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Disability-Related Factors and Perceived Stigma: A Closer Examination of Suicidality in Individuals with Physical Disabilities

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DISABILITY-RELATED FACTORS AND PERCEIVED STIGMA: A CLOSER
EXAMINATION OF SUICIDALITY IN INDIVIDUALS WITH PHYSICAL
DISABILITIES

by

Lauren Rachel Khazem

A Dissertation
Submitted to the Graduate School,
the College of Education and Psychology,
and the Department of Psychology
at The University of Southern Mississippi
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for the Degree of Doctor of Philosophy

August 2018

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ABSTRACT

DISABILITY-RELATED FACTORS AND PERCEIVED STIGMA: A CLOSER EXAMINATION OF SUICIDALITY IN INDIVIDUALS WITH PHYSICAL DISABILITIES

by Lauren Rachel Khazem

August 2018

Previous research has indicated an association between physical disability and suicidal ideation. However, the mechanisms contributing to the development of suicidal ideation in this population have remained largely unstudied within an empirically supported theoretical framework. The current study expands upon previous research by examining the relationship between different facets of physical disability and suicidal ideation intensity through the indirect effect of perceived stigmatization and interactions with mental states described within the Interpersonal Theory of Suicide, namely perceived burdensomeness and thwarted belongingness. Furthermore, this research aims to examine these potential relationships in a nonclinical sample of adults with physical disabilities ranging in type and severity. It was anticipated that the severity of individuals' physical disabilities and the perceived visibility of their physical disabilities would independently exhibit an indirect effect on suicidal ideation intensity through individuals' perceived stigmatization related to their physical disabilities. Furthermore, it was hypothesized that this relationship would be strongest when feelings of perceived burdensomeness and thwarted belongingness were jointly present. Participants in the study were 20 individuals with various physical disabilities from 2 metropolitan areas in the Southeastern United States who were recruited through various methods, including

online and printed advertisements. Overall, the results did not support hypotheses.

Implications of this research are discussed in detail. This research represents a preliminary step in understanding mechanisms prompting the development of suicidal ideation in individuals with physical disabilities. Future research should aim to clarify the relationship between various facets of physical disability and suicidal ideation.

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DEDICATION

I dedicate this work to those who believed in, supported, and challenged me throughout the course of my graduate studies. Mom, Dad, Jed, and Zach, your encouragement and love means more to me than you can imagine. To those who have given me lifelong memories during the past four years that I have called Mississippi home, I will always treasure our friendships while realizing that without all of the fun times we spent together, this dissertation would have likely been finished sooner. Finally, to each barista in the Hattiesburg area, I am immensely indebted to you for your elixir that I have come to call “dissertation juice.”

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CHAPTER I - INTRODUCTION

Disability and suicide

Physical disabilities refer to various conditions impacting individuals' lives including difficulty with hearing, vision, dexterity, and mobility and may lead to functional limitations in daily activities such as driving, performing household chores, and completing occupational tasks. (Rokach, Lehcier-Kimel, & Safarov, 2006). The most recent data from the United States Census indicate that over 50 million Americans are currently living with a form of physical disability affecting areas including vision, hearing, speech, upper body functioning, or mobility (Centers for Disease Control and Prevention [CDC], 2012). Furthermore, only 1 in 3 adults aged 18-64 with a disability were employed in 2011, compared to 3 in 4 for those without disabilities in the same age bracket; for those with disabilities who were employed, their median income was significantly lower than those without disabilities. (\$19,735 compared \$30,285; CDC 2013). Other research indicates concerning outcomes regarding disability. For example, individuals with functional limitations, which may stem from a physical disability, are less likely to engage in leisurely physical activity or consume meals containing fruits and vegetables and are more likely to have a lower family income and have more physically unhealthy days than those without functional limitations (Thompson, Zack, Krahn, Andreson, & Barile, 2012). Various concerning outcomes related to physical disabilities have been observed. However, in terms of mental health-related outcomes, namely suicidal ideation and suicide attempts, the research focused on this population is currently scarce.

Previous research has indicated an association between physical disability and suicidal ideation, and suicide attempts (Coduti, Hayes, Locke, & Youn, 2016; Gianninni et al., 2010; Ikeda et al., 2001; Shoostary et al., 2008). Particularly, the number of functional limitations due to the presence of a physical disability has been indicated as a risk factor for suicide, as individuals with a functional limitation were indicated as being 4 times more likely to have attempted suicide in the past 12 months than those without functional limitations; those with multiple functional limitations were 8 times as likely to have attempted suicide (Meltzer et al., 2012). This effect was only partially mediated by the presence of depressive symptoms, indicating a need to further investigate correlates of suicide in this population. As suicide is the tenth leading cause of death in the United States, accounting for 44,193 deaths in 2015 (Centers for Disease Control and Prevention, 2016), understanding the mechanisms contributing to death by suicide is vital, particularly for at risk and understudied populations, including individuals with physical disabilities.

Much of the current scientific literature base examining suicide risk factors in individuals with physical disabilities is focused on older adults, a population at increased risk of suicide. In 2015, suicide was the 8th leading cause of death in adults aged 55-64 and the 16th leading case of death in adults aged 65 and above (Centers for Disease Control and Prevention, 2016). This research has been well served in addressing suicide risk in this subset of the population of individuals with physical disabilities as the association between disability and suicidality has also been observed in diverse samples of older adults. In a study of older European adults, Fässberg and colleagues (2013) found that compared to older adults with no limitations in activities of daily living

(ADL), moderate difficulties in ADL were associated with a twofold increase in the odds of endorsing death wishes while those with the highest levels of difficulties in ADL were 3 times as likely to endorse death wishes. Ahn and Kim (2015) also found an association between functional limitations and suicidal ideation in a sample of older Korean immigrants. Furthermore, a systematic review of 65 studies related to physical illness, functional disability, and suicidal behaviors across 4 continents in this population supports the association between physical disability and suicidal behavior in older adults (Fässberg, 2016). However, in another study of sample of 50 older adults in primary care, it was observed that those who aimed to meet their goals through help-seeking and persistence with low secondary compensation strategies were at lower risk of suicidal ideation (Fiske, Bamonti, Nadorff, Petts, & Sperry, 2013). Overall, although much is still unknown about the mechanisms prompting the development of suicidal ideation in older adults, the association between disability and suicide risk in older adults is well-documented when compared to that for those of all ages with physical disabilities.

In terms of specific disabilities that have been researched, much literature regarding the association between physical disability and suicide focuses on individuals with chronic pain or highlights the role of pain in the association between disability and suicide. Specifically, Ilgen and colleagues (2013) observed an association between various non-cancer pain conditions and death by suicide. In one review, Hassett, Aquino, and Ilgen (2014) highlight the overlap between risk factors for suicide in the general population and individuals with chronic pain conditions as well as unique risk factors for suicide in this population (e.g. pain catastrophizing, perception of disability and type of pain). Furthermore, Hooley, Franklin, and Nock (2014) discuss the association between

chronic pain and suicide in depth in another review of the extant literature. To date, no review focusing on the association of various forms of physical disability and suicide risk from an empirically-supported theoretical perspective exists.

The Interpersonal Theory of Suicide (ITS; Joiner, 2005, Van Orden, et al., 2010) describes underlying mechanisms contributing to individuals' desire for death by suicide. Specifically, active suicidal desire is most likely to occur in the joint presence of two mental states (Van Orden, et al., 2010). The first state, perceived burdensomeness, refers to an individual's belief that he or she is a burden to others, and that others would benefit from his or her death. Research has supported the association between perceived burdensomeness and suicidal ideation in various populations, including university students (Joiner et al., 2009), deployed military personnel (Bryan, Clemans, & Hernandez, 2012), older adults (Van Orden, Witte, Gordon, Bender, & Joiner, 2008), and individuals with chronic pain (Kanzler, Bryan, McGeary, & Morrow, 2012; Wilson et al., 2017). Self-perceived burden was indicated as a mediator in the relationship between functional limitations and depressive symptoms (Demosey, Karver, Labouliere, Zesciewicz, & de Nadai, 2012). In a recent extension of this work to include suicidal ideation, the association between perceived burdensomeness and suicidal ideation was observed in individuals with physical disabilities and health conditions as the number of health conditions and physical disabilities endorsed predicted suicidal ideation intensity through perceived burdensomeness and depressive symptoms, serially (Khazem, Jahn, Cukrowicz, & Anestis, 2017). However, the potential association between perceived burdensomeness and suicidal ideation has yet to be examined in a community-based sample of adults with various types of physical disabilities.

The second state contributing to active suicidal ideation, thwarted belongingness, refers to a lack of reciprocal, meaningful relationships and feelings of loneliness and isolation (Van Orden, et al., 2010). It is currently unclear whether individuals with physical disabilities experience heightened levels of thwarted belongingness or if thwarted belongingness contributes to suicidal ideation in this population, as research has yielded mixed results regarding the presence of loneliness, one aspect of thwarted belongingness. While Rokach, Lechicier-Kimel, and Safarov (2006) did not find evidence of interpersonal isolation in those with disabilities, Doyle, Moffat, & Corlett (1994) reported feelings of ostracization and isolation are present. Furthermore, Meltzer and colleagues (2012) supported this idea, as feelings of loneliness partially mediated the relationship between disability and suicide attempts. In the aforementioned research, however, thwarted belongingness itself was not assessed for, indicating the need for further investigation of its possible presence and association with suicidal ideation in those with physical disabilities. Notably, Khazem, Jahn, Cukrowicz, and Anestis (2015) observed that undergraduate students with physical disabilities did not endorse significantly higher levels of thwarted belongingness than students without physical disabilities. Furthermore, Wilson and colleagues (2017) also found that thwarted belongingness was not predictive of suicidal ideation in those with chronic pain. Further research would be well served in clarifying the potential relationship between thwarted belongingness and suicidal ideation in individuals with various physical disabilities, particularly in a community-based sample. Particularly, in line with the ITS, research should examine whether the interaction between perceived burdensomeness and thwarted belongingness is associated with suicidal ideation in those with physical disabilities.

Recent research has examined differences in perceived burdensomeness, thwarted belongingness, and suicidal ideation between individuals with and without physical disabilities. Results indicated that those with physical disabilities only endorsed higher mean levels of perceived burdensomeness relative to those without physical disabilities (Khazem, Jahn, Cukrowicz, & Anestis., 2015). However, as the sample was drawn from an undergraduate population and utilized only self-report methods, the results may not reflect levels of ITS mental states that may be present in the overall population of individuals with physical disabilities, as university students may possess protective factors against the ITS states. University students with disabilities may receive accommodations to encourage their success in a university setting (e.g. extra time to complete work, sign language interpreters, university-owned assistive technology for reading textbooks) while such accommodations may not be readily available in the community. Furthermore, it is possible that the type and severity of physical disabilities endorsed by university students may not be representative of the general population of those with physical disabilities, as some individuals may have physical disabilities that restrict enrollment or success at a university level

Stigmatization of physical disabilities

Disability-related stigma has been defined as the stigma related to “perceived negative attributes or consequences of the disability (e.g., with respect to appearance, health, or capabilities” (McLaughlin, Bell, & Stringer 2004, p.304) and has been associated with various concerning outcomes. Some argue that this stigmatization is partly due to the negative connotations ingrained within the medical model of disability, which those with physical disabilities may internalize (Brittain, 2004). Specifically, this

model of disability focuses on disability as an impairment due to biological processes or malfunctioning. As a consequence, society views difficulties faced by individuals with physical disabilities as stemming from their disabilities or the individuals themselves and not from societal structures; medical professionals provide the definitions and solutions for these impairments, potentially providing more emphasis on the disability as the source of the individuals' difficulties (Beaudry, 2016). In line with concerns of internalized stigma, which is conceptualized as the individual having thoughts or feelings of being different (Muhlbauer, 2002), Brittain's (2004) qualitative study of Paralympic athletes noted themes of within-group stigmatization, as an athlete indicated that she was concerned about being associated with individuals with "more severe" physical disabilities, such as cerebral palsy, and did not want people without physical disabilities to believe that she had the same disability as that group of Paraolympians.

In response to the concerns about the medical model of disability, activists conceptualized a social model of disability in the 1970s (Beaudry, 2016) that was later theorized by Finklestein (1980) and Oliver (1990). This model conceptualizes disability as the exclusion experienced by individuals due to bodily impairments (Beaudry, 2016) and places specific focus on society at large as the force that creates difficulties for these individuals. Therefore, solutions to difficulties faced by these individuals should be implemented on a society-wide scale (Bingham et al., 2013).

Although debate about conceptualizations of disability exists, disability-related stigma and its effects have been well-documented, particularly within the media (Hebl & Kleck, 2000). Stigmatization of certain conditions, such as epilepsy, can be traced to the 6th century, when it became repeatedly incorporated into Greek drama as a form of

madness (Trimble & Hesdorffer, 2016). In modern times, negative portrayals of individuals with physical disabilities are still commonplace, if these individuals are portrayed at all. When these individuals are depicted, their presence may be used to invoke pity in infomercials as a means to solicit donations (Pelka, 1997), and in other scenarios, these individuals may be portrayed as monstrous or dangerous (Bogdan, Biklen, Shapiro, & Spelkoman, 1990). It can be expected that such sparse, but often negative, portrayals of those with physical disabilities in the media contribute to further stigmatization and negative outcomes in those with physical disabilities, and research has supported this theory.

Disability-related stigma in the workplace has been well-documented. Although the Americans with Disabilities Act (ADA, 1990) was implemented to require equal access and employment accommodations for individuals with physical disabilities, stigmatization in the workplace is still a concern. Coworkers' concerns about the effect of individuals' disabilities on performance as well as an association between disability type and acceptance in the workplace mediated by stigma (McLaughlin et al, 2012) support the need for further efforts at reducing disability-related stigma in the workplace. However, acceptance of individuals with disabilities in the workplace may be more likely if employees with disabilities are already present (Kulkarni & Lemgnick-Hall, 2011). Stigma in the workplace may therefore impact workplace relationships and lead to negative interpersonal outcomes. Poor mental health outcomes have been attributed to stigma, as it is associated with an increase in psychological stress (Van Brakel, 2006), lower self-esteem, mastery, and isolation (Jacoby, 1994). Green and colleagues (2005) observed that maltreatment of those with physical disabilities was predictive of

depression and thoughts of suicide. Furthermore, Lund, Nadorff, and Winer (2015) found that individuals' negative attitudes towards disability were associated with greater acceptability of suicide as an option for individuals with physical disabilities. Therefore, there is an indication that the link between disability status and suicide risk may be partly explained by individuals with disabilities' experiences with stigma.

Thus far, the potential relation of physical disability-related stigma to suicidal ideation within the framework of the ITS has yet to be examined, although an interpersonal component to stigma exists. Particularly, individuals with physical disabilities are treated differently than the rest of the general population (Rokach, Lechcier-Kimel, & Safarov, 2006). Individuals without mobility-related disabilities, if given the option, will avoid those who use wheelchairs (Snyder, Kleck, Strenta, & Mentzer, 1979). Furthermore, when people interact with those with physical disabilities, their speech is more redundant, concrete, and shorter than their speech directed towards others without physical disabilities (Gouvier, Coon, Todd, & Fuller, 1994). Indeed, these behaviors may prompt the development of ITS states. Link and Phelan (2014) posit that the role of stigmatization is to keep those with conditions "away" in an effort to exploit, control, or exclude these individuals. When individuals with physical disabilities experience this stigmatization or the effects of "stigma power", they may decide to not interact with others. In terms of the ITS, this stigmatization may prompt feelings of perceived burdensomeness and thwarted belongingness or stigmatization may exacerbate these feelings.

The current study

Past research regarding disability and suicide has been directed at specific subsets of this population (e.g. older adults, individuals with movement disorders) and has largely ignored societal influences in this relationship. Furthermore, much of the extant research has largely ignored the potential impact of the severity of these disabilities on this relationship.

This research has multiple aims. First, it intends to examine potential mechanisms, particularly disability-related stigma, contributing to suicidal ideation in individuals with physical disabilities. Furthermore, it intends to examine the role of the individuals' perceived visibility of their physical disabilities on suicidal ideation. Lastly, this research seeks to test the ITS in a community-based sample of individuals with varying physical disabilities ranging in severity. To date, research has yet to accomplish these goals. As the impact of disability is multifaceted, the impact of multiple aspects of disability status on stigma and suicidal desire were examined. Specifically, the extent to which an individual believes his or her disability is visible to others as well as the overall severity of physical disabilities were separately examined as contributors to perceived stigma. A moderated mediation model was utilized in each case. In the first model, overall disability severity was expected to indirectly effect suicidal ideation through perceived disability-related stigma. The second model examined the indirect effect of individuals' perceptions of the visibility of their disabilities on suicidal ideation through perceived stigma relating to their disabilities. In each model, these effects were expected to be strongest in the presence of heightened levels of perceived burdensomeness and

thwarted belongingness. See Figures 1 and 2, respectively, for visual representations of each hypothesized model.

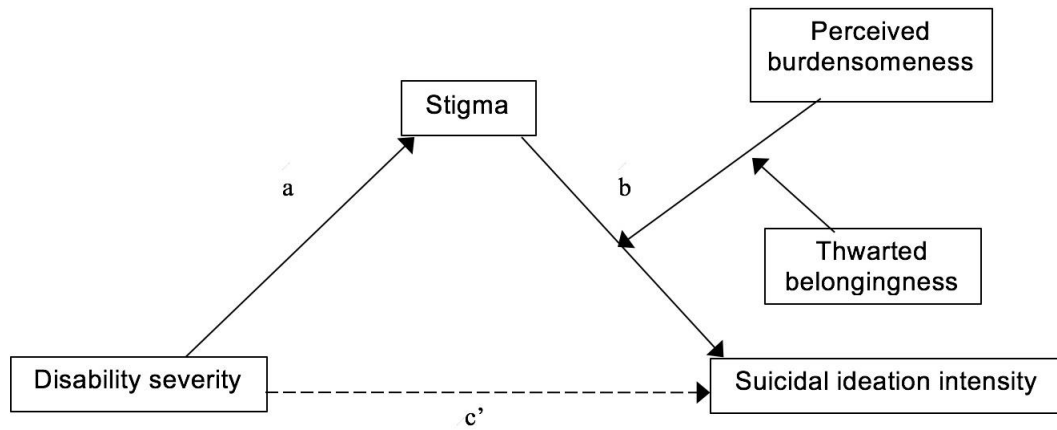


Figure 1. Hypothesized model examining the indirect effect of physical disability severity on suicidal ideation intensity

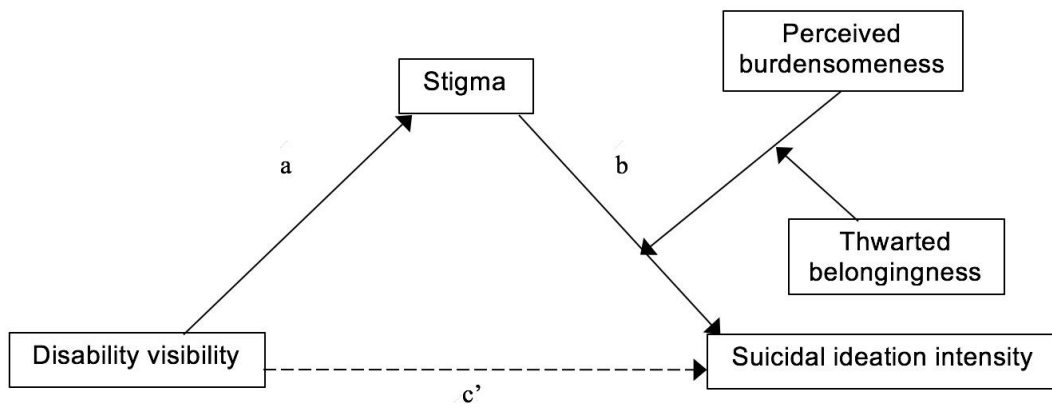


Figure 2. Hypothesized model examining the indirect effect of perceived physical disability visibility on suicidal ideation intensity

CHAPTER II METHODS

Participants and recruitment

It was originally anticipated that participants in this study would be 150 individuals with varying physical disabilities recruited from the greater Jackson and Hattiesburg, Mississippi metropolitan areas. Participants were recruited through advertisements in local newspapers, fliers left at doctors' offices, and emails sent to local support groups for individuals with physical disabilities, and through online advertisements (e.g. Facebook, Craigslist, local classified advertisements). After contacting the experimenter through phone or email, participants were asked to disclose the nature of their disability and accommodations needed, as the researcher needed to ensure participants had a physical disability as determined by the Americans With Disabilities Act (ADA, 1990)¹, and the needed accessibility equipment or study personnel would be transported to privacy protected and accessible rooms at The University of Southern Mississippi or The University of Mississippi Medical Center, both of which were equipped with accessibility ramps and elevators. At the conclusion of the study, each participant was compensated with a \$45 gift card for Amazon.com.

The full sample consisted of 20 individuals ($M_{age} = 54.70$, $SD = 11.55$; 65.00% female, 69.60% White, 25.00% African American). The most common types of physical disabilities that participants rated as most visible involved difficulties with the following: multiple disabilities rated as equally visible (30.00%), neurological functioning (20.00%), mobility (20.00%), other (20.00%), and blindness/low vision in one or both eyes

¹ Physical disability is assessed using the definition used by Americans With Disabilities Act (ADA), which states: Individuals "must have a physical impairment that substantially limits one or more life activities, or have a record of such impairment...that limits or is perceived to limit a major life activity" (ADA, 1990).

(10.00%,) Participants endorsed an average of 1.85 disabilities (mode=1, range 1-3). Out of the 20 participants responding to a measure of current and past suicidality, 9 (45.80%) participants reported experiencing lifetime suicidal ideation, and 4 (20.00%) endorsed making a previous suicide attempt (range= 1-3). Detailed statistics of the full sample are listed in Table 1.

Table 1

Descriptive Statistics of the Full Sample

Demographic information	M/n	SD/%	Minimum	Maximum
<i>Race</i>				
<i>African American/Black</i>	5	25.00	-	-
<i>Native American/American Indian</i>	1	5.00	-	-
<i>White</i>	13	65.00	-	-
<i>Other</i>	1	5.00	-	-
<i>Age</i>	54.70	11.55	26	81
<i>Sex</i>				
Male	4	20.00	-	-
Female	16	80.00	-	-
<i>Number of disabilities</i>				
1	9	45.00	-	-
2	5	25.00	-	-
3+	6	30.00	-	-
<i>Most visible disability type</i>				
Multiple disabilities with same visibility	6	30.00	-	-
Related to mobility	4	20.00	-	-
Neurological	4	20.00	-	-
Other	4	20.00	-	-
Blindness/low vision	2	10.00	-	-
<i>History of suicidal ideation</i>	9	45.80	-	-
<i>History of suicide attempts</i>	4	20.00	1	3

Accessibility

In order to ensure participants' privacy, accessibility of the proposed study, and allow participants to complete self-report questionnaires independently, the experimenter provided accessibility equipment for participants' use and specially trained study personnel for the study, if requested.

ZoomText Magnifier/Reader is a commonly used software for individuals with varying levels of low vision or blindness. Multiple options for accessibility include the ability to magnify a computer screen, change color contrasts, and read content on the computer screen and typed text using synthesized speech. This software was downloaded on one of the study laptops. Participants also had the option of the researcher equipping the computer with Braille overlay stickers.

Job Access With Speech (JAWS) Screen Reader (Freedom Scientific, 2017) is another screen reader software for individuals with blindness or low vision that prevents navigating a computer screen through use of a mouse, which is used with ZoomText software. Participants who were JAWS users were provided a laptop computer installed with JAWS or permitted to bring their own laptop for use during the study. Participants also had the option of the researcher equipping the computer with Braille overlay stickers. Headphones were offered to participants to ensure their privacy if the screen reading option for ZoomText Magnifier/Reader or JAWS software was used. Furthermore, individuals who were deaf or hard of hearing were permitted to request personnel trained in American Sign Language (ASL) to be present for the duration of the study.

Measures

Perceived Burdensomeness and Thwarted Belongingness

The Interpersonal Needs Questionnaire-15 Item Version (INQ; Van Orden, Cukrowicz, Witte, & Joiner, 2012) will be administered to measure perceived burdensomeness (9 items; e.g., *These days, I think I am a burden to society*) and thwarted belongingness (6 items; e.g., *These days, I feel disconnected from others*). Each item in the measure is scored on a Likert scale from 1 (“Not at all like me”) to 7 (“Very much like me”). The INQ has been previously used in various samples including, older adults (Van Orden, et al., 2014) and individuals with physical disabilities (Khazem, Jahn, Cukrowicz, & Anestis, 2015; Khazem, Jahn, Cukrowicz, & Anestis, 2017). The INQ has demonstrated convergent, divergent, and predictive validity (Van Orden, et al., 2012), and both subscales have demonstrated good internal consistency ($\alpha=.94$ and $.92$, respectively). In the current study, both subscales demonstrated good internal consistency ($\alpha=.88$ and $.90$, respectively).

Disability Severity

The Craig Handicap Assessment and Reporting Technique (CHART; Whiteneck, Charlifue, Gerhart, Overholser, & Richardson, 1992) is a widely used 32-item clinician-administered interview that assesses the severity of impairment of individuals living in the community. The CHART assesses functional limitations across multiple domains by measuring behaviors in areas including: physical independence, cognitive independence, mobility, occupation, social integration, and economic self-sufficiency. Furthermore, the 5 five domains are summed to create an objective index that resembles the concept of handicap that is outlined by the World Health Organization (WHO; 1980). The CHART

has exhibited good test-retest reliability, has been able to differentiate between individuals with high or low levels of handicap, and its scoring has been indicated as relatively insensitive to variations due to commonly held beliefs in the population (Whiteneck, et al., 1992). The reliability and validity of the CHART has also been demonstrated in a sample of individuals with various physical disabilities (Walker, Mellick, Brooks, & Whiteneck, 2003).

Perceived Stigma

The Jacoby Stigma Scale is a 3-item measure of perceived stigma and has been indicated as a “promising” measure of perceived stigma (Van Brakel, 2006). Answers are on a 2-point forced dichotomous scale for agreement for each item. This measure has demonstrated strong internal consistency and convergent validity when utilized in samples of individuals with epilepsy and demonstrated adequate internal consistency (Jacoby, 1994). As such, the prompt includes the word “epilepsy”. This word was replaced with “disability/disabilities” in the current study, and the rest of the measure was administered as is since there is no other indicator of the measure’s sole applicability to a specific population. In the current study, the Jacoby Stigma Scale demonstrated poor internal consistency ($\alpha=.51$).

Psychiatric Diagnostic Interview

The Mini International Neuropsychiatric Interview (MINI; Sheehan, et al., 1997) is a widely used structured diagnostic interview that was administered in order to assess for the presence of specific mental disorders, which were intended to be entered as covariates into the analyses. The MINI has demonstrated high sensitivity, specificity, and positive predictive rates as well as very good test-retest reliability (Sheehan, et al., 1997).

It is compatible with the *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition* (DSM-IV; American Medical Association, 1994) and the *International Classification of Diseases – Tenth Edition* (ICD-10; World Health Organization).

Suicidal Ideation and Past Suicide Attempts

The Self-Injurious Thoughts and Behaviors Interview-Short Form (SITBI; Nock, Holmberg, Photos & Michel, 2007) is a 72-item structured interview that was administered to assess for suicidal ideation and the number of past suicide attempts. The SITBI has demonstrated strong inter-rater reliability, concurrent validity, and content validity (Nock, et al., 2007). Item 9 of the SITBI (“On average, how intense were your thoughts of suicide?”; i.e. average suicide ideation intensity) was used as the outcome variable. Responses to the question are coded on a 5-point scale ranging from 0 (“Low/Little”) to 4 (“High/Severe”). To account for individuals without a history of suicidal ideation in the sample, responses were recoded on a 6-point scale from 0 (No history of suicidal ideation) to 5 (“High/Severe”) for the described scale.

Visibility of Disability/Disabilities

Participants were asked to provide the name of their diagnosed physical disability and rate how visible they perceive each to be on a 5-point Likert scale ranging from 1 (Not at all visible) to 5 (Very visible). Currently, no validated measures exist that assess this specific construct. This question was asked in response to every disability the participant endorsed

Demographics

Each participant was administered a demographics form, which included questions regarding age, sex, disability diagnoses, annual family income, race, marital

status, education, living situation, and history of receiving mental health services. The influence of these demographic variables on the variables of interest were intended to be examined and entered into the models as covariates if associations were found.

In order to ensure valid responding, five validation questions were included in the computer-administered survey portion of the study. Data from participants who answered at least 3 of these questions incorrectly ($n=4$) were not included in the analyses.

Administration Procedures and Safety Protocol

The researcher provided laptops equipped with accessibility software to participants for completing online-based self-report questionnaires. Participants were directed to a secure study link to complete these questionnaires through the survey site (Qualtrics) which met accessibility standards.

Participants endorsing current suicidal ideation (as assessed by the SITBI) were further assessed for suicide risk by the researcher using an empirically supported, validated structured interview (Joiner, et al., 1999; Chu et al., 2015) in order to determine the appropriate level of care. Those considered at mild risk for suicide were instructed to use self-control strategies that were discussed with the researcher and seek social support in the event that they become suicidal. Emergency numbers were provided, and mild risk participants were instructed to contact emergency mental health resources or go to the emergency room should these strategies fail or the individual believes that he or she cannot control his or her behavior. Those at moderate risk for suicide were also instructed to use self-control strategies, and were also given a card listing steps to follow in case of emergency (which contained phone numbers for the USM Psychology Clinic, 911, and the National Suicide Prevention Lifeline). Furthermore, they were also given an offer to

go to the USM Psychology Clinic or the University of Mississippi Medical Center's emergency room with the trainee for further care, if desired.

Data Analytic Procedures

Originally, the association between potential covariates (demographic information and mental disorder status from the MINI) and variables of interest were to be assessed through the use of analyses appropriate for the type of variables (e.g., continuous, ordinal), including zero-order correlations and analyses of variance (ANOVA). Variables that covary with variables of interest were to be entered into the models. However, due to the small sample size, there was not a sufficient amount of data to obtain a valid estimate of between group differences of potential covariates, particularly with regards to the MINI. Therefore, the main analyses are presented in the main text without the addition of covariates. Analyses including the covariates are presented in a footnote in the Results section.

SPSS PROCESS (Hayes, 2013; model 18) was utilized to test two models involving the possible relationships between different disability-related independent variables (visibility of the participant's physical disability and severity of the physical disability) and suicidal ideation through the indirect effect of perceived disability-related stigma at high levels of perceived burdensomeness and thwarted belongingness. Both models were analyzed using 10,000 bootstrap samples. If either model was significant, simple slope analyses were to be examined in order to better understand the strength and nature of significant moderation effects.

CHAPTER III - RESULTS

All variables of interest were normally distributed (skew $<$ 1.83 and kurtosis $<$ 2.98).

Intercorrelations and descriptive statistics for each measure are listed in Table 2

Table 2

Descriptive Statistics and Intercorrelations for Variables Utilized in Primary Analyses

	1	2	3	4	5	6
1. Disability Severity	-					
2. Perceived Disability Visibility	.24	-				
3. Perceived Stigmatization	-.17	-.20	-			
4. Perceived Burdensomeness	-.04	-.06	.31	-		
5. Thwarted Belongingness	-.12	-.22	.33	.57*	-	
6. Average Suicidal Ideation Intensity	.25	.14	-.14	.18	-.16	-
Mean	490.62	3.55	5.00	9.40	24.42	1.16
Standard Deviation	85.06	1.57	1.13	5.24	12.30	1.54
Minimum	319.40	1.00	3.00	6.00	10.00	0.00
Maximum	595.60	5.00	6.00	25.00	54.00	5.00

Note: *= significant at $p < .05$. Note: Disability Severity: CHART-Total Score; Disability visibility: Demographics questionnaire; Stigma: Jacoby Stigma Scale; PB=Perceived Burdensomeness: Interpersonal Needs Questionnaire-Perceived Burdensomeness subscale; TB= Thwarted Belongingness: Interpersonal Needs Questionnaire-Thwarted Belongingness subscale; Average suicidal ideation intensity: Self-Injurious Thoughts and Behaviors Interview, item 9.

Table 3

Results of Tests of Direct and Indirect Effects of Disability Severity on Average Suicidal Ideation Intensity

Independent variable	Coefficient	SE	Direct effects			Indirect effects					
			<i>p</i>	95% CI lower	95% CI upper	Mediator, moderators, and interactions	Bootstrap coefficient	SE	<i>p</i>	95% CI lower	95% CI upper
Disability severity	-.001	.01	.92	-.03	.024	PB	3.67	1.08	.10	-1.06	8.40
						TB	1.03	.66	.19	-.80	2.86
						Stigma	4.94	3.97	.28	-6.12	15.98
						PB x TB	-.13	.07	.14	-.32	.07
						Stigma x PB	-.67	.35	.13	-1.64	.30
						Stigma x TB	-.19	.15	.28	-.60	.23
						Stigma x PB x TB	.02	.01	.12	-.01	.06

Note: The overall model was not significant. Disability Severity: CHART-Total Score; Stigma: Jacoby Stigma Scale; PB=Perceived Burdensomeness: Interpersonal Needs Questionnaire-Perceived Burdensomeness subscale; TB= Thwarted Belongingness: Interpersonal Needs Questionnaire-Thwarted Belongingness subscale; Average suicidal ideation intensity: Self-Injurious Thoughts and Behaviors Interview, item 9.

Table 4

Results of Tests of Direct and Indirect Effects of Disability Visibility on Average Suicidal Ideation Intensity

Independent variable	Coefficient	Direct effects				Indirect effects					
		SE	<i>p</i>	95% CI lower	95% CI upper	Mediator, moderators, and interactions	Bootstrap coefficient	SE	<i>p</i>	95% CI lower	95% CI upper
Disability visibility	-.20	.40	.64	-1.23	.82	PB	3.77	1.42	.05	.12	7.41
						TB	1.9	.64	.12	-.46	2.84
						Stigma	4.78	2.94	.17	-2.88	12.43
						PB x TB	-.15	.07	.08	-.32	.03
						Stigma x PB	-.66	.265	.06	-1.34	.02
						Stigma x TB	-.20	.13	.18	-.53	.13
						Stigma x PB x TB	.03	.01	.07	-.003	.05

Note: The overall model was not significant. Disability visibility: Demographics questionnaire; Stigma: Jacoby Stigma Scale; PB=Perceived Burdensomeness: Interpersonal Needs

Questionnaire-Perceived Burdensomeness subscale; TB= Thwarted Belongingness: Interpersonal Needs Questionnaire-Thwarted Belongingness subscale; Average suicidal ideation intensity:

Self-Injurious Thoughts and Behaviors Interview, item 9

The first hypothesized model examined the indirect effect of overall disability (measured by the CHART) on suicidal ideation intensity through perceived stigma. Perceived burdensomeness and thwarted belongingness were included as moderators. Results indicated that the overall model was not significant, $R^2=.60$, $F(8,4)=.74$, $p=.67$. Furthermore, the direct effect of the severity of physical disabilities on suicidal ideation intensity was not significant ($b=-.001$, $SE=.01$, 95% $CI=-.03 - .02$). The indirect effect of physical disability severity on suicidal ideation intensity through perceived stigmatization was also not significant ($b= 4.94$, $SE=.009$, 95% $CI= -6.11 - 15.98$). Lastly, the hypothesized indirect effect of the severity of physical disabilities on suicidal ideation intensity through perceived stigmatization and its interaction with perceived burdensomeness and thwarted belongingness was not significant ($b=.02$, $SE=.01$, 95% $CI= -.01 - .06$).

The second hypothesized model examined the indirect effect of the level of endorsed visibility of individuals' physical disabilities on suicidal ideation intensity through the indirect effects of perceived stigma. Perceived burdensomeness and thwarted belongingness were included as moderators. Results indicated that the overall model was not significant, $R^2=.62$, $F(8,5)=1.01$, $p=.52$. Furthermore, the direct effect of the visibility of physical disabilities on suicidal ideation intensity was not significant ($b=-.02$, $SE=.34$, 95% $CI=-.1.23 - .82$). The indirect effect of the visibility of physical disabilities on suicidal ideation intensity through perceived stigmatization was not significant ($b= 4.78$, $SE=2.97$, 95% $CI= -2.88 - 12.48$). Lastly, the hypothesized indirect effect of the visibility of physical disabilities on suicidal ideation intensity through perceived stigmatization and

its interaction with perceived burdensomeness and thwarted belongingness was not significant ($b=.03$, $SE=.01$, 95% CI= $-.003 - .05$).

The results of both analyses are presented in Tables 3 and 4.^{2,3}

² In accordance with the originally proposed analyses, significant covariates (gender, past history of hypomanic symptoms) were included in the model examining the indirect effect of the visibility of physical disabilities on suicidal ideation intensity. Results of the model were consistent with those without covariates included. There were no significant associations between potential covariates and the severity of physical disabilities. Thus, the model including the severity of physical disabilities as the independent variable did not include covariates.

³ A series of independent samples t-tests were conducted to examine mean differences of disability severity, disability visibility, perceived stigmatization, perceived burdensomeness, and thwarted belongingness between those with and without a history of suicidal ideation. The results indicated no significant differences between the two groups on any of the variables of interest (disability severity: $t(15)=-1.52$, $p=.15$, $d=.77$; disability visibility: $t(17)=-.35$, $p=.73$, $d=.16$; perceived stigmatization: $t(12)=.69$, $p=.50$, $d=.37$; perceived burdensomeness: $t(17)=.02$, $p=.93$, $d=.01$; thwarted belongingness: $t(16) = .51$, $p=.76$, $d=.24$).

CHAPTER IV –DISCUSSION

The primary aim of this study was to examine the relationship between different facets of physical disability, namely their severity and visibility, and perceived disability-related stigmatization and suicidal ideation within the framework of the ITS. The effects of the increased severity and the visibility of physical disabilities on suicidal ideation were anticipated to be indirect through the effect of heightened levels of perceived stigmatization. These relationships were hypothesized to be strongest when heightened levels of perceived burdensomeness and thwarted belongingness were jointly present. Overall, the study's hypotheses were not supported. The results of the current study indicate that, in those with physical disabilities, the overall severity or perceived visibility of physical disabilities may not be directly related to suicidal ideation or indirectly related through perceived disability-related stigmatization, even in the presence of high levels of perceived burdensomeness and thwarted belongingness. These findings may be accounted for by various possibilities.

Factors that were unexamined in the current study may prompt the development of suicidal ideation in individuals with physical disabilities. For instance, individuals' reactions to stigmatizing experiences (e.g., discrimination) may be a more robust predictor of suicidal ideation than perceived stigmatization itself. Indeed, maladaptive forms of coping with stressors have been associated with perceived burdensomeness, thwarted belongingness, and suicidal ideation (Khazem, Law, Green, & Anestis, 2015). In this study, perceived stigmatization and not individuals' reactions to stigmatizing experiences were assessed. Although individuals may have similar experiences of disability-related stigmatization, a subset of these individuals may be more likely to

internalize this stigmatization, which may prompt the development of suicidal ideation, particularly when heightened feelings of perceived burdensomeness and thwarted belongingness are jointly present. Furthermore, some individuals may readily internalize less stigmatizing experiences while others may only internalize experiences that are higher in intensity or are more humiliating. Indeed, negative effects of internalized stigmatization, such as erosion of morale, decreased hope, increased “victim behavior,” feelings of isolation and withdrawal have been well-documented in individuals with various conditions, including leprosy (Arole, Premkumar, Arole, Maury, & Saunderson, 2002), mental illness (Livingston & Boyd, 2010; Ritsher & Phelan, 2004; Valencia, 1989), and Human Immunodeficiency Virus (HIV; Fife & Wright, 2000). For individuals who are sensitized to stigmatizing experiences, maladaptive forms of coping with repeated feelings of disability-related stigmatization (e.g., self-blame, behavioral disengagement, and substance use) may be salient risk factors for the development of negative mental health-related outcomes, including suicidal ideation.

Alternatively, adaptive forms of coping with stigmatizing experiences may serve as a protective factor against the development of suicidal ideation. Particularly, individuals with physical disabilities may adaptively cope with stress related to stigmatization through techniques including problem solving, emotional regulation and emotional expression (Connor-Smith et al., 2000). In a study of military personnel, adaptive coping strategies, including using humor and positively reframing situations, were negatively associated with perceived burdensomeness and thwarted belongingness, which are posited to prompt suicidal ideation, but not suicidal ideation (Khazem, Jahn, Cukrowicz, & Anestis, 2015). However, suicide-related outcomes have largely been

unassessed, particularly in individuals with physical disabilities. In this untested hypothetical model (Figure 3), negative reactions to stigmatization may indirectly prompt the development of suicidal ideation through the interaction of perceived burdensomeness and thwarted belongingness. However, individuals' use of adaptive coping strategies in response to stigmatizing experiences may be negatively associated with suicidal ideation, as these forms of coping responses may decrease the intensity of feelings of perceived burdensomeness and thwarted belongingness. Future research should aim to examine the possible influence of reactions to stigmatizing experiences on suicidal ideation within the ITS framework in individuals with various physical disabilities.

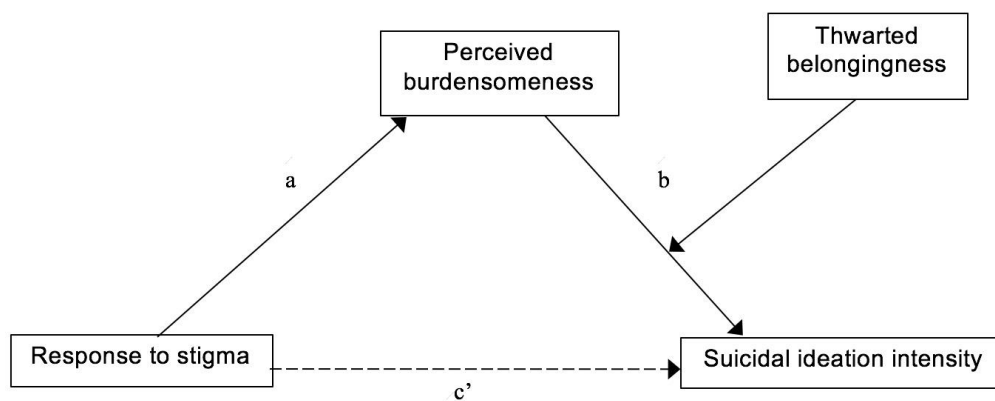


Figure 3. Alternative Untested Model Examining the Indirect Effect of Reactions to Stigmatization on Suicidal Ideation Intensity Through the Interaction of Perceived Burdensomeness and Thwarted Belongingness

Although the ITS is bolstered by empirical support across a range of other populations, another explanation for these findings is that another theoretical model may be more applicable for this population. Specifically, the joint presence of perceived burdensomeness and thwarted belongingness may not be necessary for the development of suicidal ideation among adults with physical disabilities. For such individuals, perceived burdensomeness may be a more salient risk factor for the development of

suicidal ideation, both directly and indirectly. This possibility is supported by the findings of previous research (Bryan, Clemans, & Hernandez, 2012; Joiner et al., 2009; Kanzler, Bryan, McGeary, & Morrow, 2012; Khazem et al., 2017; Van Orden, Witte, Gordon, Bender, & Joiner, 2008; Wilson et al., 2017) indicating that perceived burdensomeness, but not thwarted belongingness, is independently associated with suicidal ideation in some populations. The current study provides further support for this possibility.

Although neither hypothesized models were significant, it should be noted that perceived burdensomeness was significantly associated with suicidal ideation intensity in the model that included perceived visibility of physical disabilities as the independent variable ($b=3.77$, $SE=1.42$, $95\% CI=.12 - 7.41$). However, this effect was not observed in the model including the severity of physical disabilities as the independent variable, further indicating the need to clarify the relationship between physical disability, perceived burdensomeness, and suicidal ideation.

Other nonsignificant and observed effects provide further support for the possibility that thwarted belongingness may not be a salient risk factor for suicidal ideation in this population. The hypothesized indirect effect of the severity of physical disabilities on suicidal ideation intensity through perceived stigmatization was not significant, and the interaction between perceived stigmatization, perceived burdensomeness and thwarted belongingness did not significantly contribute to the model. The model was also not significant when the perceived visibility of physical disabilities was entered into the model as the independent variable. Furthermore, the interaction between perceived stigmatization and thwarted belongingness was not significant. However, the interaction of perceived stigmatization and perceived

burdensomeness indicated a marginally significant association with suicidal ideation intensity ($b=.66$, $SE=.27$, 95% $CI=-.34 - .02$). Heightened feelings of perceived burdensomeness, combined with greater experiences of perceived disability-related stigmatization, including beliefs about receiving differential treatment, avoidance by others, and others' discomfort with their disability, may increase suicidal ideation. The joint presence of perceived burdensomeness and perceived stigmatization may be more indicative of the mechanisms contributing to suicidal ideation in individuals with physical disabilities than the interaction between perceived burdensomeness and thwarted belongingness. Although thwarted belongingness, like perceived burdensomeness, is associated with individuals' beliefs about their interpersonal experiences, for those with physical disabilities, perceived disability-related stigmatization may be a more salient risk factor for suicidal ideation than thwarted belongingness. Specifically, thwarted belongingness is a mental state referring to beliefs of isolation from others and feelings of loneliness (Joiner 2005, Van Orden et al., 2010) but may not fully encompass thoughts and beliefs that may be more emotionally painful for individuals with physical disabilities, such as those pertaining to perceived stigmatization related to their disabilities. Therefore, the possibility that perceived stigmatization, in conjunction with perceived burdensomeness, may prompt suicidal ideation independent of feelings of thwarted belongingness in individuals with various visible physical disabilities should also be further explored in future research.

It should be noted that a 3-way interaction between perceived burdensomeness, thwarted belongingness, and hopelessness that these states will improve has been associated with suicidal ideation in two samples (Hagan, Podlogar, Chu, & Joiner, 2015).

However, the influence of hopelessness as a potential third moderator in both models was not examined in the current study. It is possible that disability-related hopelessness or negative beliefs about the future stemming from the presence of a disability (particularly those that are degenerative in nature, such as Multiple Sclerosis or macular degeneration) may also influence the development of suicidal ideation. However, the current research was unable to examine these potential relationships. This potential model for future research is depicted in Figure 4.

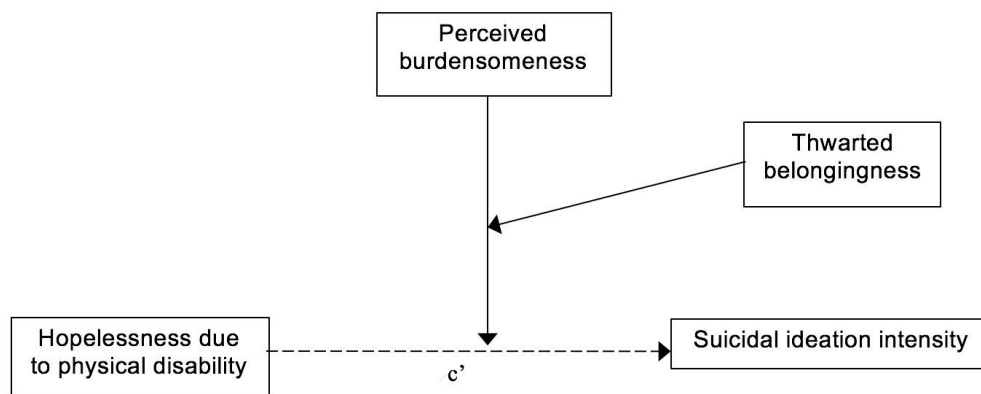


Figure 4. Alternative Untested Model Examining the Interaction of Disability-related Hopelessness, Perceived Burdensomeness, and Thwarted Belongingness as a Predictor of Suicidal Ideation Intensity

Stigma-related influences are also an area of research in this population requiring further examination. Unexpectedly, perceived stigmatization was not associated with suicidal ideation intensity, but untested factors may create an indirect effect of physical disability-related factors on suicidal ideation. Individuals with less severe but highly visible disabilities may experience greater stigmatization than individuals with more severe but less visible disabilities, as some disabilities that create more functional limitations may be less visible. Qualitative research comparing beliefs between those with visible and invisible disabilities provides support by indicating that those with

visible disabilities believed that others see them as incompetent (Olney & Brockelman, 2005). For these individuals, both the severity and visibility of their disabilities are potential contributors to their beliefs. In the current study, the severity or visibility of physical disabilities were not significantly correlated with perceived burdensomeness, thwarted belongingness, perceived stigmatization, or suicidal ideation. However, the interaction between the perceived visibility and severity of physical disabilities may be associated with these states, including internalized responses to stigmatization. In the current research, these interactions were not examined as a correlates or predictors of perceived stigmatization. This possibility has yet to be examined through quantitative research.

In interpreting the results of this study in the context of other research, the instruments and constructs measured in the current study should also be discussed. Surprisingly, neither the direct effect of the perceived visibility nor the severity of physical disabilities on suicidal ideation intensity was significant. In the current study, the direct effect of physical disability severity on suicidal ideation intensity may not have been observed due to differences in measurement of disability between this and other research. In this study, the severity of individuals' physical disabilities was measured through their responses to the CHART, a structured interview that assesses for the severity of physical disabilities in various areas of individuals lives. Specifically, subscale scores for domains measuring individuals' difficulties relating to physical independence, cognitive independence, mobility, occupation, social integration, and economic self-sufficiency are summed to obtain an overall measurement of the severity of individuals' physical disabilities. However, past research has assessed disability

through participants' perceived functional limitations by limiting this measurement to asking them to rate their ability to complete certain tasks (Ahn & Kim, 2015; Wilson et al., 2103). It is possible that the overall severity of individuals' physical disabilities may not be associated with suicidal ideation, but specific factors within the overall construct of physical disability (e.g. physical independence or social integration) may be associated with suicidal ideation. Also, individuals' perceptions about their physical disabilities may be a more robust predictor of suicidal ideation intensity than the severity of the disabilities themselves. However, the current study did not examine the potential associations between specific domains of disability and suicidal ideation intensity.

The types of instruments utilized (e.g., self-report, structured interview) measuring their respective variables of interest may also have contributed to the unexpected findings of the correlational analyses, as responses to self-report and more objective instruments assessing similar constructs may not exhibit a robust association with each other. Consistent with previous research (Anestis et al., 2016; Cero et al., 2015; Khazem, Jahn, Cukrowicz, & Anestis 2015; Khazem, Law, Green, & Anestis, 2015), perceived burdensomeness and thwarted belongingness were significantly correlated ($r=.57, p=.01$); however, no other variables were significantly correlated with one another. This may be partially accounted for by the potential incongruence of participants' responses with observation by others. Specifically, individuals rated how visible they perceived their disabilities are to others, and the severity of participants' physical disabilities was assessed by the researcher through their responses to structured interviews. However, individuals did not rate their perceptions of the severity of their disabilities, and the researcher did not rate the visibility of the participant's physical

disabilities. It is possible that the participants' ratings of the visibility of individuals' physical disabilities may differ than the researcher's ratings. A measurement of physical-disability visibility obtained by the researcher may have a greater association with the severity of individuals' physical disabilities obtained through participants' responses to structured interviews. Alternatively, individuals' perceptions of the severity of their disabilities may also be incongruent with the severity ratings obtained through objective measurement. If this is the case, the self-reported perception of the severity of participants' physical disabilities may be more strongly associated with their self-reported perceptions of disability-related stigmatization. Specifically, some individuals may perceive their disabilities as impacting more areas of their lives, independent of the objective rating of severity of their disabilities. In this scenario, individuals who perceive their disabilities as more severe or visible may internalize stigmatizing experiences while individuals who do not perceive their disabilities as more severe or visible may not internalize these experiences as readily. However, the current research was unable to examine these possibilities. The characteristics of this study's sample are different from many other studies examining suicide risk in individuals with physical disabilities and these characteristics may partially account for the conflicting findings between this and other research. Particularly, one strength of this study is that participation was not limited to only older adults, a segment of the population of individuals with physical disabilities that has been robustly studied (Ahn and Kim, 2015; Awata et al., 2005; Fässberg, 2016; Fässberg et al., 2013; Fiske et al., 2013). The ages of participants in this study ranged from 26 to 81 years, and the mean age of participants (54.70) is almost 10 years lower than the age standardly documented as the beginning of older adulthood (CDC, 2017).

For older adults, the association between physical disability and suicide may be stronger or more direct than for younger or middle-aged adults. Furthermore, for older adults, functional limitations may not be solely linked to physical disabilities but may also be associated with physical ailments, which are more common in this age group (Fässberg,2016). Another possibility may be that younger adults may possess certain protective factors that moderate the relationship between facets of physical disability and suicidal ideation. Although an association between health conditions and suicidal ideation intensity has been observed in adults of various ages (Khazem et al., 2017), the current study did not assess for the presence of these conditions or examined whether these types of conditions were associated with suicidal ideation intensity.

As this research is also the first to examine all variables of interest in a community sample of individuals with various physical disabilities, the mean levels of these variables should be interpreted within the context of those reported in previous research of clinical and nonclinical samples. Notably, the mean levels of perceived burdensomeness and thwarted belongingness in the current study are consistent with those observed in other research examining these states in individuals with physical disabilities (Khazem et al., 2015; 2017) and psychiatric inpatients (Cero, Zuromski, Witte, Ribeiro, & Joiner, 2015) but are higher than those observed in undergraduate students (Cero et al., 2015) and some military personnel (Assavedo, Green, & Anestis, in press; Khazem, et al., 2015b). However, the observed mean levels of perceived burdensomeness and thwarted belongingness in the current sample were lower than those observed in a study including samples of military personnel with current suicidal ideation and civilians with a history of multiple suicide attempts (Assavedo, et al., in press). In

terms of average suicidal ideation intensity, those with a history of suicidal ideation reported roughly the same mean level of average suicidal ideation intensity as a sample of adolescent inpatients (Nock, Holmberh, Photos, & Michel, 2007). In the current sample, two participants with a history of suicidal ideation endorsed a history of suicide attempts and hospitalization in an inpatient psychiatric unit (22.22% of those with suicidal ideation, 10.00% of the full sample). Both participants who endorsed a history of making a suicide attempt made two or three suicide attempts during their lifetime. Taken in conjunction with the findings from the aforementioned studies, the findings of this research indicate that individuals with physical disabilities may experience heightened levels of perceived burdensomeness and thwarted belongingness, consistent with other populations at increased risk for suicide (e.g. military personnel, clinical samples), even though thwarted belongingness may be less salient of a risk factor for suicidal ideation. However, the specific mechanisms contributing to the development of these states in individuals with various physical disabilities or their specific roles in the development of suicidal ideation is still largely unstudied, despite evidence supporting heightened rates of suicidal ideation in this and the aforementioned research. Further research should aim to clarify the relationship between ITS mental states, particularly perceived burdensomeness, and its potential interaction with perceived stigmatization in regards to the development of suicidal ideation in a larger sample representative of the population of individuals with physical disabilities.

Although the current research is novel and represents an incremental step in clarifying the relationship between physical disability and suicidal ideation, the results of this study should be interpreted in light of its limitations. One limitation of the current

study is that it did not take into account whether individuals' physical disabilities were congenital or acquired or whether the length of time individuals have lived with their physical disabilities influenced any of the variables of interest. The possibility exists that individuals with acquired disabilities may be more perceptive of disability-related stigmatization, as they may notice different treatment from before they acquired the disability. Furthermore, research has indicated that those who acquire physical disabilities experience ostracization from acquaintances (Britain, 2004) and a loss of social status (Hogan, 1999). The circumstances pertaining to how individuals acquire physical disabilities may also impact the type or severity of the stigma they experience. Individuals who acquire a physical disability due to an accident or intentional behavior that may have caused a stigmatized condition (e.g. unsafe sex resulting in HIV/AIDS) may experience stigmatization differently than individuals who acquire a physical disability through other means (e.g. combat, being involved in an automobile accident caused by an intoxicated driver). Specifically, the former group may experience greater discrimination while the latter may experience pity. Alternatively, individuals with congenital physical disabilities may have experienced greater stigmatization throughout their lifetime, creating greater awareness of these experiences over time and leading to an increased effect of such experiences on suicidal ideation. The distinction between congenital and different physical disabilities acquired under differing circumstances as well as its potential effects on perceived stigmatization should be examined in future research as moderating and mediating influences on the suicidal ideation in those with physical disabilities.

Limitations regarding the measurement of stigmatization in the current study should be noted. For the purposes of the current study, the Jacoby Stigma Scale, which was validated within a sample of individuals with epilepsy, was augmented for use with individuals with various physical disabilities. It is possible that this measure is not a valid measure of perceived stigmatization in those with various physical disabilities. Furthermore, the internal consistency of the measure was lower than anticipated ($\alpha=.51$), given that this measure has demonstrated acceptable internal consistency reliability in previous research (Jacoby, 1994). This score is below the recommended cutoff of .70 for preliminary research (Nunally, 1978). The small number of items in the measure coupled with the small sample size likely contributed to this score. Furthermore, the wording of items in the measure was altered to refer to physical disabilities instead of epilepsy, and the psychometric properties of this augmented version of the scale have yet to be tested. However, no other measure of perceived stigmatization for those with physical disabilities currently exists. Future research would be well served in creating and validating a robust measure of physical disability-related stigmatization for use in samples of individuals with various physical disabilities.

Another limitation of the current study is that, due to limited availabilities of study personnel, the inter-rater reliabilities for responses to the CHART, SITBI, and MINI were not assessed. It is possible that participants' responses to the structured and semi-structured interviews were coded incorrectly or responses were misunderstood by the researcher. Utilization of video or audio recording during interview portions of future studies would serve to remedy this limitation and allow for multiple study personnel to code responses at a later time.

The largest limitation of this study pertains to its sample size. Initially, it was anticipated that 150 individuals would participate in this project. However, after implementing various recruitment efforts, only 20 participants with valid data were obtained in the full sample. In each analysis, the sample size was further diminished due to missing data, and the size of the samples in the two analyses were 13 and 14 participants, respectively. Therefore, the sample was not sufficiently powered to detect any existing effects.

The necessity of traveling to a laboratory to participate in the study may have prevented some individuals with physical disabilities from participating in the study. Specifically, many participants relied on others to provide transportation to the study locations, and in one study location, public transportation was not readily available. As the study was primarily conducted during business hours and required in-person participation in order to adequately respond to potential imminent suicide risk, some potential participants may have been prevented from participating as there were no options for them to participate via interviews conducted over the phone. Therefore, this not only may have impacted the sample size but also may have restricted the range of the types and severity of physical disabilities endorsed. As the severity of physical disabilities was an observed outcome of the study, an unintentional effect of the study design may be that the results do not accurately reflect those individuals at more severe levels of physical disability. Prior research examining physical disability and suicide in individuals with various physical disabilities has largely relied on internet-based assessment (Khazem, Jahn, Cukrowicz, & Anestis, 2015; Khazem, Jahn, Cukrowicz, & Anestis, 2017), and most examining specific disabilities have exclusively utilized self-

report measures (Dempsey et al., 2012; Fässberg et al., 2014; Fishbain et al., 2012; Meltzer, et al., 2009). Furthermore, the severity of various physical disabilities has largely remained unexamined, particularly by use of gold-standard structured interviews, such as the CHART. Therefore, although, the current study is preliminary in nature, and its limitations prevent interpretation of the results without caution, this research represents an advancement in the study of suicide risk in individuals with physical disabilities.

Surprisingly, the correlations between perceived burdensomeness or thwarted belongingness and suicidal ideation were not significant. This finding may be partly due to temporal differences in the measurement of the ITS states and suicidal ideation intensity. Current levels of physical disability visibility and severity, perceived stigmatization, perceived burdensomeness, and thwarted belongingness were assessed while lifetime suicidal ideation intensity was assessed. Current suicidal ideation could not be included as the outcome variable of interest in the current study as no participants endorsed past-month suicidal ideation. It is possible that individuals' lifetime suicidal ideation was unrelated to their physical disabilities, particularly if these disabilities were acquired or increased in severity after these experiences. In order to maximize the sample size, the current study did not specifically recruit individuals who are experiencing current suicidal ideation. Future research should aim to assess whether individuals acquired their disability before experiencing suicidal ideation in order to specifically recruit individuals with physical disabilities who are experiencing current suicidal ideation to be included in the study sample.

Despite the current study's limitations, it represents an incremental step in advancing knowledge regarding the development of suicidal ideation in individual with various physical disabilities. Specifically, previous research has neither incorporated such a multifaceted examination of disability (e.g. type, severity, perceived visibility), nor conceptualized the link between physical disability and suicide within an empirically-supported conceptualization of suicide risk. Future research would be well-served in addressing the limitations of the current study and further clarifying the relationship between facets of physical disability and suicide. Once these associations are better understood, suicide prevention efforts targeting this population may be better developed in order to prevent the development of suicidal ideation, and ultimately, suicide attempts

APPENDIX A – IRB Approval Letters



INSTITUTIONAL REVIEW BOARD

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NOTICE OF COMMITTEE ACTION

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

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: CH2-15060902

PROJECT TITLE: Disability-related factors and perceived stigma: A closer examination of suicidality in individuals with physical disabilities

PROJECT TYPE: Change to a Previously Approved Project

RESEARCHER(S): Lauren Khazem

COLLEGE/DIVISION: College of Education and Psychology

DEPARTMENT: Clinical Psychology

FUNDING AGENCY/SPONSOR: American Psychological Foundation Scott and Paul Pearsall Scholarship

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 02/02/2016 to 02/01/2017

Lawrence A. Hosman, Ph.D.

Institutional Review Board

Dear Miss Khazem,

The ERRC has completed its review of your revised application/study documentation (ERR-1015) entitled, "Physical Disability and Suicidal Ideation." Thank you for taking the time to respond to the issues raised by the ERRC.

A determination was made to "Approve" your request to collect survey information (via electronic survey or in-person interviews) with the objective to investigate psychological parameters/mechanisms that contribute to suicidal ideation in individuals with physical disabilities as outlined in your application. However, since you will be at UMMC to administer the survey/conduct interviews you will be likely be required to obtain official approval to be on campus and interact with staff and patients through human resources. Your UMMC sponsor (Dr. Kim Gratz) can inquire with human resources as well as facilitate this by completing and submitting the attached document (http://www.umm.edu/uploadedFiles/UMMCedu/Pages/Business_Services/Human_Resources/Forms/Research%20Volunteer%20Form.pdf), if necessary.

The approval of your application will be from **September 8, 2015- September 7, 2016**. At completion of the project period, you will be required to submit a short final report summarizing the data collected, how the data was used, and any conclusions reached. This report will be due within 30 days from the end of the approval period (October 7, 2016).

Also, we want to make you aware that UMMC has an established policy (provided in our first email correspondence) on publishing data collected through this application process. The policy states, "Any proposed publications resulting from an approved project will be submitted through the UMMC sponsor to the External Requests Review Committee for review at least 60 days prior to submission for publication. UMMC will delete references to Confidential Information from any Publication. In the event that the proposed publication or presentation contains patentable subject matter and needs protection, the external investigator will, upon written notice from UMMC within the 60 day review period, delay the publication or presentation for an additional 90 days to allow UMMC to file a patent application."

Please respond by email by September 23, 2015 to confirm that you intend to move forward with this study as well as agree to the study terms (i.e., final report and publication criteria). If you have any questions that can't be answered by your UMMC sponsor, please feel free to contact me.

On behalf of the ERRC, we wish you success in your research project. Thank you.

Michael R. Garrett, PhD, MBA, FAHA
Chair, External Requests Review Committee (ERRC)

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