belong to a stigmatized group (individuals with OUDs) but then shed their stigma attribute (no

longer have an OUD) conceive of group identity. Such a study could provide insight into best communication strategies for members of distinct OUD-related groups: people with current OUDs, people seeking recovery, and people living after recovery. This research could also seek more nuanced ways of measuring group identification not just through personal experience, but through the type of experiences and perceived identities of individuals. While experience with OUDs was used to measure group identification in this study, future work can investigate more nuanced measurements of group identification for non-chronically salient identities like being someone with or associated with an OUD. Stigma communication research should seek to isolate the unique experiences of each of these groups; doing so can advance practical communication strategies in addition to intergroup communication theories and conceptions of group identity.

While people with affiliate OUD experiences may experience anger that ultimately positively affects their attitudes, this emotion ultimately negatively effects behavioral outcomes and more specific attitudinal measures like social distance. Indeed, anger was the pathway through which high stigma peril messages led to more behavioral regulation, less support for opioid-related policies, and more intended stigma message sharing of the stigma message. This finding affirms prior literature suggesting that anger can serve a maladaptive function (Stephan et al., 2009) particularly for individuals who may have experienced some of the negative consequences of OUDs by association.

The I-MISC

In terms of the I-MISC, the current study affirms the utility of expanding the MSC to include both cognitive and affective mediators. While the current study cannot speak to the utility of responsibility and label messages in the I-MISC, past research does suggest that future studies should find similar results for appropriate inductions of these messages (Ledford et al.,

2021; Smith, 2014). In terms of the tenets of the I-MISC, the current study does affirm that affective, cognitive, and/or dual pathways can explain the relationship between stigma message features and stigma-related outcomes. For most analyses with mark and peril messages, both of these pathways were significant, attesting to the importance of measuring and subsequently targeting affect and belief-based perceptions in the stigma process. Second, this study offers very preliminary evidence of a recursive relationship between affective and cognitive pathways. While not substantially explored in the study, the correlational evidence suggested a significant association between all affective variables in the study and stigma beliefs. Future work should seek to more clearly examine this relationship and may consider affect theories like the affect infusion model when doing so (Forgas, 2008). Third, the study finds evidence for group identification's conditional indirect effect through discrete three discrete emotions, but no evidence for its moderating role between message and negative emotions. Even so, this should not be taken as explicit evidence against the I-MISC due to the operationalization of group identification in the current study as experience with OUDs. It is theoretically and empirically likely that when primed appropriately, this relationship should and will hold up. Finally, the study affirms the group-level hypothesis that stigma perceptions are group-based and can extend from an individual to a group. Namely, the stigma messages in this study discussed a particular person with an OUD, but stigma measures asked about "people with OUDs." This finding has particular relevance for narrative communication strategies that could, inversely, use narratives about a specific person in a stigma group to reduce stigma toward the group (Heley et al., 2021). In sum, the MSC and intergroup communication literature's strong theoretical foundation is what made the I-MISC relevant and timely for this study. Even in a new health context (opioids), the key tenets applied from stigma communication literature remained true. This finding offers

powerful implications for theory building and practice. More work is needed to study the I-MISC in diverse stigma context, and as this body of work cumulates, it can become clear what tenets of the I-MISC can be applied in communication interventions across contexts and what contextual factors apply uniquely to each stigma issue.

Study Limitations

This study may be limited by its sample. While MTurk offered a more representative sample (of adults generally) for this study than a college student sample, it may also not be fully representative of the U.S. population. Indeed, the MTurk sample used in the current sample was majority white and college educated. Future work should seek to replicate findings in diverse samples and contexts. Second, this study may be limited by the stimuli used in the study and the artificiality of the news articles. While every attempt was made to make the manipulation both internally valid and ecologically valid, the tradeoff between these two is inevitable. The findings from this study should be paired with survey research, longitudinal studies, and media effects research to offer a more holistic perspective of the effects of stigmatizing portrayals. Next, the measurement of group identification in this study was not as complex as other methods for measuring group identification (e.g., ingroup identity importance), and future research should seek to refine this measurement. Conclusions about intergroup research and theory should not be drawn on the basis of any one study, including this one. Fourth, the distribution of the opioid-related policy support variable in this study is a limitation. Future research should seek to further develop this measure so that ceiling effects do not occur or social desirability does not lead to high results. Fifth, another methodological limitation to the study is the number of statistical tests conducted for hypothesis testing. While the researcher conducted these individual tests with purpose to advance the understanding of indirect effects, this amount of tests is subject to the

multiple testing effect, such that with conducting more statistical tests on the same sample, the likelihood of a Type I error increases (Ranganathan et al., 2016). As such, conclusions contradictory to theoretical reasoning or with less stringent p values (those closer to .05) should be interpreted with caution. Next, the current study used PROCESS for a robust examination of indirect effects but is limited in commenting on the entire I-MISC as a whole since structural equation modeling (SEM) was not explored. PROCESS was preferred over SEM in this dissertation because PROCESS requires smaller sample sizes, can test conditional indirect effects, and utilizes bootstrapping to estimate such effects. However, PROCESS does not offer the complete picture of model relationships, and as such, SEM should be explored in future research to comment on the validity of the I-MISC as a unit. Researchers may also consider model comparisons to comment on overall I-MISC model tenability. Finally, an obvious limitation to the current studies in sample size. While moderated mediation is explored in this study, the ideal sample size to detect a medium effect with a power of .991 is 500 (Preacher et al., 2007). With each experiment having approximately 350 participants, this sample size is not ideal for the estimation of conditional effects. While not terminal to the study, conditional effects should be interpreted as *preliminary* rather than conclusive.

Future Research

Like any empirical study, this one answers to a limited set of questions, thus leaving many more to be answered by future research studies. First, future research should utilize more complex experimental designs to examine more sequential mediation pathways between attitudinal (social distance and attitudes) and behavioral outcomes. This finding could support researchers and practitioners in uncovering the attitude-behavior discrepancy and isolating the specific stigmatizing attitudes and behaviors that are connected. Second, future work should seek

more nuanced measurement of experience with OUDs and the relationship of identity to opioid type. For example, this study only inquired about if an individual or their close friend or family had experienced an OUD in the past. Those questions were not specific to opioid type. Ensuring this match between OUD experience and OUD type can support researchers attempting to isolate moderation effects based on both group identity and opioid type. Finally, the next step to stigma message effects research is to examine what stigma interventions *change* stigmatizing beliefs, attitudes, and behaviors. So far, much of stigma research has concluded that knowledge-based interventions are not successful (e.g., Wagner et al., 2016), but there is little research on which strategies *are* successful. As stigma communication scholars continue their interdisciplinary work, explicit connections to persuasion and health communication theory may offer paths for success. For example, recent research has begun to illuminate how narratives, and specifically first-person narratives, may serve a destigmatizing function in the opioids context (Heley et al., 2019, Ma et al., 2022).

Conclusion

This study extends stigma communication theory by expanding its inclusion of mediators and moderators and by situating the MSC in a new context. Only a handful of empirical tests of the MSC have been published to date (Ledford et al., 2021; Smith, 2012; Smith, 2014; Smith et al., 2019), and aside from the author's previous work, each tested the MSC in the same context (fictitious infectious disease) and with different mediators. By proposing and testing a substantive revision of the MSC, the I-MISC, across three types of opioids, this study significantly contributes to stigma communication theory. It is the first to consider and test dual pathways of the stigma communication process in the same empirical model and the first to empirically test the MSC in a new context. Furthermore, testing a key moderator— experience

with OUDs—can provide a more complete picture of the relationships at work in the stigma communication process. Finally, integrating stigma, persuasion, and intergroup literature is an important advancement of this study. While scholars have done so in the past, this study explicitly integrates a stigma communication theory with an intergroup communication theory, uniting literatures and hopefully scholars in the process.

The practical implications of this dissertation are also far-reaching, as this study is one of the few to experimentally test the impact of opioid stigma messages on stigma-related outcomes. The National Science and Technology Council (2018) made the study of opioid stigma a national priority, but little empirical research has followed suit. Communication scholars are uniquely equipped to study stigma messages because the study of messages is one of the central features of our discipline. Results of this study can suggest that practitioners should seek to improve and de-stigmatize the way they portray individuals with OUDs through images and image-laden language and the consequences that they discuss when talking about people with OUDs.

Opioid use disorder poses serious concerns for public health, especially given the prevalence of opioid stigma in the media (McGinty et al., 2016; Russell et al., 2019). Stigma negatively impacts public health (Akdag et al., 2018), and is therefore a key target for opioid-related interventions. By creating an integrative model of identity-based stigma communication (I-MISC), this dissertation advances stigma communication theory while also producing tangible implications. Results of this dissertation suggest that mark and peril messages may have particularly salient effects on stigma-related beliefs and negative affect in addition to indirect effects on stigma-related outcomes. More work is naturally needed to answer the questions this dissertation poses for future research, but the results of this dissertation offer insight into how, why, and for whom stigma messages affect beliefs, emotions, attitudes, and behaviors. If the I-

MISC can effectively explain the possible mechanisms through which news media about stigmatizing issues, like opioids, impact stigma-related beliefs, attitudes, and intentions, this model can serve as a tool for health stakeholders to create communication interventions that reduce stigma and ultimately promote public health.

Appendix A: Figures

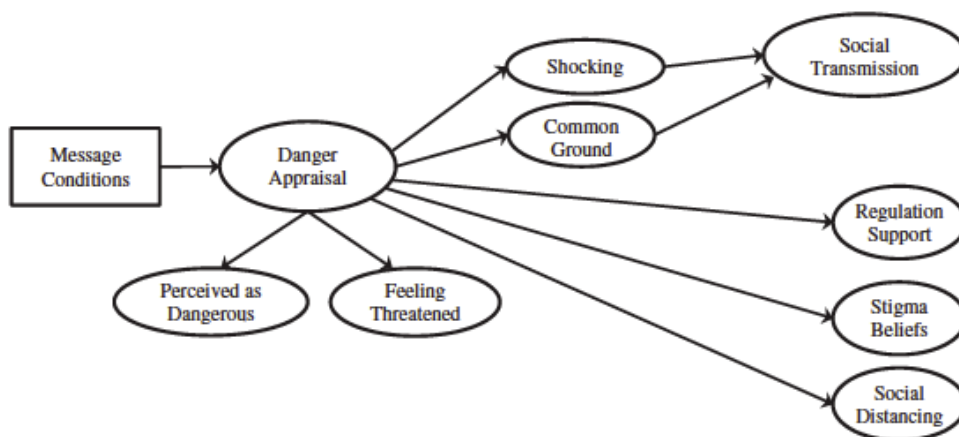


Figure 1. Revised model of stigma communication (MSC; Smith et al., 2019)

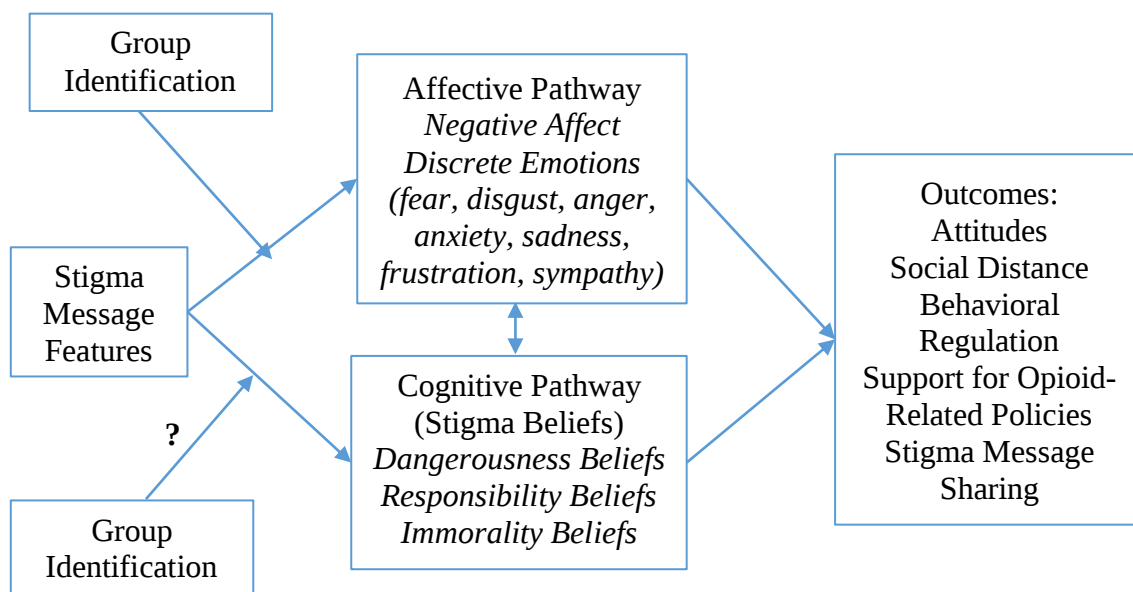


Figure 2. Integrative Model of Identity-Based Stigma Communication (I-MISC)

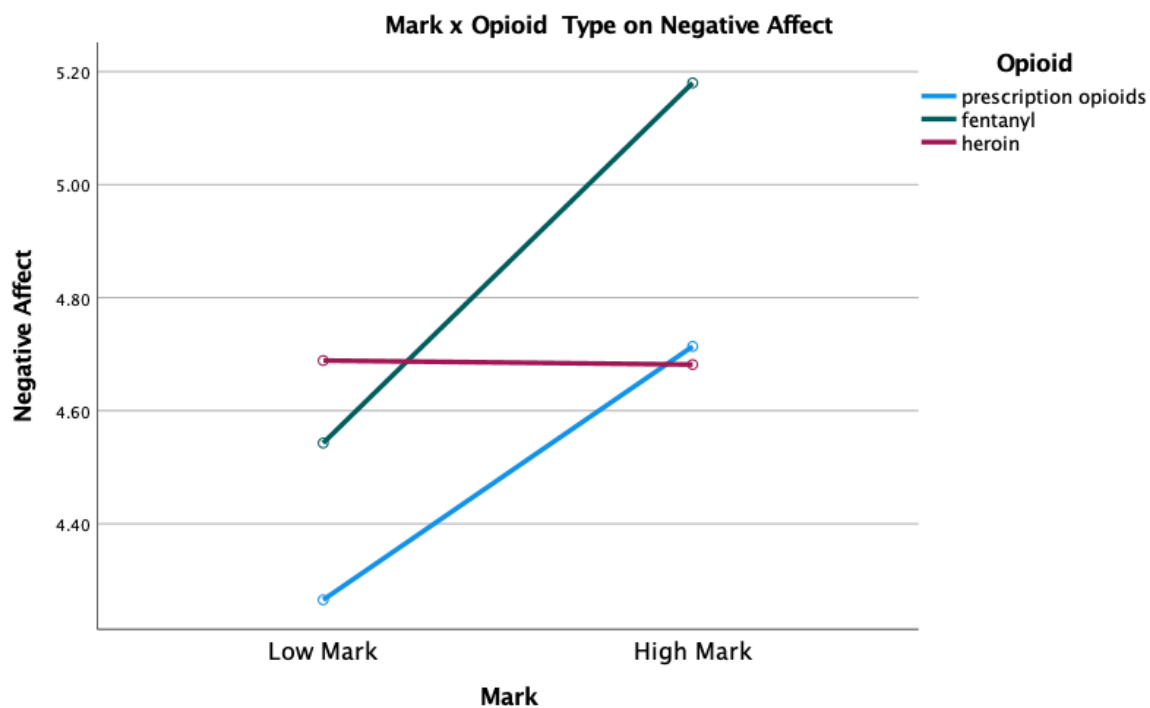


Figure 3. Moderation of Opioid Type on Negative Affect in the Mark Conditions.

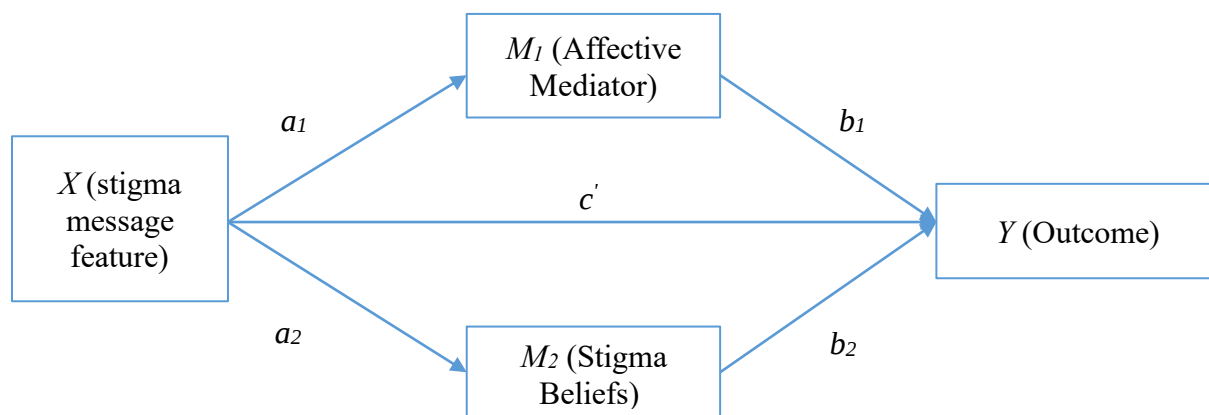


Figure 4. Indirect Effects Model.

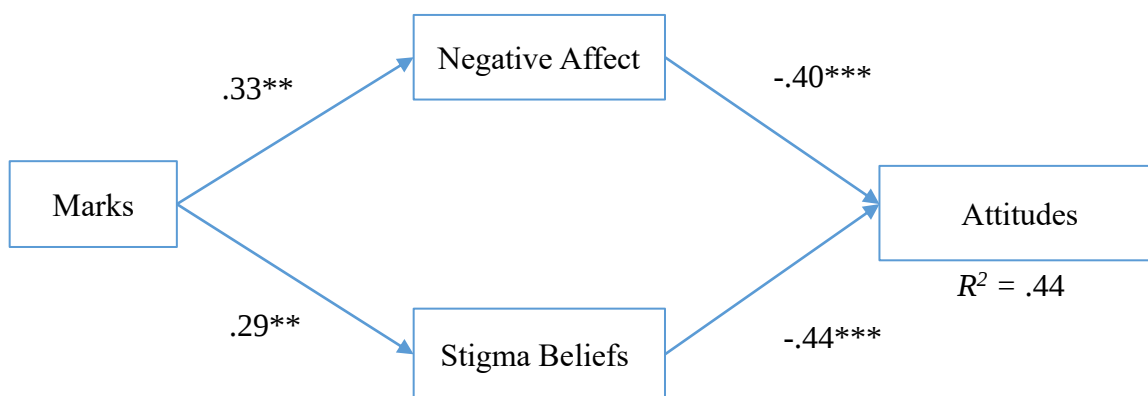


Figure 5. Dual Mediation of Mark Messages on Attitudes.

Only significant relationships depicted, and standardized coefficients are used in the figure. Opioid type was also entered as a control in the model.

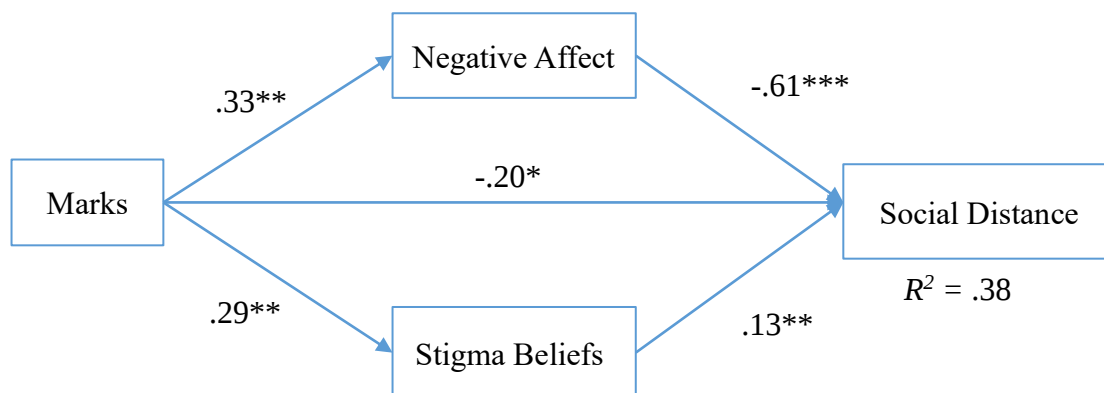


Figure 6. Mediation of Mark Messages on Social Distance.

Only significant relationships depicted, and standardized coefficients are used in the figure. Opioid type was also entered as a control in the model.

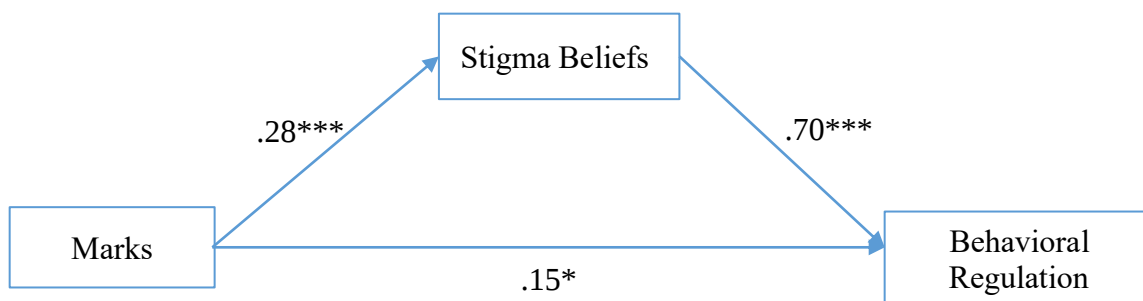


Figure 7. Mediation of Mark Messages on Behavioral Regulation.

Only significant relationships depicted, and standardized coefficients are used in the figure. Opioid type was also entered as a control in the model.

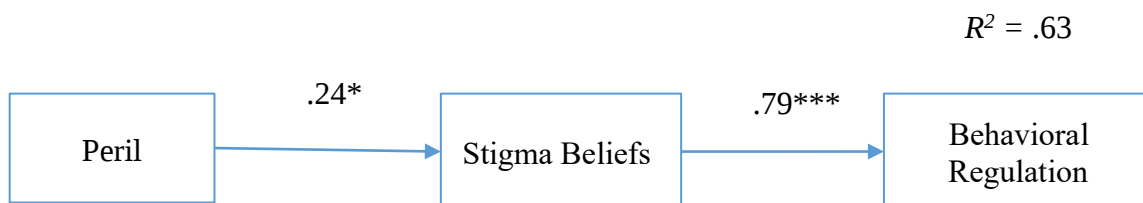


Figure 8. Mediation of Peril Messages on Behavioral Regulation through Stigma Beliefs and Negative Affect.

Only significant relationships depicted, and standardized coefficients are used in the figure. Opioid type was also entered as a control in the model.

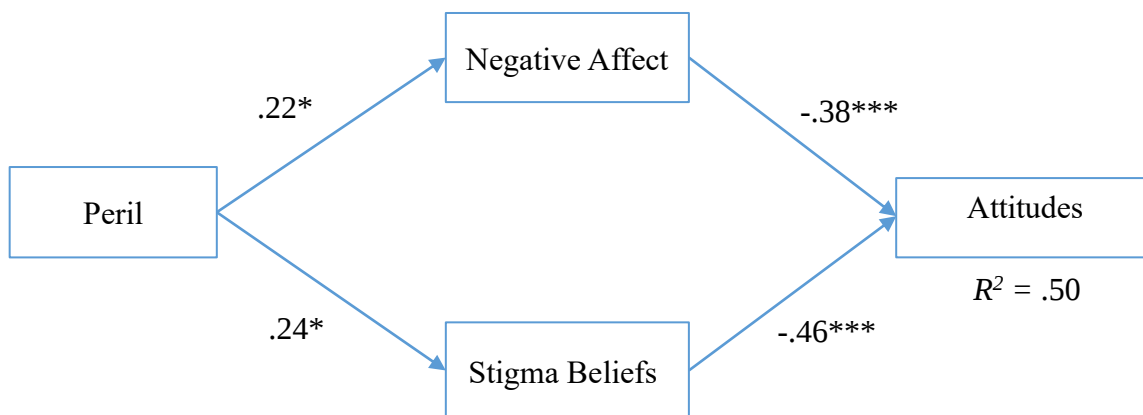


Figure 9. Mediation of Peril Messages on Attitudes.

Only significant relationships depicted, and standardized coefficients are used in the figure. Opioid type was also entered as a control in the model.

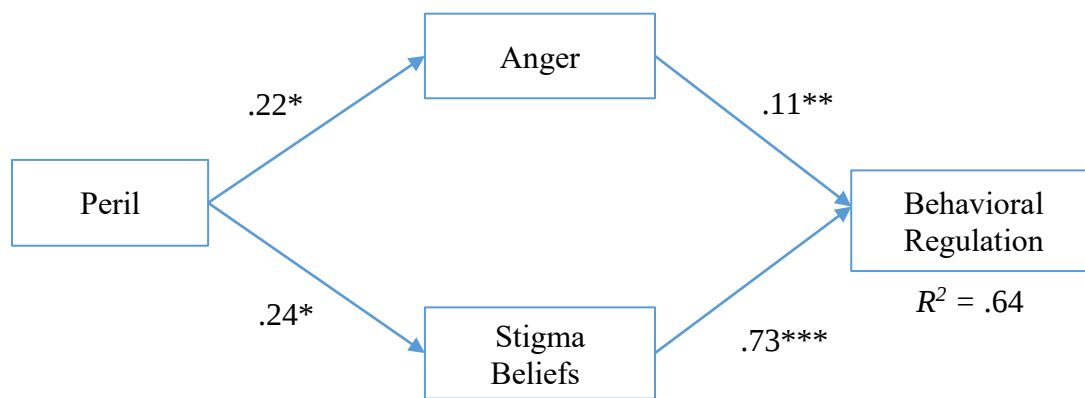


Figure 10. Mediation of Peril Messages on Behavioral Regulation through Anger and Stigma Beliefs.

Only significant relationships depicted, and standardized coefficients are used in the figure. Opioid type was also entered as a control in the model.

Appendix B: MTurk Recruitment Message (Both Studies)

We are conducting an academic survey about how people read, process, and respond to news media messages about opioids. Select the link below to complete the survey. At the end of the survey, you will receive a code to paste into the box below to receive credit for taking our survey.

Make sure to leave this window open as you complete the survey. When you are finished, you will return to this page to paste the code into the box.

Appendix C: Pilot Study Experimental Stimuli

All stimuli included the following contents:



“Opioids in the U.S.”

By Tim Johnson

August 7, 2021

[Introductory paragraph same for all conditions] Prescription opioid use has become a rising problem in the United States. All around the country, people are trying to understand this problem. With rising rates of addiction, overdoses, and deaths, some have even begun to call the opioid problem in the United States a full blown epidemic. People are taking prescription opioids in doses other than what they are prescribed and may even be accessing these drugs without a prescription. Across the country, policymakers, health professionals, and everyday citizens are working to combat the opioid epidemic.

[Stigma manipulation]

[Closing Paragraph] Sam is just one of the many faces of the opioid epidemic. In 2021, our country continues to work to combat this growing problem.

Mark Manipulation

High, [Low]

Sam Carlum knows this all too well. If you see Sam out and about, you might notice Sam’s **unclean** [clean] clothes or pay attention to how Sam seems **does not seem put together** [does seem put-together]. Sam’s appearance [does not reveal] **reveals** a bigger problem hiding beneath the surface.

Label Manipulation

High, [Low]

For **prescription opioid addicts** [people prescription opioid use disorders], everyday can be a struggle. Sam Carlum knows this all too well. Sam **is a prescription opioid addict** [is a person with a prescription opioid use disorder] who you might pass on the street one day. Sam might also be your neighbor, friend, or family member. Sam struggles with **an addiction to prescription opioids** [a prescription opioid use disorder].

Responsibility Manipulation

High, [Low]

Sam Carlum knows this all too well. While Sam is struggling, he ultimately **has control** [*does not have control*] over whether or not he gets better. It is [*not entirely*] **entirely** Sam's responsibility to find resources to help himself get his problem under control. Sam **is** [*is not*] the key person responsible for his problem **and** [*or*] for seeking help.

Peril Manipulation

High, [Low]

Sam Carlum knows this all too well. The consequences of Sam's choices **affect** [*do not affect*] us all. You **should** [*should not*] take Sam's story as a warning. What Sam does **may** [*may not*] affect our entire nation, **and** [*but*] Sam has to face these consequences.

Appendix D: Pilot Study Questionnaire

Consent Form

See Appendix _ for Consent Form

MTurk ID

Please enter your MTurk ID number. _____

First, we would like to know a little bit about your experiences with opioids. As a reminder, your responses to this survey are entirely anonymous, so please answer honestly and accurately to the best of your ability.

Moderator

In talking about opioids, we define Opioid Use as “a problematic pattern of opioid use leading to problems or distress” that includes at least **2** of these **11** behaviors related to any opioid, including a prescription opioid (like oxycodone, hydrocodone, or morphine for example), heroin, or fentanyl:

1. Taking larger amounts or taking drugs over a longer period than intended.
2. Persistent desire or unsuccessful efforts to cut down or control opioid use.
3. Spending a great deal of time obtaining or using the opioid or recovering from its effects.
4. Craving, or a strong desire or urge to use opioids
5. Problems fulfilling obligations at work, school or home.
6. Continued opioid use despite having recurring social or interpersonal problems.
7. Giving up or reducing activities because of opioid use.
8. Using opioids in physically hazardous situations.
9. Continued opioid use despite ongoing physical or psychological problem likely to have been caused or worsened by opioids.
10. Tolerance (i.e., need for increased amounts or diminished effect with continued use of the same amount).
11. Experiencing withdrawal (opioid withdrawal syndrome) or taking opioids (or a closely related substance) to relieve or avoid withdrawal symptoms.

Experience with opioids

Based on this definition, have **you** ever had an Opioid Use Disorder?

Yes/No/Prefer not to answer

Have you ever known a **family member** that had an Opioid Use Disorder?

Yes/No/Prefer not to answer

Have you ever known a **close friend** that had an Opioid Use Disorder?

Yes/No/Prefer not to answer

Do you have any other experiences with Opioid Use Disorders that you'd like to share?

Yes/No/Prefer not to answer

[For participants who selected “yes” to the previous question] Please use the space below to list any additional experiences with Opioid Use Disorders that you would like to share.

Experimental Stimuli

[Participants will be randomly assigned to 1 of 8 groups of the experimental stimuli]
See Appendix _ for pilot study stimuli

Attention Check 1

What was the name of the person mentioned in the article?

Alex

Susan

Barb

Sam

Message Variables

Message Comprehension

Please indicate how strongly you agree or disagree with the following statements:

1. The article was easy to read.
2. The article was easy to understand.
3. The article was difficult to understand.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
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Message Derogation

Please indicate how strongly you agree or disagree with the following statements:

1. The message was exaggerated.
2. The message was distorted.
3. The message was overblown.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
---------------------------	-----------------------------	---------------------------	--------------	------------------------	--------------------------	------------------------

Qualitative feedback

Please use this space to write down any thoughts you have about the article you read. Please focus on the words and ideas in the message and provide any feedback you have on how the message can be made to be more relevant or easier to understand.

Select Mediators & Dependent Variables

Thank you for your responses. We have a few more questions we would like to ask you.

Stigma Beliefs

Please consider how much you agree with the following statements.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
---------------------------	-----------------------------	---------------------------	--------------	------------------------	--------------------------	------------------------

People like Sam with prescription opioid use disorders are dangerous.

People like Sam with prescription opioid use disorders engage in violent behavior.

People like Sam with prescription opioid use disorders pose a physical threat to others.

People like Sam with prescription opioid use disorders are weak minded.

When people like Sam develop a prescription opioid use disorder, that is a sign of personal failure.

People like Sam with prescription opioid use disorders should take control of their problem.

Having a prescription opioid use disorder is morally wrong.

People like Sam with prescription opioid use disorders are dishonest.

People like Sam with prescription opioid use disorders cannot be trusted.

Attention Check #2

Please select Strongly Agree for this question.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
---------------------------	-----------------------------	---------------------------	--------------	------------------------	--------------------------	------------------------

Attitudes

In the article you read, you read about Sam, a person with a prescription opioid use disorder. What are your perceptions about people like Sam a scale of 1-7, where 1 is represents the adjective on the left and 7 represents the adjective on the right?

People like Sam are generally:

Good _____ bad
 Positive _____ negative
 Pleasant _____ unpleasant
 Kind _____ cruel
 Wise _____ foolish
 Valuable _____ worthless
 Shameful _____ honorable

Support for Narcan

Naloxone, or Narcan, as it is commonly known, is a drug used to revive someone when they have overdosed on opioids. Please consider how much you agree with the following statements about Narcan.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
---------------------------	-----------------------------	---------------------------	--------------	------------------------	--------------------------	------------------------

If a person like Sam overdoses on prescription opioids, Narcan should be used to save their life. First responders should administer Narcan to people like Sam who overdose on prescription opioids.

I would support policies that promote Narcan administration for people who overdose on prescription opioids.

Narcan should definitely be used to save the lives of people who overdose on prescription opioids.

Support for Rehabilitation

Thinking of individuals like Sam who have a prescription opioid use disorder, please indicate how strongly you agree or disagree with the following statements.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
---------------------------	-----------------------------	---------------------------	--------------	------------------------	--------------------------	------------------------

People like Sam should have the opportunity to attend rehabilitation programs.

People like Sam belong in jail.

I would support government policies that help people like Sam receive rehabilitation.

Demographics

Thank you for answering those questions. They will be helpful to us in determining what messages are clearer and easier to read and more understandable.

Now, we would like to know a bit more about you. As a reminder, your responses are entirely anonymous. **You can also choose to skip or select "prefer not to answer" for any of the remaining demographic questions if you do not feel comfortable answering. Even if you choose not to answer specific questions, please continue through the rest of the survey.**

Age

What is your age? *If you wish to skip this question, please select "Prefer not to answer."*

[18-99]

Prefer not to answer

Gender

I identify my gender as: *If you wish to skip this question, please write "Prefer not to answer."*

Race/Ethnicity

Which of the following racial and/or ethnicity categories describe you? Please select all that apply. *If you wish to skip this question, please select "Prefer not to answer."*

Caucasian

Black or African American

Asian

Hispanic or Latino/Latinx

American Indian or Alaskan Native

Native Hawaiian or Pacific Islander

Middle Eastern

Other (please specify) _____

Prefer not to answer

Education Level

What is your highest level of education received? If currently enrolled, list highest *received*. *If you wish to skip this question, please select "Prefer not to answer."*

No schooling completed

Nursery school to 8th grade
Some high school, no diploma
High school graduate, diploma or the equivalent (for example: GED)
Some college credit, no degree
Trade/technical/vocational training
Associate degree
Bachelor's degree
Master's degree
Professional degree (for example, medicine, theology, law)
Doctorate degree
Prefer not to answer

Random ID

Here is your validation code: [random ID generated]. To receive payment for participating, click “Accept HIT” in the Mechanical Turk window, enter this validation code and then click submit.

You must also click to the next page on this survey to submit your responses.

Debrief

[The study debrief was shared with participants immediately upon survey completion. See Appendix) for the pilot study debrief message].

Appendix E: Pilot Study Debrief Message

Thank you for participating in this survey. By participating, you have helped us to better understand the opioid epidemic. If you were triggered in any way from reading this news story, please do not hesitate to call the free National Substance Abuse Treatment Helpline at 1-800-662-4357.

As stated in the consent form, the story you read was entirely fictional. We originally told you that “This study aims to understand how people read, process, and respond to news media articles about opioids.” The **more specific purpose** of our study was to understand how to create more clear and easily understandable messages that humanize people with opioid use disorders. We wanted to understand how the words in the hypothetical article you read influenced people’s perceptions of the person mentioned in the article. We apologize for concealing the specific purpose of our study in the beginning of the article. Again, we assure you that your responses are anonymous and will only be reported in the aggregate. We are not interested in examining individual responses.

We want our research to help people understand that people with opioid use disorders could be anyone, and everyone deserves help. One way we want to help humanize people with opioid use disorders is by removing words like “addict” from the way we communicate about people with opioid use disorders. If you have questions about this language choice, we encourage you to visit the National Institute on Drug Abuse’s page at <https://www.drugabuse.gov/nidamed-medical-health-professionals/health-professions-education/words-matter-terms-to-use-avoid-when-talking-about-addiction> . We are grateful for your participation in our study, and we hope the results of our study help people understand the importance of using humanizing language.

If you are uncomfortable with the aims of this study now knowing our purpose, you can email the principal investigator at yledford@umd.edu with your MTurk ID and state that you would like your response withdrawn. Your data will then be withdrawn immediately. You will still be compensated if you complete the study but then want your data to be withdrawn.

Appendix F: Main Study Stimuli

(Modified from Ledford et al., 2021)

All stimuli included the following contents:



“[Opioid Type] in the U.S.”

By Tim Johnson

January 10, 2022

[Introductory paragraph about that particular opioid type—same within opioid type conditions].

[Stigma manipulation]

[Closing Paragraph] Sam is just one of the many faces of the opioid epidemic. In 2022, our country continues to work to combat this epidemic.

Introductory Paragraph for Prescription Opioid Conditions

Prescription opioid use has become a rising problem in the United States. People are taking prescription opioids, such as morphine or oxycodone, in doses other than what they are prescribed and may even be accessing prescription opioids without a prescription. As this problem rises, rates of opioid addiction, overdoses, and deaths have as well. Considered an epidemic, the opioid problem in the United States has policymakers, health professionals, and everyday citizens working to combat this growing problem.

Introductory Paragraph for Fentanyl Conditions

Fentanyl use has become a rising problem in the United States. People are taking and manufacturing fentanyl, a type of opioid approved for severe pain treatment, without license or prescription. As this problem rises, rates of opioid addiction, overdoses, and deaths have as well. Considered an epidemic, the opioid problem in the United States has policymakers, health professionals, and everyday citizens working to combat this growing problem.

Introductory Paragraph for Heroin Conditions

Heroin use has become a rising problem in the United States. People are manufacturing and taking heroin, an illegally produced opioid, in various forms. As this problem rises, rates of opioid addiction, overdoses, and deaths have as well. Considered an epidemic, the opioid

problem in the United States has policymakers, health professionals, and everyday citizens working to combat this growing problem.

Mark Manipulation

High, [Low], [opioid type manipulation]

Sam Carlum knows the harms of using [opioid type] in ways other than intended all too well. *However*, if you see Sam out and about, you might notice **Sam's unclean clothes** [*Sam's clean clothes*] or observe that **Sam does not seem put together** [*how Sam seems put together*]. Sam's **unkempt appearance reveals** [*polished appears does not reveal*] a bigger problem hiding beneath the surface.

Label Manipulation

High, [Low], [opioid type manipulation]

For **[opioid type] addicts** [*people with opioid type use disorders*], everyday can be a struggle. Sam Carlum knows the harms of using [opioid type] in ways other than intended all too well. Sam is a **[opioid type] addict** [*person with an opioid-type use disorder*] who you might pass on the street one day. Sam might also be your neighbor, friend, or family member. Sam continues to struggle with an/a **addiction to [opioid type]** [*opioid type use disorder*].

Responsibility Manipulation

High, [Low], [opioid type manipulation]

Sam Carlum knows the harms of using [opioid type] in ways other than intended all too well. While Sam is struggling, **he is the only person** [*he is not the only person*] who can decide whether or not he gets better. It is **Sam's personal responsibility** [*our collective responsibility*] to find resources that can help him get his [opioid type] problem under control.

Peril Manipulation

High, [Low], [opioid type manipulation]

Sam Carlum knows the harms of using [opioid type] in ways other than intended all too well. **The people in Sam's life are affected** [*Sam is personally affected*] by the physical, social, and mental consequences of Sam's [opioid type] problem. Sam's story should serve **as a warning to us all** [*as an invitation to us all to support Sam through his recovery*].

Appendix G: Main Study Questionnaire

Consent Form

See Appendix I for Consent Form

MTurk ID

Please enter your MTurk ID number. _____

First, we would like to know a little bit about your experiences with opioids. As a reminder, your responses to this survey are entirely anonymous, so please answer honestly and accurately to the best of your ability.

Moderator

In talking about opioids, we define Opioid Use as “a problematic pattern of opioid use leading to problems or distress” that includes at least **2** of these **11** behaviors related to any opioid, including a prescription opioid (like oxycodone, hydrocodone, or morphine for example), heroin, or fentanyl:

12. Taking larger amounts or taking drugs over a longer period than intended.
13. Persistent desire or unsuccessful efforts to cut down or control opioid use.
14. Spending a great deal of time obtaining or using the opioid or recovering from its effects.
15. Craving, or a strong desire or urge to use opioids
16. Problems fulfilling obligations at work, school or home.
17. Continued opioid use despite having recurring social or interpersonal problems.
18. Giving up or reducing activities because of opioid use.
19. Using opioids in physically hazardous situations.
20. Continued opioid use despite ongoing physical or psychological problem likely to have been caused or worsened by opioids.
21. Tolerance (i.e., need for increased amounts or diminished effect with continued use of the same amount).
22. Experiencing withdrawal (opioid withdrawal syndrome) or taking opioids (or a closely related substance) to relieve or avoid withdrawal symptoms.

Experience with opioids

Based on this definition, have **you** ever had an Opioid Use Disorder?

Yes/No/Prefer not to answer

Have you ever known a **family member** that had an Opioid Use Disorder?

Yes/No/Prefer not to answer

Have you ever known a **close friend** that had an Opioid Use Disorder?

Yes/No/Prefer not to answer

Do you have any other experiences with Opioid Use Disorders that you'd like to share?

Yes/No/Prefer not to answer

[For participants who selected “yes” to the previous question] Please use the space below to list any additional experiences with Opioid Use Disorders that you would like to share.

Thank you for your responses so far. Now, we would like to show you a brief news article and ask your opinions about the article. It is important that you read the article carefully. Please take your time and read the article before proceeding to the next page.

Experimental Stimuli

[Participants will be randomly assigned to 1 of 24 groups of the experimental stimuli]
See Appendix _ for stimuli.

Attention Check 1

What was the name of the person mentioned in the article?

Alex
Susan
Barb
Sam

Mediators & Dependent Variables

Now we would like to ask you a few questions.

Marking

Please indicate how strongly you agree or disagree with the following statements.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Sam looks like an addict.

If I saw Sam in public, I would think he was an addict.

Based on Sam’s appearance, I’m not sure if I would know if Sam is addicted to [opioid type].

Labeling

Please indicate how strongly you agree or disagree with the following statements.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Sam has an addiction to [opioid type].

Sam misuses [opioid type], but I am not sure if Sam is an addict.

Sam is an addict.

Negative Affect

How do you feel toward people like Sam who have a [opioid type]-related problem? Rate your feelings on a scale of 1-7, where 1 represents the adjective on the left and 7 represents the adjective on the right.

Good _____ Bad
 Afraid _____ Unafraid
 Worried _____ Unworried
 Fearful _____ Unfearful
 Pleasant _____ Unpleasant
 Negative _____ Positive

Discrete Emotions (Harmon-Jones et al., 2016; Smith, 2014)

While reading the article, to what extent did you experience these emotions toward Sam? *Italics represent the name of the subscale, and these were not delineated or shown in the survey.

Not at all	Slightly	Somewhat	Moderately	Quite a bit	Very much	An Extreme Amount
1	2	3	4	5	6	7

Anger

Anger
 Rage
 Pissed off
 Mad

Disgust

Grossed out
 Sickened
 Revulsion
 Nausea

Fear
Panic
Scared
Terror
Fear

Frustration
Irritated
Aggravated
Angry

Sympathy
Sympathy
Pity
Concern

Sadness
Lonely
Sad
Empty
Grief

Anxiety
Worry
Anxiety
Dread
Nervous

Stigma Beliefs

Please consider how much you agree or disagree with the following statements.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

People like Sam with a [fentanyl/heroin/prescription opioid]-related problem are dangerous.
People like Sam with a [fentanyl/heroin/prescription opioid]-related problem engage in violent behavior.

People like Sam with a [fentanyl/heroin/prescription opioid]-related problem use disorders pose a physical threat to others.

People like Sam with a [fentanyl/heroin/prescription opioid]-related problem are weak minded.

When people like Sam develop a [fentanyl/heroin/prescription opioid]-related problem, that is a sign of personal failure.

People like Sam with a [fentanyl/heroin/prescription opioid]-related problem should take control of their problem.

Having a [fentanyl/heroin/prescription opioid]-related problem is morally wrong.

People like Sam with a [fentanyl/heroin/prescription opioid]-related problem are dishonest.

People like Sam with a [fentanyl/heroin/prescription opioid]-related problem cannot be trusted.

Attention Check #2 *Embedded in the matrix question for Stigma Beliefs.

Please select Strongly Agree for this question.

Social Distance (Bogardus, 1924; Link, 1987)

Extremely Unwilling 1	Moderately Unwilling 2	Slightly Unwilling 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
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Thinking of individuals like Sam with a [fentanyl/heroin/prescription opioid]-related problem, please indicate how strongly you would be willing to engage in the following actions.

How willing would you be to rent a room to this type of person?

How willing would you be to work on the same class project as this type of person?

How willing would you be to have a person like this as your neighbor?

How willing would you be to have a person like this care for your children?

How willing would you be to introduce a person like this to a friend of yours?

How willing would you be to recommend a person like this for a job working for a friend?

How willing would you be to accept a person like this into the family through marriage?

Attitudes

In the article you read, you read about Sam, a person with a [fentanyl/heroin/prescription opioid]-related problem. What are your perceptions about people like Sam a scale of 1-7, where 1 is represents the adjective on the left and 7 represents the adjective on the right?

People like Sam are generally:

Good _____ Bad

Positive _____ Negative

Pleasant _____ Unpleasant

Kind _____ Cruel

Wise _____ Foolish

Valuable _____ Worthless

Shameful _____ Honorable

Support for Opioid-Related Policies (Ledford et al., 2021)

Narcan Policy Support

Naloxone, or Narcan, as it is commonly known, is a drug used to revive someone when they have overdosed on opioids. Please consider how much you agree with the following statements about Narcan.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

If a person overdoses on [opioid type], Narcan should be used to save their life.
 First responders should administer Narcan to people who overdose on [opioid-type].
 I would support policies that promote Narcan administration for people who overdose on [opioid type].
 Narcan should definitely be used to save the lives of people who overdose on [opioid type].

Rehabilitation Policy Support

Thinking of individuals like Sam with a [fentanyl/heroin/prescription opioid]-related problem, please indicate how strongly you agree or disagree with the following statements.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

People like this should have the opportunity to attend rehabilitation programs.
 People like this belong in jail.
 I would support government policies that help people like this receive rehabilitation.

Behavioral Regulation (Smith, 2014)

Thinking of individuals like Sam with a [fentanyl/heroin/prescription opioid]-related problem, please indicate how strongly you agree or disagree with the following statements.

I would want their movements through the community to be monitored and reduced.
 If a person like this tried to come to work, I would want someone to tell them to go home.
 I would not want a person like this to interact with my family.

Stigma Message Sharing (Lee & Jin, 2019)

Thinking about the message you read, how likely would you be to share it in the following situations?

Extremely Unlikely	Moderately Unlikely	Slightly Unlikely	Neither Unlikely nor Likely	Slightly Likely	Moderately Likely	Extremely Likely
1	2	3	4	5	6	7

I would tell people I know (e.g., family, friends, coworkers, etc.) about this message via face-to-face conversations.

I would tell people I know (e.g., family, friends, coworkers, etc.) about this message via phone conversations.

I would tell people I know (e.g., family, friends, coworkers, etc.) about this message through email.

I would call people I know (e.g., family, friends, coworkers, etc.) to talk about this message.

I would text people I know (e.g., family, friends, coworkers, etc.) to talk about this message.

I would post about or share this message on social media (e.g., "Facebook, Twitter, Instagram, etc.)

Demographic Questions

Thank you for answering those questions.

We would like to know just a bit more about you. As a reminder, your responses are entirely anonymous. **You can also choose to skip or select "prefer not to answer" for any of the remaining questions if you do not feel comfortable answering. Even if you choose not to answer specific questions, please continue through the rest of the survey to receive compensation for completion.**

Age

What is your age? *If you wish to skip this question, please select "Prefer not to answer."*
[18-99]

Prefer not to answer

Gender

I identify my gender as: *If you wish to skip this question, please write "Prefer not to answer."*

Race/Ethnicity

Which of the following racial and/or ethnicity categories describe you? Please select all that apply. *If you wish to skip this question, please select "Prefer not to answer."*

Caucasian

Black or African American

Asian
 Hispanic or Latino/Latinx
 American Indian or Alaskan Native
 Native Hawaiian or Pacific Islander
 Middle Eastern
 Other (please specify) _____
 Prefer not to answer

Education Level

What is your highest level of education received? If currently enrolled, list highest *received*. If you wish to skip this question, please select "Prefer not to answer."

No schooling completed
 Nursery school to 8th grade
 Some high school, no diploma
 High school graduate, diploma or the equivalent (for example: GED)
 Some college credit, no degree
 Trade/technical/vocational training
 Associate degree
 Bachelor's degree
 Master's degree
 Professional degree (for example, medicine, theology, law)
 Doctorate degree
 Prefer not to answer

Random ID

Here is your validation code: [random ID generated]. To receive payment for participating, click "Accept HIT" in the Mechanical Turk window, enter this validation code and then click submit.

You must also click to the next page on this survey to submit your responses.

Debrief

[The study debrief was shared with participants immediately upon survey completion. See Appendix) for the pilot study debrief message].

Appendix H: Main Study Debrief Message

Thank you for participating in this survey. By participating, you have helped us to better understand the opioid epidemic. If you were triggered in any way from reading this news story, please do not hesitate to call the free National Substance Abuse Treatment Helpline at 1-800-662-4357.

Now that the study is complete, we want to let you know its true purpose. While the facts about the opioid epidemic are true, **the person you read about in the article, Sam, is fictional.** We originally told you that this study aimed to understand your thoughts about the opioid epidemic and news surrounding it. **The more specific purpose** of our study was to understand how to create more inclusive messages that humanize people with opioid use disorders. We wanted to understand how the words in the hypothetical article you read influenced people's perceptions of the person mentioned in the article. We apologize for concealing the specific purpose of our study in the beginning of the article. Again, we assure you that your responses are anonymous and will only be reported in the aggregate. We are not interested in examining individual responses.

We want our research to help people understand that people with opioid use disorders could be anyone, and everyone deserves help. One way we want to help humanize people with opioid use disorders is by removing words like “addict” from the way we communicate about people with opioid use disorders. If you have questions about this language choice, we encourage you to visit the National Institute on Drug Abuse's page at <https://www.drugabuse.gov/nidamed-medical-health-professionals/health-professions-education/words-matter-terms-to-use-avoid-when-talking-about-addiction> . We are grateful for your participation in our study, and we hope the results of our study help people understand the importance of using humanizing language.

If you are uncomfortable with the aims of this study now knowing our purpose, you can email the principal investigator at vledford@umd.edu with your MTurk ID and state that you would like your response withdrawn. Your data will then be withdrawn immediately. You will still be compensated if you complete the study but then want your data to be withdrawn.

Appendix I: Main Study Consent Form

Project Title	<i>News Media Messages about Opioids</i>
Purpose of the Study	<i>This research is being conducted by Victoria Ledford of the University of Maryland, College Park. I am inviting you to participate in this research project because you are at least 18 years of age. This study aims to understand how people read, process, and respond to news media articles about opioids. Results of this study will be used to create better news media messages and promote public health.</i>
Procedures	<i>First, you will receive an online invitation to participate in an online study about opioids and news media messages. This study aims to understand how you read, process and respond to news media articles about opioids. This study will take you approximately 20 minutes to complete.</i> <i>Once you agree to participate in the study, you will be directed to read a news article about the opioid crisis. You will be asked to carefully read this article so you can answer questions. After reading, you will be asked a series of questions about your emotions, beliefs, and intentions. Throughout the study, you will also be asked demographic questions such as your age, gender, or experience with opioids, but you may choose not to answer the demographic questions.</i> <i>Questions may come in different formats. Sometimes you will be asked a direct question while other times you will be asked to indicate your level of agreement with a particular statement.</i> <i>Example questions you may answer include:</i> • “How do you feel toward people who have an opioid-related problem?” • “I would tell people I know (e.g., family, friends, coworkers, etc.) about this message via face-to-face conversations.” • Please indicate how strongly you agree or disagree with the following statement: “People who use opioids are dangerous.” <i>Finally, once you have answered the questions, you will be thanked for your participation and given additional information about the study/ You will also be given the phone number to the National Substance Abuse Hotline in the instance that answering any of these questions made you experience negative emotions or thoughts.</i> <i>Finally, as compensation for your participation, you will receive \$2 if</i>

	<i>you read the questions and answer all study-related questions.</i> While you may choose not to answer demographic questions, you must answer all remaining questions in order to receive payment for your participation. <i>This research will include multiple test questions to ensure you are actually reading. These may direct you to give a specific answer to a question to ensure you are paying attention. If you fail to answer a question in the way it is directed, you will not be compensated for your participation in this survey.</i>
Potential Risks and Discomforts	<i>Participation in this research has minimal risks, or those considered as risks ordinarily encountered in daily life. However, it is possible that you may have experiences with opioid use disorders that cause a negative reaction. Please be aware of this potential risk and consider it in order to make a responsible decision to partake or not to partake in the study. Information about the National Substance Abuse Treatment Helpline (1-800-662-4357) will be distributed to you upon completion of the study.</i> <i>You have the right to withdraw from this study at any time. However, keep in mind that only participants who complete all study-related questions will be eligible for study compensation.</i> <i>Finally, we will never connect your name with your participation so there is no risk that your opinions will be disclosed.</i>
Potential Benefits	<i>There are no direct benefits to participating in this study. However, this study will advance our understanding of the effects of opioid-related news messages, thus providing information that can be used to create better messages. This study advances our theoretical and practical understandings of the how news media communication about opioids.</i>
Confidentiality	<i>You will complete the survey online, and your participation will be anonymous. No identifying information will be collected in the survey. MTurk provides you with an arbitrary identification number, preventing confidentiality breaches from being a concern.</i> <i>That said, the researcher will take extra caution to mitigate any potential loss of confidentiality. Your MTurk ID is an arbitrary identification number unrelated to your name or personal information. The researcher will remove your MTurk ID from the survey spreadsheets after completion of the study to ensure maximum confidentiality.</i> <i>Your survey responses will also be stored on Qualtrics' secure servers (the survey platform) and on a password protected laptop controlled by the researcher until any identifying information is removed (MTurk ID). Then, the researcher may share unidentified data with other research</i>

	team members. Unidentified data will be preserved as long as is necessary for research publication and to answer any follow up questions that may be sent to the corresponding author of such publications. In the event that it is discarded, it will be deleted off Qualtrics' servers and researchers' password protected devices. If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.
Compensation	You will receive \$2 for your completion of the study, if you read the study-related questions and answer them all. As a reminder, you may choose not to answer the demographic questions, and these will be clearly labeled in the survey. However, you must answer all other study-related questions to receive compensation. This \$2 will be deposited in your Amazon Mechanical Turk account within 7 days after study completion. If you do not complete the study according to the study instructions, you will not be eligible to receive full compensation. This research will include multiple test questions to ensure you are actually reading. If you fail to answer a question in the way directed, you will not be compensated for your participation in this survey. You will be responsible for any taxes assessed on the compensation.
Right to Withdraw and Questions	Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. If you are an employee or student at the University of Maryland, your employment status or academic standing will not be positively or negatively affected by your participation or non-participation in this study If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator: Victoria Ledford Skinner Building, UMD vledford@umd.edu [301-405-8979]

Participant Rights	<i>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</i> University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678 <i>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</i>
Statement of Consent	<i>By clicking yes, you indicate that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You may download this consent form for your reference.</i> <i>If you agree to participate, please select “Yes”.</i> I consent to participate Yes ☐ No ☐

Appendix J: Tables

Table 1. 1

Types of Stigma

Stigmatizers		Stigmatized	
<i>Institutions</i>	<i>Public</i>	<i>Self</i>	<i>Others</i>
Structural Stigma	Public Stigma	Self/Internalized Stigma	Courtesy Stigma
		Residual Stigma	
		Affiliate Stigma	

Table 2. 1

Pilot Study Stigma Beliefs Final EFA Factor Loadings

	Loading
People like Sam with prescription opioid use disorders are dangerous.	.78
People like Sam with prescription opioid use disorders engage in violent behavior.	.83
People like Sam with prescription opioid use disorders pose a physical threat to others.	.83
People like Sam with prescription opioid use disorders are weak minded.	.81
When People like Sam develop a prescription opioid use disorder, that is a sign of personal failure.	.81
Having a prescription opioid use disorder is morally wrong.	.76
People like Sam with prescription opioid use disorders are dishonest.	.80
People like Sam with prescription opioid use disorders cannot be trusted.	.74

Table 2. 2

Pilot Study Support for Opioid-Related Policies Final EFA Factor Loadings

	Loading
If a person like Sam overdoses on prescription opioids, Narcan should be used to save their life.	.85
First responders should administer Narcan to people who overdose on prescription opioids.	.74
I would support policies that promote Narcan administration for people who overdose on prescription opioids.	.74
Narcan should definitely be used to save the lives of people who overdose on prescription opioids.	.84
People like Sam should have the opportunity to attend rehabilitation programs.	.71
I would support government policies that help people like Sam receive rehabilitation.	.66

Table 2. 3

Qualitative Themes in Pilot Study Feedback

	Count	Percent
Message comprehension and interest	130	38.0%
Message relevance	87	25.4%
Needed context	31	9.1%
Message confusion or derogation	13	3.8%
Negative emotions	12	3.5%
N/A	69	20.2%

Table 2. 4

Pilot Study t-test results

Outcome Variable	Condition	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>t</i>	<i>df</i>
Stigma Beliefs	Low Mark	45	4.83	1.29	.19	.30	83
	High Mark	40	4.56	1.18	.19		
Attitudes	Low Mark	45	3.87	1.01	.15	.90	83
	High Mark	40	3.84	.75	.12		
Support for Opioid-Related Policies	Low Mark	45	5.57	1.24	.18	.16	83
	High Mark	40	5.64	.93	.15		
Stigma Beliefs	Low Label	46	4.60	1.45	.21	.67	87
	High Label	43	4.39	1.52	.23		
Attitudes	Low Label	46	4.15	1.19	.18	1.20	87
	High Label	43	3.87	1.02	.16		
Support for Opioid-Related Policies	Low Label	46	5.83	.86	.13	-.27	87
	High Label	43	5.89	1.03	.16		
Stigma Beliefs	Low Responsibility	37	4.54	1.39	.23	-.22	81
	High Responsibility	46	4.61	1.40	.21		
Attitudes	Low Responsibility	37	4.08	.99	.16	.56	81
	High Responsibility	46	3.95	1.14	.17		
Support for Opioid-Related Policies	Low Responsibility	37	5.48	1.01	.17	-2.30*	81
	High Responsibility	46	5.97	.92	.14		
Stigma Beliefs	Low Peril	50	4.75	1.27	.18	.25	82
	High Peril	34	5.07	1.18	.20		
Attitudes	Low Peril	50	4.19	1.17	.17	2.57*	82
	High Peril	34	3.55	1.04	.18		
Support for Opioid-Related Policies	Low Peril	50	5.63	.83	.12	.17	82
	High Peril	34	5.59	1.14	.19		

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

Table 3. 1

Main Study Experimental Conditions

Stigma Marks		
	<i>Low Stigma Mark</i>	<i>High Stigma Mark</i>
<i>Prescription Opioids</i>	Low Mark, Prescription	High Mark, Prescription
<i>Fentanyl</i>	Low Mark, Fentanyl	High Mark, Fentanyl
<i>Heroin</i>	Low Mark, Heroin	High Mark, Heroin
Stigma Labels		
	<i>Low Stigma Label</i>	<i>High Stigma Label</i>
<i>Prescription Opioids</i>	Low Label, Prescription	High Label, Prescription
<i>Fentanyl</i>	Low Label, Fentanyl	High Label, Fentanyl
<i>Heroin</i>	Low Label, Heroin	High Label, Heroin
Stigma Responsibility Messages		
	<i>Low Stigma Responsibility</i>	<i>High Stigma Responsibility</i>
<i>Prescription Opioids</i>	Low Responsibility, Prescription	High Responsibility, Prescription
<i>Fentanyl</i>	Low Responsibility, Fentanyl	High Responsibility, Fentanyl
<i>Heroin</i>	Low Responsibility, Heroin	High Responsibility, Heroin
Stigma Peril Messages		
	<i>Low Stigma Peril</i>	<i>High Stigma Peril</i>
<i>Prescription Opioids</i>	Low Peril, Prescription	High Peril, Prescription
<i>Fentanyl</i>	Low Peril, Fentanyl	High Peril, Fentanyl
<i>Heroin</i>	Low Peril, Heroin	High Peril, Heroin

Table 3. 2

Main Study Data Cleaning Process

Data Cleaning Stage	Responses Excluded	Sample Size after Exclusion
Raw Data Download	N/a	2,128
Incomplete Responses	329	1,799
Failed Attention Checks	220	1,579
Duplicates	46	1,533
Failed Stimuli Reading Check	3	1,530
Withdrawn Response	1	1,529
Speeder Responses	83	1,446
Outlier Survey Time	2	1,444 Final N

Table 3. 3

Main Study Counts of Experimental Conditions

Stigma Feature	Stigma Level	Opioid	Count	Stigma Level	Opioid	Count
Mark	High	Prescription	67	Low	Prescription	54
	High	Fentanyl	62	Low	Fentanyl	62
	High	Heroin	66	Low	Heroin	60
Label	High	Prescription	57	Low	Prescription	64
	High	Fentanyl	59	Low	Fentanyl	60
	High	Heroin	60	Low	Heroin	60
Responsibility	High	Prescription	59	Low	Prescription	61
	High	Fentanyl	61	Low	Fentanyl	49
	High	Heroin	63	Low	Heroin	56
Peril	High	Prescription	59	Low	Prescription	57
	High	Fentanyl	58	Low	Fentanyl	60
	High	Heroin	63	Low	Heroin	67

Table 3. 4

Main Study Stigma Beliefs Final Factor Loadings

	Loading
People like Sam with prescription opioid use disorders are dangerous.	.85
People like Sam with prescription opioid use disorders engage in violent behavior.	.82
People like Sam with prescription opioid use disorders pose a physical threat to others.	.84
People like Sam with prescription opioid use disorders are weak minded.	.78
When People like Sam develop a prescription opioid use disorder, that is a sign of personal failure.	.78
Having a prescription opioid use disorder is morally wrong.	.75
People like Sam with prescription opioid use disorders are dishonest.	.76
People like Sam with prescription opioid use disorders cannot be trusted.	.75

Table 3. 5

Main Study Support for Opioid-related Policies Final Factor Loadings: One Factor Solution

	Loading
If a person like Sam overdoses on prescription opioids, Narcan should be used to save their life.	.90
First responders should administer Narcan to people who overdose on prescription opioids.	.88
I would support policies that promote Narcan administration for people who overdose on prescription opioids.	.89
Narcan should definitely be used to save the lives of people who overdose on prescription opioids.	.91
People like Sam should have the opportunity to attend rehabilitation programs.	.58
I would support government policies that help people like Sam receive rehabilitation.	.62

Table 3. 6

Main Study Support for Opioid-related Policies Final Factor Loadings: Two Factor Solution

	Narcan	Rehab
If a person like Sam overdoses on prescription opioids, Narcan should be used to save their life.	.91	
First responders should administer Narcan to people who overdose on prescription opioids.	.90	
I would support policies that promote Narcan administration for people who overdose on prescription opioids.	.89	
Narcan should definitely be used to save the lives of people who overdose on prescription opioids.	.92	
People like Sam should have the opportunity to attend rehabilitation programs.		.76
I would support government policies that help people like Sam receive rehabilitation.		.78
People like Sam belong in jail.		-.53

Table 3. 7

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Beliefs

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.023
Intercept	6366.18	1	6 366.18	3459.07***	<.001	.905	
Mark	14.36	1	14.36	7.80**	.005	.021	
Opioid	10.531	2	5.27	2.86	.058	.015	
Mark x Opioid	1.45	2	.73	.394	.675	.002	
Label							.009
Intercept	6044.12	1	6044.12	2788.91***	<.001	.887	
Label	1.201	1	1.201	.554	.457	.002	
Opioid	.612	2	.306	.141	.868	.001	
Label x Opioid	2.14	2	1.07	.494	.611	.003	
Responsibility							.019
Intercept	5794.232	1	5794.232	2829.30***	<.001	.892	
Responsibility	1.36	1	1.361	.664	.416	.002	
Opioid	22.325	2	11.163	5.45**	.005	.031	
Responsibility x Opioid	.039	2	.019	.010	.991	.000	
Peril							.019
Intercept	6212.613	1	6212.613	2813.37***	<.001	.887	
Peril	12.00	1	12.00	5.43*	.020	.015	
Opioid	15.26	2	7.63	3.46*	.033	.019	
Peril x Opioid	.197	2	.099	.045	.956	.000	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. 8

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Negative Affect

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.052
Intercept	8081.45	1	8081.45	7861.57***	<.001	.96	
Mark	11.93	1	11.93	11.60***	<.001	.031	
Opioid	8.42	2	4.21	4.10*	.017	.022	
Mark x Opioid	6.85	2	3.42	3.33*	.037	.018	
Label							.002
Intercept	7226.96	1	7226.96	6327.37	<.001	.95	
Label	2.71	1	2.71	2.37	.12	.007	
Opioid	1.80	2	.90	.79	.46	.004	
Label x Opioid	.35	2	.17	.15	.86	.001	
Responsibility							.008
Intercept	6584.64	1	6584.64	5473.34	<.001	.94	
Responsibility	.07	1	.07	.06	.82	.000	
Opioid	2.64	2	1.32	1.10	.33	.006	
Responsibility x Opioid	.05	2	.02	.02	.98	.000	
Peril							.024
Intercept	7452.55	1	7452.55	6759.44	<.001	.95	
Peril	5.26	1	5.26	4.77	.03	.013	
Opioid	5.92	2	3.00	2.68	.07	.015	
Peril x Opioid	4.45	2	2.23	2.02	.13	.011	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. 9

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Anger

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	1818.56	1	1818.56	653.74	<.001	.64	
Mark	.27	1	.27	.10	.76	.000	
Opioid	2.43	2	1.22	.44	.65	.002	
Mark x opioid	.08	2	.05	.01	.99	.000	
Label							.01
Intercept	1985.48	1	1985.48	705.47	<.001	.67	
Label	1.89	1	1.89	.67	.41	.002	
Opioid	4.09	2	2.05	.73	.48	.004	
Label x opioid	1.37	2	.69	.24	.78	.001	
Responsibility							-.003
Intercept	1987.00	1	1987.00	684	<.001	.67	
Responsibility	2.30	1	2.30	.79	.38	.002	
Opioid	7.96	2	3.98	1.37	.26	.008	
Responsibility x opioid	1.21	2	.60	.21	.81	.001	
Peril							.01
Intercept	2080.17	1	2080.17	692.84	<.001	.66	
Peril	13.94	1	13.94	4.64*	.03	.013	
Opioid	9.15	2	4.58	1.52	.22	.008	
Peril x opioid	2.23	2	1.12	.37	.69	.002	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. 10

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Disgust

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	1899.97	1	1899.97	685.6	<.001	.65	
Mark	1.21	1	1.21	.44	.51	.001	
Opioid	2.58	2	1.29	.47	.63	.003	
Mark x opioid	.81	2	.41	.15	.86	.001	
Label							.01
Intercept	1939.68	1	1939.68	671.40	<.001	.66	
Label	2.044	1	2.04	.71	.40	.002	
Opioid	4.49	2	2.25	.78	.46	.004	
Label x opioid	.211	2	.11	.04	.96	.000	
Responsibility							.01
Intercept	1795.17	1	1795.17	620.60	<.001	.64	
Responsibility	5.70	1	5.70	1.97	.16	.006	
Opioid	11.75	2	5.88	2.03	.13	.012	
Responsibility x opioid	2.47	2	1.24	.43	.65	.002	
Peril							.03
Intercept	2079.36	1	2079.36	725.36	<.001	.67	
Peril	18.22	1	18.22	6.36*	.012	.017	
Opioid	25.01	2	12.50	4.36*	.013	.024	
Peril x opioid	1.10	2	.55	.19	.83	.001	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 11

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Fear

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	2039.86	1	2039.86	724.35	<.001	.67	
Mark	.05	1	.05	.02	.89	.000	
Opioid	2.62	2	1.31	.47	.63	.003	
Mark x opioid	1.54	2	.77	.27	.76	.001	
Label							.00
Intercept	2184.65	1	2184.65	739.02	<.001	.68	
Label	3.13	1	3.13	1.06	.30	.003	
Opioid	9.83	2	4.92	1.66	.19	.009	
Label x opioid	.01	2	.01	.00	.998	.000	
Responsibility							.01
Intercept	2060.33	1	2060.33	678.61	<.001	.66	
Responsibility	1.99	1	1.99	.66	.42	.002	
Opioid	20.74	2	10.37	3.42*	.03	.020	
Responsibility x opioid	1.02	2	.51	.17	.85	.001	
Peril							.01
Intercept	2189.95	1	2189.95	745.97	<.001	.68	
Peril	9.34	1	9.34	3.18	.08	.009	
Opioid	15.41	2	7.70	2.62	.07	.014	
Peril x opioid	.74	2	.37	.13	.88	.001	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 12

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Frustration

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	2285.535	1	2285.535	735.972	<.001	.67	
Mark	.03	1	.03	.01	.92	.000	
Opioid	.53	2	.27	.09	.92	.000	
Mark x opioid	.41	2	.20	.07	.94	.000	
Label							.01
Intercept	2264.92	1	2264.92	743.25	<.001	.68	
Label	2.96	1	2.96	.97	.33	.003	
Opioid	2.64	2	1.32	.43	.65	.002	
Label x opioid	.71	2	.36	.12	.89	.001	
Responsibility							.00
Intercept	2165.75	1	2165.75	738.92	<.001	.68	
Responsibility	2.02	1	2.02	.69	.41	.002	
Opioid	13.07	2	6.53	2.23	.11	.013	
Responsibility x opioid	.73	2	.36	.12	.88	.001	
Peril							.02
Intercept	2359.52	1	2359.52	804.70	<.001	.69	
Peril	17.36	1	17.36	5.92*	.02	.016	
Opioid	16.37	2	8.19	2.79	.06	.015	
Peril x opioid	6.84	2	3.42	1.17	.31	.006	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 13

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Sympathy

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	7084.16	1	7084.16	2843.37	<.001	.89	
Mark	.39	1	.39	.16	.69	.000	
Opioid	1.63	2	.82	.33	.72	.002	
Mark x opioid	5.42	2	2.71	1.09	.34	.006	
Label							.01
Intercept	7081.45	1	7081.45	3110.41	<.001	.90	
Label	3.28	1	3.28	1.44	.23	.004	
Opioid	11.61	2	5.80	2.55	.08	.02	
Label x opioid	8.08	2	4.04	1.78	.17	.01	
Responsibility							.00
Intercept	6761.43	1	6761.43	2856.15	<.001	.89	
Responsibility	.33	1	.33	.14	.71	.000	
Opioid	1.95	2	.98	.41	.66	.002	
Responsibility x opioid	5.38	2	2.69	1.14	.32	.007	
Peril							.00
Intercept	6886.24	1	6886.24	3020.62	<.001	.89	
Peril	.03	1	.03	.013	.91	.000	
Opioid	.87	2	.43	.19	.83	.001	
Peril x opioid	5.53	2	2.76	1.21	.30	.007	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. **p* < .05, ***p* < .01, ****p* < .001

Table 3. 14

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Sadness

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	3044.75	1	3044.75	1434.79	<.001	.80	
Mark	.03	1	.03	.02	.90	.000	
Opioid	.02	2	.01	.00	.996	.000	
Mark x opioid	5.39	2	2.70	1.27	.28	.007	
Label							.01
Intercept	3319.92	1	3319.92	1566.18	<.001	.82	
Label	4.31	1	4.31	2.03	.16	.006	
Opioid	9.69	2	4.85	2.29	.10	.013	
Label x opioid	.71	2	.36	.17	.85	.001	
Responsibility							.00
Intercept	3117.84	1	3117.84	1413.74	<.001	.81	
Responsibility	.38	1	.38	.17	.68	.001	
Opioid	11.74	2	5.87	2.66	.07	.015	
Responsibility x opioid	.90	2	.45	.20	.82	.001	
Peril							.01
Intercept	3209.33	1	3209.33	1420.77	< .001	.80	
Peril	3.51	1	3.51	1.55	.21	.004	
Opioid	12.80	2	6.40	2.83	.06	.016	
Peril x opioid	1.71	2	.86	.38	.69	.002	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 15

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Anxiety

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.01
Intercept	3381.60	1	3381.60	1264.38	<.001	.78	
Mark	.14	1	.14	.05	.82	.000	
Opioid	.60	2	.30	.11	.89	.001	
Mark x opioid	5.30	2	2.65	.99	.37	.005	
Label							.01
Intercept	3376.49	1	3376.49	1376.02	<.001	.80	
Label	8.54	1	8.54	3.48	.06	.010	
Opioid	8.22	2	4.11	1.68	.09	.009	
Label x opioid	.94	2	.47	.19	.83	.001	
Responsibility							.01
Intercept	3293.60	1	3293.60	1248.14	<.001	.78	
Responsibility	6.11	1	6.11	2.31	.13	.007	
Opioid	15.65	2	7.82	2.97	.053	.017	
Responsibility x opioid	1.66	2	.83	.31	.73	.002	
Peril							.01
Intercept	3441.90	1	3441.90	1393.99	< .001	.80	
Peril	5.32	1	5.32	2.16	.14	.006	
Opioid	12.93	2	6.46	2.62	.07	.014	
Peril x opioid	2.76	2	1.38	.56	.57	.003	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. **p* < .05, ***p* < .01, ****p* < .001

Table 3. 16

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Attitudes

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.02
Intercept	4497.75	1	4497.75	4605.77	<.001	.93	
Mark	8.51	1	8.51	8.71**	.003	.023	
Opioid	2.68	2	1.34	1.37	.26	.007	
Mark x opioid	.02	2	.008	.008	.99	.000	
Label							.000
Intercept	4906.22	1	4906.22	1431.04	<.001	.80	
Label	.34	1	.34	.10	.75	.000	
Opioid	8.99	2	4.45	1.31	.27	.007	
Label x opioid	.000	2	.000	.000	1.00	.000	
Responsibility							.01
Intercept	4978.69	1	4978.69	5093.14	<.001	.94	
Responsibility	.83	1	.83	.85	.36	.002	
Opioid	6.17	2	3.08	3.15	.04	.018	
Responsibility x opioid	.53	2	.27	.27	.76	.002	
Peril							.01
Intercept	4563.15	1	4563.10	4006.42	<.001	.92	
Peril	5.47	1	5.47	4.81*	.03	.013	
Opioid	4.91	2	2.45	2.16	.12	.012	
Peril x opioid	1.01	2	.51	.44	.64	.002	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 17

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Social Distance

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.03
Intercept	3036.90	1	3036.90	1200.65	<.001	.77	
Mark	33.47	1	33.47	13.23***	<.001	.035	
Opioid	7.35	2	3.68	1.45	.24	.008	
Mark x opioid	1.16	2	.58	.23	.80	.001	
Label							.000
Intercept	3290.86	1	3290.86	1362.69	<.001	.794	
Label	.58	1	.58	.20	.65	.001	
Opioid	.90	2	.45	.16	.86	.001	
Label x opioid	.19	2	.10	.03	.97	.000	
Responsibility							.00
Intercept	4294.57	1	4294.57	1546.87	<.001	.82	
Responsibility	3.37	1	3.37	1.21	.27	.004	
Opioid	10.23	2	5.12	1.84	.16	.011	
Responsibility x opioid	2.50	2	1.25	.45	.64	.003	
Peril							.00
Intercept	3999.21	1	3999.21	1309.13	<.001	.79	
Peril	3.42	1	3.42	1.12	.29	.003	
Opioid	3.20	2	1.60	.52	.59	.003	
Peril x opioid	11.27	2	5.64	1.85	.16	.010	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. **p* < .05, ***p* < .01, ****p* < .001

Table 3. 18

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Behavioral Regulation

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.03
Intercept	6442.16	1	6442.16	2886.20	<.001	.89	
Mark	28.14	1	28.14	12.61***	<.001	.033	
Opioid	6.09	2	3.05	1.36	.26	.007	
Mark x opioid	4.40	2	2.20	.99	.37	.005	
Label							.000
Intercept	6273.38	1	6273.38	2615.76	<.001	.881	
Label	1.90	1	1.90	.79	.37	.002	
Opioid	5.24	2	2.62	1.09	.34	.006	
Label x opioid	7.14	2	3.57	1.49	.23	.008	
Responsibility							.02
Intercept	5489.42	1	5489.42	2618.95	<.001	.88	
Responsibility	.45	1	.45	.22	.64	.001	
Opioid	20.16	2	10.08	4.80**	.009	.027	
Responsibility x opioid	26.48	2	3.24	1.55	.22	.009	
Peril							.01
Intercept	6483.17	1	6483.17	2492.47	<.001	.88	
Peril	9.56	1	9.56	3.67	.06	.010	
Opioid	13.24	2	6.62	2.55	.08	.014	
Peril x opioid	1.39	2	.69	.27	.77	.001	

Note. *SS* = Type III Sum of Squares, *MS* = Mean Square. **p* < .05, ***p* < .01, ****p* < .001

Table 3. 19

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Support for Opioid-Related Policies

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.000
Intercept	14700.06	1	147000.06	14488.02	<.001	.98	
Mark	.10	1	.10	.09	.76	.000	
Opioid	1.30	2	.65	.64	.53	.003	
Mark x opioid	2.98	2	1.49	1.47	.23	.008	
Label							.000
Intercept	13785.50	1	13785.50	13124.02	<.001	.97	
Label	1.18	1	1.18	1.12	.29	.003	
Opioid	.54	2	.27	.26	.78	.001	
Label x opioid	2.19	2	1.09	1.04	.35	.006	
Responsibility							.00
Intercept	13214.49	1	13214.49	13046.65	<.001	.97	
Responsibility	3.59	1	3.59	3.54	.06	.010	
Opioid	.35	2	.17	.17	.84	.001	
Responsibility x opioid	.18	2	.09	.09	.92	.001	
Peril							.10
Intercept	13984.83	1	13984.83	14177.39	<.001	.98	
Peril	4.68	1	4.68	4.74*	.03	.013	
Opioid	3.19	2	1.60	1.62	.20	.009	
Peril x opioid	.48	2	.24	.24	.78	.001	

Note. SS = Type III Sum of Squares, MS = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 20

Two-Way ANOVA results, Each Stigma Message Feature x Opioid on Stigma Message Sharing

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2	<i>Adjusted</i> <i>R</i> ²
Mark							.000
Intercept	4906.22	1	4906.22	1431.04	<.001	.80	
Mark	.34	1	.34	.10	.75	.000	
Opioid	8.99	2	4.45	1.31	.27	.007	
Mark x opioid	.000	2	.000	.000	1.00	.000	
Label							.01
Intercept	5087.91	1	5087.91	1572.35	<.001	.82	
Label	.71	1	.71	.22	.64	.001	
Opioid	14.68	2	7.34	2.27	.11	.013	
Label x opioid	11.37	2	5.69	1.76	.17	.010	
Responsibility							.01
Intercept	5242.84	1	5242.84	1559.11	<.001	.82	
Responsibility	17.20	1	17.20	5.12*	.02	.015	
Opioid	5.73	2	2.86	.85	.43	.005	
Responsibility x opioid	2.85	2	1.43	.43	.66	.002	
Peril							.00
Intercept	5525.24	1	5525.25	1647.91	<.001	.82	
Peril	1.15	1	1.15	.34	.56	.001	
Opioid	.19	2	.10	.03	.97	.000	
Peril x opioid	4.45	2	2.23	.66	.52	.004	

Note. SS = Type III Sum of Squares, MS = Mean Square. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. 21

Correlations among all Study Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Attitudes	3.62	1.04	1.00													
2. Social Distance	3.24	1.70	.44***	1.00												
3. Regulation	4.15	1.54	-.44***	-.06*	1.00											
4. Policy Support	6.22	1.01	.17***	-.09***	-.33***	1.00										
5. Transmission	3.80	1.83	.09***	.45***	.30***	-.10***	1.00									
6. Stigma Beliefs	4.27	1.35	-.54***	-.01	.75***	-.36***	.28***	1.00								
7. Negative Affect	4.52	1.07	-.53***	-.55***	.24***	.00	-.10***	.29***	1.00							
8. Anger	2.34	1.69	-.18***	.43***	.51***	-.35***	.53***	.59***	-.01	1.00						
9. Disgust	2.32	1.69	-.20***	.43***	.54***	-.33***	.50***	.63***	.00	.88***	1.00					
10. Fear	2.43	1.71	-.12***	.47***	.47***	-.29***	.55***	.54***	.02	.86***	.87***	1.00				
11. Frustration	2.51	1.73	-.22***	.36***	.53***	-.33***	.49***	.60***	.06*	.94***	.87***	.83***	1.00			
12. Sympathy	4.40	1.53	.16***	.25***	-.03	.25***	.36***	-.06*	-.01	.29***	.27***	.37***	.27***	1.00		
13. Sadness	3.00	1.48	-.02	.46***	.34***	-.13***	.53***	.37***	-.05	.75***	.76***	.82***	.73***	.59***	1.00	
14. Anxiety	3.06	1.60	.11***	.37***	.37***	-.16***	.51***	.42***	.10***	.75***	.78***	.86***	.75***	.55***	.83***	1.00

Table 4. 1

Descriptive Statistics and ANOVA results for all Study Variables as a Function of Experience with Opioid Use Disorders

Variables	Experience with OUDs <i>M(SD)</i>			<i>F</i>	Partial η^2	Significant Differences	Adjusted R^2
	None	Affiliate	Personal				
Attitudes	3.54(.99)	3.57(1.04)	3.80(1.10)	8.11***	.011	N-P -.27***	.01
Social Distance	2.67(1.43)	3.03(1.56)	4.51(1.62)	178.58***	.199	N-A -.36*** N-P -1.84*** A-P -1.48***	.20
Regulation	3.97(1.48)	4.00(1.54)	4.65(1.54)	26.59***	.036	N-P -.68***	.03
Policy Support	6.32(.10)	6.33(.99)	5.93(1.01)	21.35***	.029	N-P .39***	.03
Stigma	3.18(1.71)	3.84(1.76)	4.85(1.62)	112.12***	.135	N-P -1.66***	.13
Message Sharing						N-A -.66*** A-P -1.01***	
Stigma Beliefs	3.90(1.35)	4.02(1.46)	4.64(1.47)	33.78***	.045	N-P -.74***	.04
Negative Affect	4.69(1.03)	4.60(1.07)	4.12(1.04)	37.63***	.050	N-P .58*** A-P .48***	.05
Anger	1.81(1.25)	2.07(1.47)	3.59(1.96)	168.72***	.190	N-P -.27*** N-A -1.18*** A-P -1.51***	.19
Disgust	1.78(1.22)	2.05(1.42)	3.59(1.02)	177.52***	.198	N-P -1.81*** N-A -.27*** A-P -1.54***	.20
Fear	1.84(1.24)	2.18(1.44)	3.77(1.98)	197.51***	.215	N-P -1.93*** N-A -.34*** A-P -1.59***	.21
Frustration	2.01(1.39)	2.29(1.53)	2.66(1.96)	131.18***	.154	N-P -1.65*** N-A -.27*** A-P -1.37***	.15
Sympathy	4.06(1.56)	4.49(1.52)	4.89(1.35)	37.37***	.049	N-P -.83*** N-A -.43*** A-P -.40***	.05
Sadness	2.46(1.19)	2.84(1.26)	4.02(1.62)	163.25***	.185	N-P -1.56*** N-A -.37*** A-P -1.19***	.18
Anxiety	2.54(1.34)	2.97(1.48)	4.10(1.67)	132.80***	.156	N-P -1.56*** N-A -.43*** A-P -1.13***	.15

Mean differences are reported from post-hoc Tukey tests between each of the three groups. N represents no experience (none), A represents experience with a friend or family member (affiliate), and P represents personal experience with an OUD (personal).

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

Table 4. 2

Conditional Indirect Effect of Mark on Outcomes through Negative Affect and Stigma Beliefs (Dual Mediation)

Outcome Variable	Moderated Mediation Index	SE	95%CI	Change in R ²	W Level	Unstandardized coefficient	SE	95%CI
Attitudes								
<i>Negative Affect</i>				.002				
W1	.04	.10	[-.15, .25]		<i>Experience</i>			
W2	-.06	.19	[-.25, .12]		None (0)	-.12*	.06	[-.25, -.01]
					Affiliate (1)	-.08	.08	[-.25, .08]
					Personal (2)	-.18*	.08	[-.34, -.04]
<i>Stigma Beliefs</i>				.001	None (0)	-.13*	.06	[-.26, -.02]
W1	.04	.11	[-.16, .27]		Affiliate (1)	-.09	.09	[-.26, .09]
W2	-.04	.12	[-.28, .19]		Personal (2)	-.18	.10	[-.28, .01]
Social Distance								
<i>Negative Affect</i>				.002				
W1	.09	.25	[-.41, .57]		<i>Experience</i>			
W2	-.15	.24	[-.64, .30]		None (0)	-.30*	.14	[-.57, -.02]
					Affiliate (1)	-.21	.21	[-.63, .19]
					Personal (2)	-.45*	.19	[-.84, .09]
<i>Stigma Beliefs</i>				.001	None (0)	.06	.04	[-.0001, .16]
W1	-.02	.05	[-.14, .08]		Affiliate (1)	.04	.05	[-.04, .15]
W2	.02	.05	[-.10, .13]		Personal (2)	.08	.05	[-.01, .20]
Behavioral Regulation								
<i>Negative Affect</i>				.001				
W1	-.001	.03	[-.07, .05]		<i>Experience</i>			
W2	.01	.03	[-.04, .07]		None (0)	.03	.02	[-.004, .08]
					Affiliate (1)	.02	.03	[-.02, .08]
					Personal (2)	.04	.03	[-.01, .10]
<i>Stigma Beliefs</i>				.001	None (0)	.33*	.14	[.05, .61]
W1	-.11	.26	[-.61, .41]		Affiliate (1)	.22	.22	[-.19, .66]
W2	.06	.28	[-.48, .86]		Personal (2)	.39	.23	[-.06, .86]
Support for Opioid-Related Policies								

<i>Negative Affect</i>				.001	<i>Experience</i>			
W1	-.01	.03	[-.08, .05]		None (0)	.03	.02	[-.004, .08]
W2	.01	.03	[-.04, .07]		Affiliate (1)	.02	.03	[-.02, .09]
					Personal (2)	.04	.03	[-.004, .11]
<i>Stigma Beliefs</i>				.001	None (0)	-.12*	.05	[-.23, -.01]
W1	.04	.09	[-.15, .22]		Affiliate (1)	-.08	.08	[-.23, .07]
W2	-.02	.10	[-.22, .17]		Personal (2)	-.14	.09	[-.32, .02]
Stigma Message Sharing								
<i>Negative Affect</i>				.001	<i>Experience</i>			
W1	.02	.06	[-.09, .14]		None (0)	-.05	.04	[-.16, .01]
W2	-.02	.05	[-.21, .01]		Affiliate (1)	-.04	.05	[-.16, .04]
					Personal (2)	-.07	.06	[-.21, .01]
<i>Stigma Beliefs</i>				.001	None (0)	.15*	.08	[.01, .32]
W1	-.05	.13	[-.30, .22]		Affiliate (1)	.11	.11	[-.09, .35]
W2	.04	.14	[-.24, .30]		Personal (2)	.19	.12	[-.04, .43]

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

Note. Opioid type was entered as a covariate into all models given preliminary analyses in Phase I suggesting a significant direct effect of opioid type.

Note. Since the moderator is a categorical moderator, PROCESS codes two interaction terms, W1, or the comparison of individuals with level 1 (affiliate experience) to the other groups, and W2, or the comparison of individuals with level 2 (personal experience) to the other groups.

Table 4. 3

Conditional Indirect Effect of Peril on Outcomes through Anger and Stigma Beliefs (Dual Mediation)

Outcome Variable	Moderated Mediation Index	SE	95%CI	Change in R^2	W Level	Unstandardized coefficient	SE	95%CI
Attitudes								
<i>Anger</i>				.009	<i>Experience</i>			
W1	.14*	.07	[.02, .28]		None (0)	.00	.03	[-.07, .07]
					Affiliate (1)	.14*	.06	[.03, .26]
W2	.04	.09	[-.13, .21]		Personal (2)	.04	.08	[-.11, .20]
<i>Stigma Beliefs</i>				.001	None (0)	-.20	.12	[-.45, .04]

W1	.11	.20	[-.30, .51]		Affiliate (1)	-.10	.16	[-.42, .22]
W2	-.05	.21	[-.47, .36]		Personal (2)	-.25	.17	[-.60, .09]
Social Distance								
<i>Anger</i>				.009	<i>Experience</i>			
W1	.61*	.28	[.07, 1.15]		None (0)	.00	.15	[-.30, .30]
W2	.18	.38	[-.51, .87]		Affiliate (1)	.61*	.23	[.17, 1.08]
					Personal (2)	.18	.35	[-.51, .87]
<i>Stigma Beliefs</i>				.001	None (0)	-.24	.145	[-.52, .04]
W1	.13	.24	[-.35, .59]		Affiliate (1)	-.11	.19	[-.50, .26]
W2	-.06	.25	[-.56, .44]		Personal (2)	-.30	.21	[-.71, .11]
Behavioral Regulation								
<i>Anger</i>				.010	<i>Experience</i>			
W1	.08*	.46	[.01, .19]		None (0)	.00	.03	[-.04, .04]
W2	.02	.05	[-.08, .13]		Affiliate (1)	.08*	.04	[.02, .17]
					Personal (2)	.02	.05	[-.07, .12]
<i>Stigma Beliefs</i>				.001	None (0)	.29	.18	[-.06, .64]
W1	-.15	.29	[-.73, .39]		Affiliate (1)	.14	.23	[-.32, .59]
W2	.07	.31	[-.54, .67]		Personal (2)	.36	.25	[-.12, .85]
Support for Opioid-Related Policies								
<i>Anger</i>				.010	<i>Experience</i>			
W1	-.11*	.06	[-.25, -.01]		None (0)	-.001	.03	[-.06, .06]
W2	-.03	.07	[-.18, .11]		Affiliate (1)	-.11*	.05	[-.23, .02]
					Personal (2)	-.03	.06	[-.17, .09]
<i>Stigma Beliefs</i>				.001	None (0)	-.05	.04	[-.13, .01]
W1	.03	.05	[-.08, .14]		Affiliate (1)	-.02	.04	[-.12, .06]
W2	-.01	.06	[-.13, .10]		Personal (2)	-.06	.05	[-.17, .02]

Stigma Message Sharing									
<i>Anger</i>					<i>Experience</i>				
W1	.50*	.22	[.06, .95]	.010	None (0)	.004	.12	[-.24, .25]	
W2	.14	.30	[-.44, .75]		Affiliate (1)	.50*	.19	[.13, .88]	
					Personal (2)	.15	.28	[-.39, .71]	
<i>Stigma Beliefs</i>									
W1	.03	.07	[-.09, .21]	.001	None (0)	-.06	.05	[-.19, .01]	
W2	-.02	.07	[-.16, .14]		Affiliate (1)	-.03	.06	[-.16, .08]	
					Personal (2)	-.08	.06	[-.23, .03]	

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

Note. Opioid type was entered as a covariate into all models given preliminary analyses in Phase I suggesting a significant direct effect of opioid type.

Note. Since the moderator is a categorical moderator, PROCESS codes two interaction terms, W1, or the comparison of individuals with level 1 (affiliate experience) to the other groups, and W2, or the comparison of individuals with level 2 (personal experience) to the other groups.

Table 4. 4

Conditional Indirect Effect of Peril on Outcomes through Disgust and Stigma Beliefs (Dual Mediation)

Outcome Variable	Moderated Mediation Index	SE	95%CI	Change in R^2	W Level	Unstandardized coefficient	SE	95%CI
Attitudes								
<i>Disgust</i>					<i>Experience</i>			
W1	.11	.08	[-.03, .28]	.004	None (0)	.03	.04	[-.05, .12]
W2	.03	.10	[-.16, .23]		Affiliate (1)	.14*	.07	[.02, .29]
					Personal (2)	.06	.09	[-.10, .25]
<i>Stigma Beliefs</i>								
W1	.11	.21	[-.31, .54]	.001	None (0)	-.21	.13	[-.47, .04]
W2	-.05	.23	[-.51, .38]		Affiliate (1)	-.11	.17	[-.44, .23]
					Personal (2)	-.27	.18	[-.63, .08]
Social Distance								
<i>Disgust</i>					<i>Experience</i>			
W1	.45	.30	[-.11, 1.06]	.004	None (0)	.14	.17	[-.18, .47]
W2	.13	.41	[-.66, .92]		Affiliate (1)	.59*	.25	[.12, 1.10]
					Personal (2)	.27	.37	[-.45, .98]

<i>Stigma Beliefs</i>				.001	None (0)	-.27	.17	[-.61, .05]
W1	.14	.27	[-.40, .68]		Affiliate (1)	-.13	.22	[-.56, .28]
W2	-.07	.28	[-.62, .49]		Personal (2)	-.34	.23	[-.81, .13]
Behavioral Regulation								
<i>Disgust</i>				.004	<i>Experience</i>			
W1	.06	.04	[-.02, .16]		None (0)	.02	.02	[-.02, .06]
W2	.02	.05	[-.09, .13]		Affiliate (1)	.08*	.04	[.01, .17]
					Personal (2)	.03	.05	[-.06, .14]
<i>Stigma Beliefs</i>				.001	None (0)	.28	.18	[-.07, .63]
W1	-.15	.29	[-.71, .40]		Affiliate (1)	.14	.27	[-.30, .58]
W2	.07	.30	[-.52, .68]		Personal (2)	.36	.24	[-.13, .84]
Support for Opioid-Related Policies								
<i>Disgust</i>				.004	<i>Experience</i>			
W1	-.06	.05	[-.17, .02]		None (0)	-.02	.02	[-.07, .03]
W2	-.02	.05	[-.14, .09]		Affiliate (1)	-.07*	.05	[-.19, -.001]
					Personal (2)	-.03	.05	[-.15, .06]
<i>Stigma Beliefs</i>				.001	None (0)	-.06	.04	[-.15, .01]
W1	.03	.06	[-.09, .16]		Affiliate (1)	-.03	.05	[-.14, .07]
W2	-.01	.06	[-.15, .11]		Personal (2)	-.07	.06	[-.20, .02]
Stigma Message Sharing								
<i>Disgust</i>				.004	<i>Experience</i>			
W1	.36	.24	[-.09, .86]		None (0)	.11	.13	[-.15, .36]
W2	.10	.32	[-.53, .74]		Affiliate (1)	.47*	.20	[.10, .88]
					Personal (2)	.21	.29	[-.37, .80]
<i>Stigma Beliefs</i>				.001	None (0)	-.08	.06	[-.23, .01]
W1	.04	.09	[-.12, .25]		Affiliate (1)	-.04	.07	[-.18, .09]
W2	-.02	.09	[-.20, .18]		Personal (2)	-.10	.08	[-.28, .04]

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

Note. Opioid type was entered as a covariate into all models given preliminary analyses in Phase I suggesting a significant direct effect of opioid type.

Note. Since the moderator is a categorical moderator, PROCESS codes two interaction terms, W1, or the comparison of individuals with level 1 (affiliate experience) to the other groups, and W2, or the comparison of individuals with level 2 (personal experience) to the other groups.

Table 4. 5

Conditional Indirect Effect of Peril on Outcomes through Frustration and Stigma Beliefs (Dual Mediation)

Outcome Variable	Moderated Mediation Index	SE	95%CI	Change in R ²	W Level	Unstand ardzied coefficient	SE	95%CI
Attitudes								
<i>Frustration</i>					<i>Experience</i>			
W1	.14*	.06	[.03, .27]	.01	None (0)	-.001	.03	[-.07, .07]
W2	.05	.06	[-.08, .17]		Affiliate (1)	.13*	.05	[.04, .25]
					Personal (2)	.05	.06	[-.08, .17]
<i>Stigma Beliefs</i>								
				.001	None (0)	-.20	.12	[-.44, .04]
W1	.10	.20	[-.28, .49]		Affiliate (1)	-.09	.16	[-.39, .21]
W2	-.05	.21	[-.44, .36]		Personal (2)	-.25	.17	[-.58, .09]
Social Distance								
<i>Frustration</i>					<i>Experience</i>			
W1	.66*	.26	[.12, 1.17]	.01	None (0)	-.01	.16	[-.32, .31]
W2	.23	.34	[-.42, .91]		Affiliate (1)	.65*	.21	[.23, 1.05]
					Personal (2)	.23	.29	[-.33, .81]
<i>Stigma Beliefs</i>								
				.001	None (0)	-.22	.14	[-.50, .04]
W1	.12	.23	[-.33, .57]		Affiliate (1)	-.11	.18	[-.47, .25]
W2	-.06	.24	[-.52, .42]		Personal (2)	-.28	.19	[-.66, .09]
Behavioral Regulation								
<i>Frustration</i>					<i>Experience</i>			
W1	.11*	.05	[.02, .23]	.01	None (0)	-.001	.03	[-.05, .05]
W2	.04	.06	[-.07, .16]		Affiliate (1)	.11*	.05	[.03, .21]
					Personal (2)	.04	.05	[-.06, .15]
<i>Stigma Beliefs</i>								
				.001	None (0)	.28	.17	[-.05, .62]
W1	-.15	.28	[-.70, .40]		Affiliate (1)	.13	.23	[-.32, .57]
W2	.07	.29	[-.51, .64]		Personal (2)	.35	.24	[-.10, .85]
Support for Opioid-Related Policies								
<i>Frustration</i>					<i>Experience</i>			
W1	-.13*	.07	[-.28, -.02]	.01	None (0)	.001	.03	[-.06, -.07]

W2	-.05	.07	[-.20, .09]		Affiliate (1)	-.13*	.06	[-.26, -.03]
					Personal (2)	-.04	.06	[-.18, .06]
<i>Stigma Beliefs</i>				.001	None (0)	-.05	.03	[-.13, .01]
W1	.03	.05	[-.07, .14]		Affiliate (1)	-.02	.04	[-.11, .06]
W2	-.01	.05	[-.12, .10]		Personal (2)	-.06	.05	[-.17, .02]
Stigma Message Sharing Frustration								
				.01	<i>Experience</i>			
W1	.56*	.22	[.14, .99]		None (0)	-.01	.13	[-.26, .26]
W2	.19	.28	[-.34, .75]		Affiliate (1)	.55*	.18	[.22, .91]
					Personal (2)	.18	.24	[-.27, .69]
<i>Stigma Beliefs</i>				.001	None (0)	-.05	.05	[-.17, .02]
W1	.03	.06	[-.08, .19]		Affiliate (1)	-.02	.05	[-.14, .07]
W2	-.01	.06	[-.14, .12]		Personal (2)	-.06	.06	[-.21, .03]

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

Note. Opioid type was entered as a covariate into all models given preliminary analyses in Phase I suggesting a significant direct effect of opioid type.

Note. Since the moderator is a categorical moderator, PROCESS codes two interaction terms, W1, or the comparison of individuals with level 1 (affiliate experience) to the other groups, and W2, or the comparison of individuals with level 2 (personal experience) to the other groups.

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