

Don't DIS my ABILITY: Expansion of Minority Stress Theory for Adults with Learning
Disabilities

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ABSTRACT

Don't DIS my ABILITY: Expansion of Minority Stress Theory for Adults with Learning Disabilities

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Since the multicultural movement, disability theorists have called to understand disability as a marginalized and socially constructed identity (Olkin, 2002). The current study aimed to adopt this approach with individuals diagnosed with learning disabilities (LD) to assess the psychological ramifications of LD stigma and discrimination. Previous work has begun to explore the links between LD discrimination and psychological health (Geiger & Brewster, 2018); however, the role of mediating variables remains unexplored. The current study applied *Minority Stress Theory* (Meyer, 1995, 2003) with a national sample of 227 adults with LDs to assess the potential mediating roles LD-specific minority stressors have on the relationship between LD discrimination and psychological distress grounded in the integrative mediation framework (Hatzenbuehler, 2009). Through bivariate correlations and structural equation modeling, the study examined relations between five variables: one distal stressor (i.e., LD discrimination), and three proximal stressors (i.e., expectations of LD stigma, internalized LD stigma, concealment of LD identity) with mental health outcomes (i.e., psychological distress). Results provide support for the adaptation of minority stress theory with adult LD populations through model fit, in addition to support from hypothesized bivariate correlations between variables of interest. Findings indicate partial support for direct effects, with LD discrimination demonstrating the most robust effect on psychological distress and all three proximal stressors. In terms of mediating variables, findings do not support the three hypothesized indirect effects of

proximal stressors. Clinical, theoretical, and research implications and future directions are explored.

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DEDICATION

This work is dedicated to my parents. Thank you for believing in me, inspiring me, and for embracing my way of learning. I am forever grateful.

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CHAPTER ONE

INTRODUCTION

The act of being labeled, *disabled*, is frequently described as a scary, unwelcoming, and highly stigmatizing process (Riddell & Watson, 2014). Why might this be? The answer is twofold: (1) disability is typically understood through a medical model, indicating an inherent defect within the individual that must be corrected and (2) societal perceptions of disability are loaded with negative and offensive stereotypes about one's ability to be human (Olkin, 2002). As such, when conceptualizing disability as a socially constructed and marginalized identity, it is understandable that people with disabilities (PWDs) experience great distress when exposed to disability stigma and discrimination. Yet, within multicultural psychology—a field dedicated to understanding the oppression of marginalized groups—the lives of PWDs remain unexplored and misunderstood. The absence of disability can be seen across psychological practice, research, and training programs (Artman & Daniels, 2010; Foley-Nicpon & Lee, 2012; Olkin & Pledger, 2003). Of the little research that exists, even less is known about invisible neurological disabilities, such as learning disabilities (LDs). This is concerning when considering that LDs currently comprise the largest disability group within the K-12 educational system (Cortiella & Horowitz, 2014) and encompass a substantial number of adults claiming disability in the US (Census Bureau, 2010).

Not surprisingly, past research on the study of LDs has utilized a medical model approach, focusing heavily on accommodations and response to intervention (Denhart, 2010; May & LeMont, 2014). This narrow focus is problematic in that it functions to reinforce LD stigma by supporting the notion that LDs are something to be “fixed” and that something is “wrong” with the individual (Denhart, 2008). A number of narrative-based studies have

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identified LD stigma as a unique subset of disability stigma specific to the cultural manifestation of LDs (May and Stone, 2010). For example, distinct features surround themes of low intelligence (e.g., individuals with LDs are stupid), poor performance (e.g., individuals with LDs are not successful), and cheating the system (e.g., accommodations for LDs are an unfair advantage). Furthermore, LD stigma has been connected to experiences of LD discrimination, which has been acknowledged as a pervasive (Denhart, 2008; Geiger & Brewster, 2018; Stage & Milne, 1996) and psychologically damaging (Shessel & Reiff, 1999) experience for individuals with LDs.

Some of the most well-known and public displays of LD discrimination are presented in the HBO documentary film, *Journey into Dyslexia* (Raymond & Raymond, 2011). The documentary opens with a powerful scene of a lecture by Jonathan Mooney to an auditorium full of students with LDs. Jonathan, a graduate of Brown University who was diagnosed with dyslexia and ADHD at the age of six, introduces himself as a “proud” member of the LD community. He goes on to say, “I did not overcome dyslexia. Y’all want to know what I overcame? I overcame dis-*teach*-ia, ok. I overcame this myth that there is only one way to learn and that if you don’t fit that one way then something is wrong with you.” Jonathan pauses while the room fills with applause, laughter, and cheers. As Jonathan’s story continues it takes a more serious turn:

That year 6th grade, 12 years old. I had a plan for suicide. By the time I was in 9th grade I was told three things about myself on a daily basis. I was told that I was the stupid kid. I heard that almost every day, John you are dumb. Number two, I heard that I was the crazy or bad kid and number three I heard that I was lazy. Stupid, crazy, and lazy. I was told that every single day. Anyone else in the audience ever been told that about themselves?

The room goes silent as the camera spans out to take in the auditorium at large. Each student has a hand raised, high in the air. The documentary goes on to voice a collection of stories from both

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adults and children with LDs, most of which touch on the psychological consequences of experiencing LD stigma and discrimination.

Despite public displays and research supporting the severity of discrimination, the medical model approach has worked to mask LD stigma and discrimination by placing blame on the individual as opposed to acknowledging a larger societal problem (May & LaMont, 2014). As such, LD researchers have called for a shift away from the medical model and towards a sociocultural identity framework (Denhart, 2008; May & LaMont, 2014). It is hoped that understanding LDs as a minority identity will legitimize the existence of LD discrimination, aid in the fight against LD stigma, and support a positive identity formation. Additionally, such an approach may provide insight into the disproportionate rates of psychological distress experienced within LD populations. Recent research suggests that individuals with LDs reported higher levels of depression, anxiety, low self-esteem (Davis, Nida, Zlomke & Nebel-Schwalm, 2009; Lindsey, Fabiano, & Stark, 2009; MacInnes & Broman, 2013; Martinez & Semrud-Clikeman, 2004), and are more likely to attempt suicide when compared to individuals without LDs (Fuller-Thomson, Carroll, and Yang, 2017). Thus, it is clear that individuals with LDs experience psychological distress at higher rates. However, what remains unclear is the answer to the following question: *why?*

The application of *minority stress theory* (Meyer, 1995, 2003) has proved to be a helpful tool in understanding the disproportionate rates of psychological distress within minority groups. Minority stressors, such as exposure to group-specific stigma and discrimination, have been shown to predict elevated levels of psychological distress for sexual minorities (Brewster & Moradi, 2010; Balsam & Szymanski &, 2005) and racial minorities (Alamilla, Kim, & Lam, 2010). Furthermore, Hatzenbuehler's (2009) integrative mediation model, an extension of

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minority stress theory, has allowed researchers to identify variables that may mediate the relationship between discrimination and psychological distress such as awareness of stigma, internalized stigma, and concealment of stigmatized identity. Such information has serious implications for informing future research, clinical practice, and training programs for work with minority populations. Recent research has provided preliminary support for the use of minority stress theory with LD college and graduate students (Geiger & Brewster, 2018). Findings suggest that LD discrimination is positively related to psychological distress; however, more research is needed to assess the full psychological role LD discrimination plays in the lives of individuals with LDs. As such, an integrative mediation model is the probable next step for investigating LD-specific minority stressors. Thus, the purpose of the current study was to investigate the impact perceived experiences of LD discrimination have on the psychological well-being of people with LDs, in addition to variables such as expectations of LD stigma, internalized LD stigma, and concealment of LD identity that may mediate this relation.

The following chapters provide a review of the literature, methodology, and analyses. Specifically, Chapter Two theorizes the present study's aims by providing a literature review of the past and current standing of LDs. The literature review positions LDs as a sociocultural identity, paving the way for application of minority stress theory with LD populations (Meyer, 1995, 2003). LD-specific minority stress variables are defined and conceptualized within a minority stress framework. Chapter Two concludes with a review of the study rationale and hypotheses are explored. Chapter Three presents information about the study's methodology, including recruitment procedures, participants, and measurements. Chapter Four reviews data cleaning procedures, exploration of descriptive statistics, and the results of bivariate correlations and latent variable structural equation modeling. The aim of the current study was to investigate

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the impact LD discrimination has on the psychological wellbeing of adults with LDs through a minority stress framework in order to inform clinical practice and future research. Furthermore, in efforts to inform psychological theory, the current study aimed to increase awareness of applying a sociocultural identity framework to a population who has historically been under-researched and conceptualized through a medical model. As such, Chapter Five reviews the study's findings within the context of theoretical and clinical implications, in addition to future research for working with adults with LDs.

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CHAPTER TWO

LITERATURE REVIEW

Chapter Two provides an integrative assessment of the literature addressing the function of LD stigma and discrimination within the lives of people with LDs. The literature review begins with an introduction into disability, positioned within a multicultural framework. An overview of the history and current standing of LDs is explored, in which LD is identified as a sociocultural identity that is marginalized. The review utilizes *minority stress theory* (Meyer, 1995, 2003), a model devoted to understanding the psychological impact of minority stressors for stigmatized groups, to conceptualize experiences of LD discrimination. Specifically, Hatzenbuehler's (2009) integrative mediation framework is reviewed and support for its use within the current sample is provided. Next, all five variables for the integrative mediation framework in the current study are operationalized and explored with specific focus to LD populations. Finally, the purpose of the present study and hypotheses are reviewed.

Multiculturalism: is there Room for Disability?

In the early 1960's counseling psychology took on efforts to provide culturally competent services to better serve minority and marginalized populations (Sue et. al, 1998). These efforts commenced a paradigm shift within the field of psychology and contributed to the birth of multicultural psychology—the study of diversity and cultural competency. Prior to this shift, psychology had operated within an ethnocentric and monocultural lens, largely ignoring the lived experiences of groups living outside the dominant culture (i.e., White, male, American, upper/middle-class) and contributing to systematic oppression. Multicultural psychology called upon professionals to examine the sociopolitical identities (e.g., race, ethnicity, gender, sexual orientation, age) they hold and those of the diversifying world around them. By the year 2003,

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The American Psychological Association (APA) developed multicultural guidelines for education, training, research, and practice (Arredondo & Perez, 2006). Despite such movements, disability has been a silent and often forgotten cultural identity within multicultural psychology (Artman & Daniels, 2010; Linton, 1998; Olkin, 2002).

When investigating the inclusion of people with disabilities (PWDs) in psychology education and training programs, formal education on disability has rarely been provided (Olkin & Pledger, 2003). In 1999, nine years after the passage of the American with Disabilities Act (ADA), there were still no psychology programs that required disability coursework. Furthermore, only 11% of programs even offered a course with a focus on disability. As such, disability theorists have harshly criticized the absence of disability studies:

Indeed, the very absence of persons with disabilities in psychology—in textbooks, in curricula, and among peers and professors—is a powerful statement about the marginalization of people with disabilities and trains students not to notice the absence of disability in the psychology discourse (Olkin & Pledger, 2003, p. 297).

The dearth of disability within multicultural psychology and psychology has raised questions about the field's devotion to diversity while perpetuating disability stigma and experiences of discrimination for PWDs (Olkin, 2002).

The experiences of PWDs have also been absent from psychological research. Foley-Nicpon and Lee (2012) found disability research within the top five counseling psychology journals (e.g., *Journal of Counseling Psychology*, *The Counseling Psychologist*, *Journal of Multicultural Counseling and Development*) to be exceedingly sparse—from less than 1% to 2.7% over the past 20 years. Of the little research that exists, the main paradigm conceptualizes disability within a negative light (Olkin & Pledger, 2003). Thus, disability is understood as a deficit or developmental abnormality that must be corrected. Understanding disability in this way allows for a pathological oriented view of disability. In a call to research, Olkin & Pledger

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(2003) ask to shift to a paradigm that orients a systemic and societal perspective of disability. A paradigm that allows for research to be conducted by people who identify as PWDs, promotes health and resilience, acknowledges experiences of stigma and discrimination, and values the cultural history of disability.

Despite multicultural psychology's minimal focus on disability, PWDs comprise the largest minority population in the United States (Artman & Daniels, 2010). Approximately one in five Americans have a disability or roughly 19% of the US population (Census Bureau, 2010). Similarly, a recent study conducted by the Center for Disease, Control, and Prevention (2013) estimated that 22% of adults in the US have a disability. Out of those 53 million Americans, the majority identified as having some type of physical disability (13%) or cognitive/neurological disability (10%). Due to the high prevalence of disabling conditions, it is inevitable that psychologists will encounter PWDs in their work. At this point in time, it is evident that psychological researchers, clinicians, and educators are not prepared to work competently with this population. As such, it is crucial to make room for disability within multicultural psychology. Inclusion can aid in better understanding the lived experiences of PWDs and help to meet the vast psychological needs of a population that faces stigma, isolation, discrimination, and exclusion.

Understanding Invisible Disabilities

The word *disability*, when broken into syllables, provides insight into how dominant culture understands disability. In exploring the term, Linton (1998) states, "The Latin root *dis* means apart, asunder. Therefore, to use the verb *disable*, means, in part, to deprive of capability or effectiveness" (p. 30). In other words, *disability*, is viewed as the opposite of ability and has been equated with abnormal and broken. In a similar light, the Center for Disease, Control, and

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Prevention defines disability as “[a]ny condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them (participation restrictions)” (Disability Overview, 2015). However, taking from disability theory, disability can be understood as a cultural/minority identity that an individual holds, encompassing a wide range of physical, neurological, cognitive, and psychological differences that fall outside sociocultural norms of what is deemed to be “able” (Siebers, 2008).

Within the general public and literature, a disability identity is most often attributed to those with physical disabilities such as, vision or mobility impairments and limitations (Cory, 2005; Samuels, 2003). However, a large percentage of PWDs hold invisible disabilities (also called hidden or nonvisible disabilities), meaning that their disability status is not immediately apparent (CDC, 2013; Olney & Kim, 2001). An invisible disability is an umbrella term for a wide range of impairments, typically caused by neurological or cognitive dysfunction, such as sensory impairment, mental illness, learning and cognitive disabilities, repetitive strain injuries, and chronic and terminal illness (Samuels, 2003). For example, chronic illness such as fibromyalgia may not be visible or obviously seen, but nonetheless, significantly impacts the individual’s emotional and physical connection with the world (Sturge-Jacobs, 2002).

Due to societal perceptions of a disability identity being one that is physical and visible, the legitimacy of people with invisible disabilities is commonly questioned (Olney & Kim, 2001; Samuels, 2003). Even within the disability community, those with invisible disabilities have expressed being placed in a “neitherworld,” finding difficulty fitting within the disabled and non-disabled communities. Having to defend one’s legitimacy has also made it more difficult for individuals with invisible disabilities to both seek and receive accommodations and support.

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Although focus on disability calls for further exploration, there exists an even greater need for understanding the lived experiences of individuals with invisible disabilities (Olney & Kim, 2001).

Similar to societal perceptions, psychological research on disability has focused most heavily on physical disabilities. There is little known about the sociocultural ramifications and daily experiences for people with invisible disabilities such as experiences of stigma and discrimination. Recent literature on invisible disabilities has begun to explore experiences of discrimination and psychological outcomes for individuals with chronic illness (see for a review Brewster & Esposito, 2017). However, the daily lived experience of individuals with neurodevelopmental disabilities such as learning disabilities (LD) continue to be unexplored and misunderstood within psychological research (Denhart, 2008; Stage & Milne, 1996). This is particularly concerning since LDs represent the largest disability identity within the educational system (Cortiella & Horowitz, 2014) and comprise a large number of adults claiming disability (Census Bureau, 2010). As such, the purpose of this study was to gain insight on the lived experiences of individuals with LDs by conceptualizing LD as a cultural and marginalized identity.

Learning Disabilities

Types of LDs: A hybrid model. Finding consensus on the definition of LDs has been a difficult task and is likely due, in part, to the nature of the disorder itself—as no one LD looks or operates the same (Scanlon, 2013). As such, the classification of what constitutes as an LD has been of great debate within the fields of education, psychology, and learning disability studies since its inception (for a detailed history see Hallahan, Pullen, & Ward, 2013). The term LD was coined by psychologist Samuel Krik in the early 1960's when a group of children who appeared

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“bright” were found to struggle significantly with learning how to read and write; from this lens, LDs became associated with a discrepancy between intelligence and achievement. Generally speaking and across disciplines, the construct has always attempted to capture the experience of individuals who struggle to learn (hence its name). However, the definition of LD has relied heavily on the use of exclusion criteria (Fletcher, Stuebing, Morris, & Lyon, 2013). For example, learning struggles cannot be better explained by contextual factors (e.g., economic disadvantage, lack of educational resources) or other neurological disabilities (e.g., intellectual disability, autism). Fletcher, Stuebing, Morris, and Lyon (2013) criticize this approach in that, “it does not produce a conceptual model of what LD might represent at the latent or construct level” (p. 34). To get a better sense of the discrepancies that exist within LD conceptualization, the following section explores the current classifications of LDs.

Field of Psychology. Within psychology, LDs are categorized into three main types: math, reading, and writing, with each name representing the specific area of marked difficulty for the individual (American Psychiatric Association, 2013). In addition, LDs have been further categorized into names that denote more specific qualities within each of the three areas. Some of the most commonly known and talked about are: dyslexia (i.e., subset of reading disability), dyscalculia (i.e., subset of math disability), and dysgraphia (i.e., subset of writing disability) (Cortiella & Horowitz, 2014). For example, an individual diagnosed with a specific reading disorder may struggle with processing and comprehending written information. Yet, they may not classify as having dyslexia if they do not show significant deficits in phonemic awareness.

The current Diagnostic and Statistical Manual for Mental Disorders (DSM-5) uses the following criteria to diagnose specific learning disabilities in children and adults:

The diagnosis requires persistent difficulties in reading, writing, arithmetic, or mathematical reasoning skills during formal years of schooling. Symptoms may include

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inaccurate or slow and effortful reading, poor written expression that lacks clarity, difficulties remembering number facts, or inaccurate mathematical reasoning. Current academic skills must be well below the average range of scores in culturally and linguistically appropriate tests of reading, writing, or mathematics. The individual's difficulties must not be better explained by developmental, neurological, sensory (vision or hearing), or motor disorders and must significantly interfere with academic achievement, occupational performance, or activities of daily living. Specific learning disorder is diagnosed through a clinical review of the individual's developmental, medical, educational, and family history, reports of test scores and teacher observations, and response to academic interventions (Specific Learning Disorder Fact Sheet, American Psychiatric Association, 2013).

Thus, within the field of psychology, specific learning disabilities are confined to three main academic subjects and focus heavily on the individual's performance within the educational domain.

Field of Education. In comparison, the field of education takes a slightly different approach. For school aged children, the Individuals with Disabilities Education Act (IDEA), identifies specific learning disabilities as:

A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage (2004, section 601(d)).

The two definitions have overlap, however, as IDEA includes a broader inclusion of accompanying neurodevelopmental disorder under the term, *specific learning disorder*, the DSM-5 does not. Furthermore, IDEA relies more heavily on exclusion criteria as opposed to specific inclusion criteria.

Field of LD. Experts within the field of learning disabilities have voiced disapproval for both the DSM-5 and IDEA conceptualizations of LDs. A major criticism for psychology is the DSM's reliance on a narrow subset of academic subjects. Focusing on the three academic areas

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ignores the impact LDs have outside the world of academia and limits a holistic understanding of the lived experiences of individuals with LDs (Scanlon, 2013). Furthermore, LDs occur across the life span and do not simply “end” once the individual leaves the school setting. In the most recent version of the DSM, the LD diagnosis, *not otherwise specified (NOS)*, was removed. Before its removal, LD NOS was used to classify the many individual’s whose learning difficulties did not fit within the neat and narrow categories of reading, writing, and math. Thus, the loss of this diagnosis has pushed psychology to rely even more heavily on academics as opposed to differences in neurological and cognitive processes. Major criticism for the field of education has been IDEAs lack of insight on what truly constitutes as an LD (Kavale & Foreness, 2000). In fact, many say that the definition provides a clearer picture of what is *not* an LD. The problem with relying on a more relaxed and exclusion-focused diagnosis is that it lacks specifics, which is unsuitable when the purpose is to outline *specific* learning disabilities.

In an effort to better represent the intricacy of LDs, the National Center for Learning Disabilities (NCLD) 2014 report uses the following understanding:

Learning disabilities arise from neurological differences in brain structure and function and affect a person’s ability to receive, store, process, retrieve, or communicate information [...] Learning disabilities can best be described as unexpected and significant difficulties in academic achievement and related areas of learning and behavior in individuals who have not responded to high-quality instruction and for whom struggle cannot be attributed to medical, educational, environmental or psychiatric causes (Cortiella & Horowitz, 2014, p. 3).

Within the field of learning disabilities, this definition has served as an aspiration for future research and practice with LDs. The report identifies the most common types of LDs to be housed within the areas of reading, writing, and math. However, they also include associated disorders such as nonverbal learning disabilities, auditory processing deficit, visual processing deficit, and executive functioning deficits within the umbrella of LDs. Although these disorders

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are not technically classified as specific learning disabilities, many associations (i.e., Understood, Learning Disability Association of America, Promise Project) consider them to be types of learning disabilities and urge future researchers to branch outside the restrictions of academic categories and focus on difficulties in learning.

Executive functioning deficits, such as attention deficit/hyperactive disorder (ADHD) are also commonly talked about when discussing LDs. In terms of diagnostic measures, ADHD is not conventionally qualified as a subtype of LDs (Cortiella & Horowitz, 2014). For example, IDEA classifies ADHD under, “other health impairment,” and although the DSM-5 houses ADHD within neurodevelopmental disabilities it is classified as a distinct disorder from specific LDs. Despite such separation, approximately one in three individuals with LDs have a comorbid diagnosis of ADD/ADHD (Cortiella & Horowitz, 2014). Similar to LDs, ADHD is innate, disrupts the learning process, and impacts the individual throughout the lifespan. For example, neurobiology research within the past six years indicate that the learning struggles of individuals with ADHD closely mimic the learning struggles of individuals with specific LDs, which has been attributed to abnormalities in the frontal lobe circuitry (Denckla, Barquero, Lindstrom, Benedict, Wilson, & Cutting, 2013). As such, individuals with ADHD present with similar academic difficulties in comparison to individuals with LDs, and in return are provided with similar accommodations, resources, and civil rights protection. In fact, many reference ADHD as a subtype of LDs due to the vast similarities and high rate of comorbidity (Mayes, Calhoun, & Crowell, 2000; Cortiella & Horowitz, 2014; Semrud-Clikeman et al., 1992). Furthermore, many individuals with ADHD self-identify as having a LD and consider themselves a member of the LD community, as evident by online LD community groups (e.g., Facebook group: “Learning Disabilities-ADHD, Dyslexia, and More”).

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For the purpose of this study, the researcher decided to utilize a hybrid approach in conceptualizing LDs. In identifying a hybrid model, Fletcher, Stuebing, Morris, and Lyon (2013) recommend that a LD diagnosis represent an individual who has learning difficulties and would benefit from intervention resources and civil rights protection. The hybrid model is recommended for future clinical and research practice, as it attempts to address the diagnostic limitations outlined in the previous sections. In following future calls to the advancement of LD research, the present study conceptualized a LD as encompassing both the specific (e.g., reading, writing, math) and associated learning difficulties (e.g., nonverbal LD, language processing deficits, executive functioning deficits) outlined above in the NCLD 2014 report. Furthermore, the current study will include ADHD within the term “LD,” due to the vast similarities in learning and academic struggles, which is consistent with the hybrid LD model (Fletcher et al., 2013). The purpose of this study was to capture the experiences of perceived LD discrimination in connection to societal norms of learning ability and the stigma associated with learning differently. As one can imagine, societal understandings of what constitutes a LD are more expansive than the narrow qualifications and diagnostic requirements set forth in clinical and educational settings (May & Stone, 2010). Therefore, the use of a hybrid LD model in the current study was a strategic effort to capture the lived experiences of individuals who learn *differently* and as such have been labeled with or self-identity as having a LD.

Diagnosis. The assessment and diagnosis of LDs are both varied and complex but can generally be broken down into four methods: 1) cognitive discrepancy model, 2) pattern of strengths and weaknesses, 3) low achievement model, and 4) response to intervention (Hallahan, Pullen, & Ward, 2013). Out of the four methods, the cognitive discrepancy model was the earliest to be developed. As its name implies, LDs are assessed through the comparison of scores

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on intelligence and achievement testing and are diagnosed when the results yield a significant difference between intelligence level and achievement score (Bender, 2004). Similarly, pattern of strengths and weaknesses (PSW) utilizes the collection of multiple data points through a variety of cognitive and educational assessments (Schultz, Simpson, Lynch, 2006). An LD diagnosis is warranted when areas of cognitive processing strength have been identified and the pattern of cognitive weaknesses match with areas of academic struggle, informal process monitoring, and parent/teacher information.

In responding to criticism of the discrepancy and PSW models, the low achievement (LA) method was created in attempts to include individuals who have a low cognitive profile and also struggle academically (Fletcher, Stuebing, Morris, and Lyon, 2013). The LA model uses IDEA's eight academic domains to diagnose LDs and a diagnosis is warranted when the individual's academic performance in the domain/s falls below the 25th percentile. Within education setting, response to intervention (RTI) has become a popular method for early identification of LDs (Fletcher, Stuebing, Morris, & Lyon, 2013). In following IDEA guidelines, schools are not required to use cognitive discrepancy and may rely on RTI for the identification of LDs. To receive an LD diagnosis through RTI, the child is identified as "at risk" during a general education screening phase; they are then given tailored interventions over a 1-3-year period to address the area of difficulty and are diagnosed with an LD if they continue to respond poorly to the interventions.

Treatment and accommodations. The leading reason behind an LD diagnosis is to gain legal access to accommodations/support systems and protections from discrimination (Herr & Bateman, 2013). However, most research on LDs has focused on accommodations, likely due to the lack of focus on LDs as a sociocultural identity. Within educational settings, a LD diagnosis

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can provide students with a large range of services. These services are recommended on the basis of an individual's LD profile. The following list includes common accommodations presented to individuals with LDs: access to special education services, extended time on testing, use of calculator, instructions read, assigned note taker, breaks during testing, distraction free setting, access to formula sheets, one-to-one tutoring and instruction, dictionary or word processor, recorded lectures, and typing access for written work (Fuchs, Fuchs, & Capizzi, 2005; Weis, Dean, Osborne, 2016). Legally, educational institutions must provide LD students with accommodations; however, they have the right to provide the accommodations they deem "reasonable." Current research has shown accommodations to be successful in improving individuals with LDs educational and psychological development (Goldberg, Higgins, Raskind, & Herman, 2003). At this time, little is known about accommodation use for adults with LDs in the workforce (Herr & Bateman, 2013).

LD across the life span. LDs are considered to be a permanent disability, which impact the individual throughout his or her life (Cortiella & Horowitz, 2014). The prevalence of LDs in the US is typically broken down by age and is more commonly explored within school populations. Currently, LDs represent the largest category of students receiving special educational services within the US. In the National Center for Learning Disabilities 2014 report, 2.4 million American public school students (approximately 5% of school population) were identified as having an LD. However, due to low reporting rates, changes in assessment/diagnostic procedures, and students who choose not to self-identify or seek academic accommodations—the amount it is estimated to be 15% higher than the studies current findings.

Two thirds of all students with LDs are male, though within public schools the gender breakdown is nearly equal (Cortiella & Horowitz, 2014). Students of color, specifically Black

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and Latino/a, are overrepresented within LD populations. Racialized stereotypes, higher poverty rates, and inadequate educational resources likely explain this discrepancy (Blanchett, 2006). Students with LDs face increased rates of school disciplinary acts, are more likely to be held back, and experience higher failure rates in comparison to non-LD students (Cortiella & Horowitz, 2014). High school dropout rates are highest for students with LDs in comparison to all other disability groups. Furthermore, students with LDs attended four-year college at half the rate of the general public and of those that attended, only 17% received accommodations as compared to the 94% who did in high school. The cause of this discrepancy is speculated (e.g., stigma, discrimination) but remains unexplored by research. Additionally, research on the lived experiences of young adults with LDs in higher education is sparse and underrepresented.

Among the general public, 1.7% of Americans (4.6 million) identify as having an LD (Census Bureau, 2010), although—in similar respects to school aged populations—this number is likely an underestimation (Cortiella & Horowitz, 2014). Of those 4.6 million, more than half experienced some form of involvement with the criminal justice system eight years after leaving high school (Census Bureau, 2010). Although the cause of heightened criminal involvement is unknown, it has been speculated that LD stigma, psychological distress, limited educational support, and limited work opportunities may contribute (Winters, 1997). When looking at working aged adults with LDs, only 46% reported current employment in comparison to the 73% of non-LD working aged adults. Of those, only 19% reported that their employers were aware of their disability and 5% were receiving accommodations at work (Cortiella & Horowitz, 2014). Despite significant and concerning differences, little is known about the experiences of working aged adults with LDs, both in and out of the workforce (Gerber, 2012). Out of all aged populations and across disciplines, working aged adults have received the least attention.

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Evidence that LDs are not only present across the life span but impact the success of individuals well into adulthood is irrefutable (Corley & Taymans, 2002; Gerber, 2012). In a qualitative study looking at the experiences of adults with LDs, one participant stated, “The problem with a disability [LD] is it’s not life-threatening, it’s life-affecting. And it affects every facet of your life” (Shessel & Reiff, 1999, p 309). As such, the lack of research focused on adults with LDs and their experience in higher education and the workforce is alarming. Future research calls for a greater focus on adult populations with LDs. The current study aimed to provide insight into the psychological impact of navigating life with an LD both in and *out* of the school system—ultimately challenging the assumption that LDs are an “academic problem” and encouraging a holistic and sociocultural perspective. Thus, the current study focuses on the experience of adults with LDs both in and out of the education system.

Holding Membership in a Marginalized Group

Disability as a marginalized identity. As previously addressed, there remains a long-standing resistance to include disability as a marginalized identity. One explanation for such resistance may be the heavy reliance of conceptualizing disability through a medical model (Waldshmidt, Berressem, & Ingwersen, 2017). Traditionally, the term disability has been defined as a medical defect or lack of ability to be “fully human” which must be corrected (Siebers, 2008). This definition has left little room for the consideration of a social/cultural identity and the positive elements of holding a disability. It has also masked the social construction of ableism and instead places blame on the individual. For those who hold able privilege, conceptualizing disability through a medical model helps to maintain power and provides several advantages. Thus, to move away from a medical model would require able-bodied individuals to not only acknowledge, but also, share their power. Another reason may be the way in which

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disability has been utilized in the oppression of other groups. Historically, disability has been used as a justification for the oppression of other minority groups. For example, the oppression of slaves was rationalized when they were painted as having low IQs, women were classified as hysterical, and homosexuality was a mental illness in the DSM. Thus, the layering of disability onto other minority identities has served as a justification for the oppression of that very group; yet, disability has struggled to hold its own marginalized identity.

The argument for positioning disability as a marginalized identity is strong within the disability community. Disability theorist, Tobin Siebers, states, “disability is not a physical or mental defect but a cultural and minority identity” (Siebers, 2008, p 4). The basis for Siebers’s argument is that the absence of centrality and medicalization of disability do not capture the lived reality of PWDs and reinforce systems of oppression. Positioning disability as a marginalized identity does what it has for other marginalized groups—legitimize the social meanings and stigma tied to the identity, of which generate discrimination, oppression, and societal exclusion. As such, it is vital to enhance awareness of disability stigma, discrimination, and oppression.

Substantial bodies of research document acts of oppression and discrimination against PWDs. Disability discrimination can range from being called a cripple, to being denied employment, to being sexually or physically assaulted (Francis & Silvers, 2000). PWDs typically have a unique subset of stigma and discrimination that is specific to the qualities of one’s disability (Goodly, 2017). For example, a woman in a wheelchair faces systemic oppression when she does not have access to handicap friendly environments, while someone with bipolar disorder is called “crazy” and “psycho.” In a recent disability discrimination stimulation experiment, Nario-Redmond, Gospodinov, and Cobb (2017) found disability discrimination to

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cause feelings of helplessness, anxiety, and embarrassment. Thus, understanding the lived experiences of PWDs through a sociocultural model can help to fight systemic oppression in addition to better meeting the psychological needs of PWDs (Siebers, 2008).

LD as a marginalized identity. In a similar light, research has begun to call for positioning individuals with LDs as bearing a socially constructed and marginalized identity (May & LaMont, 2014). Not surprisingly, most of the existing research conducted on individuals with LDs has utilized a medical model approach, focusing mainly on diagnosis, educational resources, and accommodations. As such, the definition of LDs excludes culture as a causal factor. This is perplexing since the concepts of “normal” and “abnormal” learning were in fact socially constructed. In a recent study, May and LaMont (2014) interviewed a national sample of 326 social work faculty members about the inclusion of LDs as a cultural identity. The majority of faculty members identified students with LDs as having a personal deficit rather than holding membership in a diverse population of learners. Many called for students with LDs to work harder to be more like “other students,” which is a common theme when looking at other minority groups (e.g., Black people should try to be more like White people). A few faculty members discussed the need to include disability as a marginalized identity; however, LDs were not viewed as a “traditional disability.”

The use of a medical model has essentially prohibited the understanding of LDs as a function of human diversity. In a study exploring the experiences of individuals with LDs, a participant speaks to the need for understanding a LD as human diversity:

People that don't have a smart brain, the norm, the ones that do not have LD, they are the ones who bother you; they are the ones that push you around; they are the ones that do not understand...So people around you, if they do not accept the way you are, you aren't the one with a disability, they are! I have a brain that does it different, that's all. Their brain doesn't, cannot understand that people can be different (Ferri et al., 2005, p. 72).

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The participant's plea highlights not only the need for conceptualizing LDs as a facet of human diversity but also connects the use of a medical model to experiences of LD stigma and discrimination.

Additionally, it is likely that a medical focus has prevented researchers from questioning the existence of heightened psychological distress found within LD populations. In comparison to non-LD students, students with LDs have significantly higher rates of depression, suicidal ideation, anxiety, and low self-esteem (Davis, et al., 2009; Heyman, 1990; Saracolglu, Minden, Wilchesky, 1989; Hoy, Wisenbaker, Manglitz, King, and Moreland, 1997). These findings highlight the demand for increased psychological understanding and support within LD populations. However, predictors of the heightened psychological distress remain unknown and unexplored. Which in turn makes prevention and treatment a rather challenging endeavor. Therefore, it is argued that the conceptualization of LDs as a marginalized identity will help to legitimize experiences of LD stigma and discrimination and better equip mental health workers in treating the vast psychological needs of LD populations.

Positioning LD Discrimination within a Minority Stress Framework

Minority stress theory. *Minority stress theory* has historically been used with lesbian, gay, and bisexual (LGB) populations to connect experiences of LGB stigma and discrimination to psychological distress (Brewster & Moradi, 2010; DiPlacido, 1998; Meyer, 1995; Balsam & Szymanski, 2005). Thus, minority stress theory is a potential framework for positioning LD as a marginalized identity in efforts to understand the psychological impacts of LD stigma and discrimination. Minority stress theory proposes that individuals who hold membership in one or more minority group experience psychological distress as a result of chronic exposure to discrimination and systemic oppression (Brooks; 1981; Meyer, 1995, 2003). Negative acts such

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as discrimination play a large role in the theory, however, *minority stress* aims to capture the experience of existing in an environment that is incongruent with one's own needs and values.

The term, minority stress was first coined by Virginia Brooks (1981) in her pioneering work with lesbian women. She defined minority stress as, “a state intervening between the sequential antecedent stressors of culturally sanctioned, categorically ascribed inferior status, resultant prejudice and discrimination, the impact of these forces on the cognitive structure of the individual, and consequent readjustment or adaptational failure” (p. 84). Thus, Brooks organized minority stress into a series of events: 1) cultural—ascribed inferiority based on identity, 2) social and economic—stigma, discrimination, and restricted access to economic resources, 3) psychological—threat to self-esteem and basic security, and 4) biophysical—chronic state of stress. Prior to Brooks's work, minority stress and mental health outcomes had been conceptualized as related variables. However, it was Brooks who first argued that experiences of discrimination *predicted* heightened levels of psychological distress.

Since its inception, researchers have successfully used minority stress theory to document the predictive link between chronic minority stressors and psychological distress within marginalized populations. Through this work, minority stress theory has evolved with increased specification and has developed unique qualities explicit to minority group membership. In further developing the concept of minority stress, Meyer (2003) describes the process occurring along a continuum of stressors. Minority stress can be elicited from both distal (i.e., objective, external, events, and conditions) and proximal (subjective, personal, and internal psychological) forms of discrimination. Distal stressors are events an individual is exposed to due to membership in a minority group (e.g., systemic oppression, perceived experiences of discrimination) whereas proximal stressors are connected to one's internal sense of identity (e.g.,

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internalizing negative beliefs). Distal and proximal stressors occur on a continuum and are shaped by an individual's perception of either external (i.e., distal) or internal (i.e., proximal) processes. As such, psychological research has relied heavily on the perceptual component of distal and proximal stressors in effort to understand the psychological ramifications of minority stress (Lehavot & Simoni, 2014; Wei, Ku, & Liao, 2011).

In research with LGB populations, distal stressors such as homophobia and heterosexist discrimination and proximal stressors such as internalized homophobia, expectations of heterosexist discrimination, and concealment of identity have been identified as group-specific stressors relevant to LGB populations (DiPlacido, 1998; Meyer, 1995). In Meyer's (2003) work with LGB populations he suggests that it is the union of proximal and distal group specific stressors that result in disproportionate rates of psychological distress. Minority stress theory research has documented a plethora of psychological outcomes in connection to the union of these stressors through both direct and indirect links with psychological factors. In LGB samples, experiences of discrimination and internal stressors predicted elevated levels of depression, anxiety, suicidality, and substance use (DiPlacido, 1998; Goldbach, Tanner-Smith, Bagwell, & Dunlap, 2014; Kelleher, 2009; Lea, Wit, & Reynolds, 2014; Lehavot & Simoni, 2014). Additionally, perceived discrimination and awareness of stigma predicted declines in psychological health through direct and indirect links with a sample of transgender individuals (Breslow et al., 2015; Garmel, Reisner, Laurenceau, Nemoto, & Operario, 2014). Thus, minority stress theory has substantial evidence supporting the predictive relationship between minority stressors and psychological health.

Integrative mediation framework. Hatzenbuehler (2009) introduced an integrative mediation model using distal and proximal factors from Meyer's work with the addition of

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general psychological processes. Hatzenbuehler was interested in *why* exposure to stigma related stress predicted psychological distress. The integrative model outlines two different pathways of mediation: 1) *general psychological processes* (e.g., rumination, emotional regulation) and 2) *group-specific processes* (i.e., proximal stressors). In looking at recent trends in minority stress theory research, Hatzenbuehler's (2009) integrative mediation model has received significant attention and has been identified as the future direction for minority stress theory (Persson & Pfaus, 2015). This is not surprising since the model provides researchers with a more robust understanding of the relationship between discrimination and mental health through two different mediation processes and bidirectional effects between mediators. However, due to limited research with LD populations and minority stress theory, the current study aimed to utilize a simplified version of Hatzenbuehler's mediation model, which explored the mediating roles of group-specific proximal stressors originally outlined by Meyer (2003). Exploration of the full integrative mediation model may be an important area for future research as support for minority stress theory with LDs expands.

The group-specific processes mediation model proposes proximal stressors (i.e., internalization, expectations of stigma, and concealment) to mediate the relationship between distal stressors (i.e., experiences of discrimination) and psychological distress (Hatzenbuehler, 2009). Since the introduction of Hatzenbuehler's model, numerous studies have provided evidence for the mediating roles of group-specific proximal stressors. In a study with 467 sexual minorities, perceived discrimination and psychological distress was mediated by expectations of rejection (a group-specific process similar to expectations of stigma) and internalized homonegativity (Feinstein, Goldfried, & Davila, 2012). In a study with transgender adults, group specific proximal stressors mediated the relationship between trans discrimination and

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psychological distress (Breslow et al., 2015). Research looking at the experiences of men who have sex with men found internalized homophobia to mediate the relationship between experiences of victimization and mental illness (Puckett, Newcomb, Garofalo, & Mustanski, 2016). In a study with bisexual individuals, the relationship between antibisexual discrimination and well-being was partially mediated by concealment (Brewster, Moradi, DeBlaere, & Velez, 2013). In combination, these studies strongly support the notion that group-specific proximal stressors help to explain the direct relationship between distal stressors and psychological distress.

Minority Stress Theory with LD populations. Although minority stress theory originated for the use of LGB populations, successful expansions of the model have been made with other marginalized groups. The effect of minority stress on psychological well-being has been documented with ethnic and racial minorities (Alamilla, et al., 2010; Wei, Liao, Chao, Mallinckrodt, & Botello-Zamarron, 2010; Wei, Ku, & Liao, 2011), individuals holding low socioeconomic positions (Gamarel, Reisner, Parsons, & Golub, 2012), and individuals with obesity (Sikorski, Luppia, Luck, & Riedel-Heller, 2015). Thus, the above studies highlight the adaptability of group-specific distal and proximal stressors to the minority group being studied.

Within disability populations, minority stress theory was recently used with invisible chronic illness, HIV/AIDS (Cramer, Burks, Ploderl, & Durgampudi, 2016; Rendina, et al., 2016), in which tenants of group-specific proximal processes (e.g., internalized HIV stigma) were tested in relation to mental health outcomes. Adaptations with HIV/AIDS populations provide hope for successful expansions with invisible disabilities such as LDs. The application of minority stress theory with LDs was recently tested with LD college and graduate students through development of the first known measure to assess experiences of perceived LD

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discrimination (Geiger & Brewster, 2018). Concurrent validity for the scale was established with theoretical support from minority stress theory. Both the subscales and full scale showed small direct correlations with anxiety and small indirect correlations with self-esteem. These findings provide preliminary support for the relationship between group-specific distal stressors (i.e., LD discrimination) and mental health outcomes within LD populations. Further research is needed to understand why LD discrimination may lead to increased psychological distress. As such, the application of the minority stress mediation model with LD populations was determined the probable next step.

It is believed that the use of a minority stress mediation framework is appropriate for exploring the lived experiences of individuals with LDs for a multitude of reasons. First, minority stress theory aligns with recent changes in the conceptualization of PWDs as holding a cultural and marginalized identity. Secondly, LGB minorities and people with invisible disabilities (e.g., LDs) share overlap with group-specific stressors such as concealment of identity and process of disclosure (Siebers, 2008). Thirdly, the use of minority stress theory will help to legitimize the existence of LD stigma and discrimination, which until recently (see Geiger & Brewster, 2018) has only been documented through small qualitative studies (Denhart, 2008; May & Stone, 2010). Lastly, it is hoped that minority stress theory will help to explain the disproportionate rates of psychological distress within LD populations (Davis et al., 2009; Heyman, 1990; Saracolglu et al., 1989; Hoy et al., 1997).

Through a minority stress framework, the current study aimed to expand upon the limited research connecting LD discrimination and mental health outcomes. The current study expanded Hatzenbuehler's (2009) group-specific processes mediation model to be used with LD populations. As such, LDs were positioned as a minority identity exposed to group-specific distal

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events (i.e., perceived LD discrimination). In efforts to better understand the psychological consequences of LD discrimination, mental health outcomes (i.e., psychological distress) are investigated. Finally, the model was used to explore the mediating roles of group-specific proximal stressors (i.e., expectations of LD stigma, internalization of LD stigma, and concealment of LD identity) on the relationship between LD discrimination and psychological distress.

The following section operationalizes each variable in the model, reviews support for the variable's role in minority stress, and positions the variable within LD populations. Distal stressors are explored first, followed by mediating proximal stressors, and ending with mental health outcomes.

Distal Stressors: Perceived Experiences of LD Discrimination

Perceived experiences of discrimination are defined as any event that is distinguished by the individual to be a personal and/or group specific attack that is demeaning, demoralizing, stigmatizing, and/or ostracizing of one's own marginalized identity (Denhart, 2008; Landrine & Klonoff, 1996; Pascoe & Richman, 2009; Szymanski, 2006). Thus, perceived experiences of discrimination focus specifically on impact rather than the intention behind a discriminatory act. Discrimination can range from overt and outward behaviors to implicit behaviors, known as microaggressions (Sue, 2010). Microaggressions can be intentional by nature but are often unintentional and invisible to the perpetrator. In efforts to capture the full range of discrimination, the current study focused on both overt and implicit forms of perceived LD discrimination.

In utilizing a minority stress model with LD populations, the current study measured *distal group-specific stressors* through perceived experiences of LD discrimination. Meyer

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(2003) defines distal stressors as oppressive objective events and environmental conditions that an individual is exposed to based on their perceived or openly identified group membership. Within disability populations, exposure to distal stressors (i.e., perceived HIV/AIDS stigma and discrimination) has been found to negatively impact the mental health of HIV/AIDS individuals (Berger et al., 2001) and has linked directly to increased psychological and internal processes (e.g., internalization of HIV stigma) (Lee, Kochman, & Sikkema, 2002). Past research has begun to document the existence of LD distal stressors (e.g., perceived LD discrimination, held LD stereotypes) (Denhart, 2008; May & Stone, 2010) and its connection to internal psychological processes (Geiger & Brewster, 2018) and mental health outcomes consistent with minority stress theory (Shessel & Reiff, 1999). Additionally, research has begun to explore documented ADA allegations and settlements of LD work discrimination, of which has helped to establish LD discrimination as a real and pervasive distal stressor for individuals with LDs in the workforce (McMahon, McMahon, West, & Conway, 2016; Sevak, Stapleton, & O'Neill, 2017). Despite documentation, research exploring LD distal stressors using a minority stress mediation model does not exist at this time. As such, the current study aimed to test the effects of perceived LD discrimination through Hatzenbuehler's (2009) minority stress mediation model.

Past research on group-specific discrimination within LD populations has mainly explored held stereotypes about LDs—a generalized and commonly held societal perception about individuals with LDs (May & Stone, 2010). Research suggests that holding stereotypical views of a marginalized group is a significant predictor of engaging in overt and/or implicit discriminatory behavior towards a member of that group (Sekaquaptewa, Espinoza, Thompson, Vargas, & Hippel, 2002; Stephan & Stephan, 2000). This is consistent with Meyer's (2003) understanding of distal stressors, which he believes are influenced by distal societal attitudes

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such as stereotypes. Thus, the following outline of LD discrimination is inclusive of research on commonly held LD stereotypes in addition to self-reported experiences of LD discrimination.

Within the literature on LD stereotypes, two major themes emerge including (a) perceptions of inferiority (i.e., believing people with LDs have low intelligence, low achievement, and/or have an insurmountable condition, and as a result, socially mistreat them) and (b) cheating the system (Barga, 1996; Denhart, 2008; Ferri et al., 2005; May & Stone, 2010; Penland, 2007). The constellation of these emerging themes was recently solidified as representing two distinct factors of LD discrimination (Geiger & Brewster, 2018). The following sections will explore facets of the two major themes through a review of past research on LD discrimination.

Inferiority.

Low Intelligence. One aspect of perceiving (and subsequently, treating) people with LDs as inferior is the belief that people with LDs are not as smart as individuals without LDs. In a recent study interviewing 38 students with LDs and 100 students without LDs, May & Stone (2010), identify a commonly held stereotype to be the assumption that students with LDs are less intelligent and have less ability to learn as compared to non-LD students. For example, a non-LD participant reported, “The majority of people with LDs are stupid, have physical problems, or are retarded” (May & Stone, 2010, p. 496). In addition, Lock and Layton (2001) found most post-secondary professors also hold the assumption that students with LDs have significantly lower levels of intelligence in comparison to students without LDs.

A study exploring the lived experiences of adolescent girls diagnosed with LDs highlights the role pop-culture plays in perceived experiences of discrimination as explained by one of the participants:

‘We were watching this movie called *Never Been Kissed* with Drew Barrymore, Basically, she's a reporter. She's going back to high school but she's like 30 and trying to

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play like she's 17. And she's dressed up like the '80s bizarre, like a different world. And I remember a part of this scene where one of the popular boys just looked at her and was just like, "What's your problem? Are you like in special ed?" I just remember like that part of the scene, just making me so pissed off, like I was just so mad. I was like infuriated. And exactly at that point, everybody was like, "Oh, my God. Ha ha, special ed. That's so funny." Like laughing about it. And I was just sitting there, in my chair, and I was probably the only person who wasn't laughing, but like just to hide it, I was like, "Heh, heh," you know, like, just whatever' (Penland, 2007, p. 215).

This student's account demonstrates how negative perceptions of LDs operate in the media, suggesting that LD stigma expands beyond interpersonal interactions. In a 20 year long longitudinal study interviewing 41 individuals with LDs, participants reported experiences of discrimination such as frequent teasing about being "stupid" by peers (Higgins, Raskind, Goldberg, & Herman, 2002). Participants connected the discriminatory experiences to the general belief that people with LDs have lower intelligence. Therefore, stereotypical beliefs that individuals with LDs have lower intelligence appear to perpetuate the treatment of individuals with LDs as inferior.

Low Achievement. The treatment of individuals with LDs as inferior also stems from the assumption that students with LDs cannot achieve the same level of academic success as compared to students without LDs. A group of college students with LDs reported experiencing the assumption that they cannot achieve academic success because of their LD from both professors and peers (Kitchura, 2008). For example, one student was told by a professor, "You can't make it here. The students are smart and you could never keep up with them" (Barga, 1996, p. 416). The belief that students with LDs cannot obtain academic success is further depicted in a college student's account of high school:

In high school I was placed in a special program where we spent most of the time talking and not even studying and when we had exams they gave us the answers. I felt like I was treated like a child in high school, I wasn't allowed to take many regular classes and we were put in a separate place on campus, it was a terrible experience (Brown, 2007, p. 96).

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The student's story highlights how perceptions of low achievement are connected to the treatment of individuals with LDs as inferior through educational gatekeeping and segregation.

Similarly, research looking at the lived experiences of college students with LDs found students to report recommendations from professors to "hold back academically" and/or advisement out of "academically challenging" situations due to their LD (Barga, 1996; Penland, 2007; Stage & Milne, 1996). Furthermore, individuals with LDs reported a common experience of others (i.e., peers, teachers, family, administrators) holding the expectation that they will "fail" or be "unsuccessful academically" because of their LD (Ferri et al, 2005). Thus, expectations that individuals with LDs will fail academically also shape perceived LD discrimination by marking individuals with LDs as inferior.

Insurmountable Condition. Held beliefs of individuals with LDs holding an insurmountable condition represent another facet of the larger theme of being inferior. The term insurmountable condition can be understood as discrimination surrounding the belief that individuals with LDs are hopeless and that there is no way to help them succeed. Insurmountable condition has typically been assessed through both students with LDs perceptions that other (i.e., non-LDs) hold of them and through the beliefs/assumptions that non-LDs hold through self-reports. May and Stone (2010) found insurmountable condition to be a commonly held stereotype of individuals with LDs. For example, in response to a prompt asking what the general public thinks of LDs a participant wrote, "I think they believe that their disability is biologically determined and something that they can't overcome" (p. 496). This example stresses a shared perception held by non-LD individuals.

Not surprisingly, the experience of having one's LD treated as a helpless condition has also been documented in research. For example, a college student with LDs reports:

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Because some teachers out there, they back away from us, you know, they have the “oh, wow, this is going to be harder than, you know.” I think they give up kinda easy. They do that. I think they think it’s going to create more work for them because they have to go out of their way helping this other student more than other students” (Penland, 2007, p. 220).

The student speaks to how perceptions of LDs as an insurmountable condition are also felt by the individual holding an LD. Similarly, college students with LDs reported being treated with low levels of support when asking for help or assistance (May & Stone, 2010; Stage & Milne, 1996). Students reported experiencing that people were often quick to “lose hope” or “give up” on them when seeking help. In addition, when individuals with LDs asked for help, they reported experiencing that the person helping (i.e., peer, parent/guardian, teacher) acted as it was a waste of his or her time, seemed to be frustrated, or treated the help as a burden (Cowman, 2006; Kitchura, 2008). Thus, held assumptions of having an insurmountable condition work to influence perceptions of inferiority, which in turn, shape individuals with LD’s perceived experiences of discrimination.

Socially misunderstood/Isolation. The theme of socially misunderstood/isolation is defined as discrimination surrounding interpersonal interactions resulting in isolation and teasing. Research suggests that perceptions of inferiority (i.e., assumptions of low achievement, intelligence, and insurmountable condition) commonly present through experiences of social misunderstanding and ostracism. Interviews with LD college students identified the experience of being misunderstood by professors and other students as a common occurrence in higher education (Denhart, 2008). In addition, many of the participants shared that it was easier to make friends with other LD students as opposed to non-LD students:

We’re all speaking in fragments at the exact same time, on top of one another . . . We are speaking this weird piece language, and everyone gets it” Porter said, “We’re in the same zone, you know?” Beth said, “People who don’t have learning disability can’t understand what I’m doing” (Denhart, 2008, p. 491).

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This student's report demonstrates how perceptions of social misunderstanding influence students with LDs access to securing interpersonal relationships. Past research suggests that such perceptions of social misunderstanding often led to experiences of being talked down to, social isolation, and teasing (Denhart, 2008). This finding was also supported in a personal narrative of an adolescent diagnosed with LDs in which she reports, "I've had almost no friends, I mean no one really cared how I felt, they would call me names" (Reid & Button, 1995, p.608).

Shessel and Reiff (1999) suggest that individuals with LDs experienced heightened levels of social exclusion. Participants attributed such exclusion to their LD diagnosis, which labeled them as being "different." When asked to discuss social interactions and relationships, individuals with LDs described being verbally assaulted, experiences of name-calling, and being excluded from peer groups (Ferri et al., 2005; Higgins et al., 2002). In addition, past research looking at adults, college students, and adolescents labeled with LDs reported experiencing social exclusion such as, being treated like they are "invisible" or "do not matter" as a person (Cowman, 2006; Kitchura, 2008; Penland, 2007). In sum, these finding support that negative social interactions shape individuals with LDs perceived experiences of discrimination and reflect held assumptions of inferiority.

Cheating the System. The second major theme, cheating the system, is conceptualized as discrimination that results from the assumption that LDs not real. As such people who claim to have LDs are accused of being lazy and/or using the diagnosis to receive unfair advantages within educational settings (i.e., cheating the system). Kitchura (2008) found individuals with LDs to report that their need for accommodations was frequently attributed to personal character flaws such as being "lazy," having a "low work ethic," or being "unmotivated" rather than stemming from neurological differences. For example, one student reported, "He [the teacher]

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said that I was not trying or working hard. That is the worst thing that you could tell a kid that is trying their best, ‘you are not trying!’ I just couldn’t do it anymore” (Kitchura, 2008, p. 85). May and Stone (2010) identify cheating the system as a major theme in held stereotypes of students with LDs. In response to a prompt about the general public’s view of LDs, students were believed to use the LD label as an excuse to be lazy and to receive “unearned” and “unfair advantages” over non-LD students.

Multiple studies suggest that the process of asking for accommodations can result in discriminatory behavior surrounding the theme of cheating the system (Barnard-Brak, Sulak, Tate, & Lechtenberger, 2010; Brown, 2007; Denhart, 2008; Cowman, 2006). For example, when asking for accommodations students reported: being treated like they do not deserve the requested accommodations, were accused of having low work ethic or being lazy, had their academic integrity questioned, and on occasion were denied access to such accommodations. In looking at college students experiences with accommodation services Brown (2007) found that students were often denied accommodations and accused of cheating:

I tried to use extended time with one of the online classes but the instructor gave me a hard time about it, DSP&S emailed her and told her that I qualified for the program but she wanted me to be supervised while I take the tests- this is an online class and she just needs to open the window for more time. She thought that I would cheat but it’s an online class and she doesn’t see anyone who is taking the test. I didn’t want to make any problems and this is my last week of the class anyway. I think the instructors need to understand the process because it’s not anybody trying to get over on them, maybe you all need to have a big meeting with the instructors so they know how it works (p. 92).

The above anecdotal account demonstrates how perceptions of cheating the system manifest in discriminatory acts against individuals with LDs. Additionally, when students were able to successfully access accommodations, they believed professors and peers to place less value in their work. Ferri and colleagues (2005) found commonly held beliefs of professors to be that students with LDs do not actually need accommodations since LDs are “not a real thing” and that

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the use of such accommodations are a way for “lazy students” to take advantage of the education system.

As evident in past research, assumptions of cheating the system largely shape perceived LD discrimination while holding distinct qualities from the theme perceptions of inferiority. When brought together, the two themes effectively capture individuals with LDs perceived experiences of discrimination (Geiger & Brewster, 2018). Discrimination that manifests in the forms of inferiority and cheating the system has been documented as a great source of stress for students with LDs. In a qualitative analysis, Shessel and Reiff (1999) found participants to directly attribute their experiences of psychological distress (e.g., suicidal ideation, psychiatric hospitalizations, depression, and anxiety) to experiences of LD discrimination such as being called “stupid,” “retard,” expectations of academic and intellectual failure, social isolation, and accusations of cheating the system. Relatedly, empirical research with LD populations and a number of personal narratives suggest that experiences of LD discrimination is connected to increased fear of LD stigma, internalized beliefs, and concealment of LD identity (Brown, 2007; Geiger & Brewster, 2018; Penland, 2007; Rodis, Garrod, & Boscardin, 2001). To the knowledge of the researchers, no current studies have documented the intricate relationships between LD discrimination, group-specific internal processes, and psychological health through a minority stress mediation framework.

Thus, the current study explored direct effects of LD discrimination on psychological health, as well as indirect effects of LD discrimination through group-specific internal processes (i.e., expectations of LD stigma, internalization of LD stigma, and concealment of LD identity). The following section explores the mediating roles of these group-specific proximal stressors.

Proximal Stressors

Hatzenbuehler's (2009) integrative mediation model was developed to help answer the question—*why* does exposure to stigma related stress predict psychological distress? The answer to this question was largely explained by the role of group-specific proximal stressors. Proximal stressors are defined as internal reactions specific to one's self-concept that typically arise from exposure to distal stressors. For example, one way an individual may try to make meaning out of frequent exposure to stigma (i.e., distal stressors) is by attaching and integrating the negative experiences to their personhood (i.e., proximal stressors). The activation of internal processes subsequently predicts elevations in psychological distress. Thus, the mediating role of proximal stressors has been used to help explain mental health disparities within marginalized populations. Hatzenbuehler's model applies three different types of group-specific proximal stressors: 1) expectations of LD stigma, 2) internalization of LD stigma, and 3) concealment of LD identity.

The present study aimed to extend this mediation framework by applying group-specific proximal stressors to LD populations. As such, the mediating roles of expectations of LD stigma, internalization of LD stigma, and concealment of LD on the relationship between LD discrimination and psychological distress were explored. The three LD-specific proximal stressors will be discussed in the following sections.

Expectations of LD stigma. Pinnel (1999) was the first to operationalize expectations of stigma, coining the term stigma consciousness. She defines stigma consciousness as the degree to which members of a marginalized group expect to be stigmatized by others. For example, “When a woman who expects to be reacted to only on the basis of her gender gives a colloquium, she may entertain invasive thoughts about whether the men in the audience are attending to her legs instead of to the research she is presenting” (p. 115). Thus, expectations of

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stigma is not only awareness that stigma exists but the fear that stigmatization will occur. Pinnel suggests that expectations of stigma exist on a continuum, from little or no concern to persistent evaluation of the environment in preparation to being stigmatized. Furthermore, stigma consciousness is found in individuals regardless of the person's identification with the minority group or level of internalization of stigma.

The role of stigma consciousness within a minority stress model has been measured considerably within LGB populations (Brewster & Moradi, 2010; Kelleher, 2009; Lewis, Derlega, Griffin & Krowinski, 2003). In a sample of lesbian and gay individuals, stigma consciousness was positively related to experiences of discrimination and psychological distress (Lewis et al., 2003). Research exploring the role of stigma consciousness within disability communities is scarce. Phemister and Crewe (2004) provided theoretical support for the relationship between stigma consciousness, psychological distress, and experiences of stigmatization for people with visible disabilities. Though, to the researchers knowledge, empirical studies exploring the relationship within disability populations does not exist at this time. A close connection may be Quinn and Chaudoir's (2015) work with a large sample of participants who identified as having an invisible stigmatized identity. The researchers found support for the mediating role of stigma consciousness, in that, experience of personal stigma (i.e., stigma related to one's invisible stigmatized identity) predicted psychological distress through the role of stigma consciousness.

Within LD populations, positive correlations between stigma consciousness and perceived LD discrimination and anxiety were supported, in addition to negative correlations with self-esteem in a sample of LD college and graduate students (Geiger & Brewster, 2018). A number of qualitative studies and personal narratives provide additional support for the

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relationship between LD stigma consciousness and perceived LD stigma and discrimination. In a written personal account of growing up with dyslexia, Jonathan reflects on his time in elementary school:

[Prior to this excerpt, Jonathan discusses experiences of bullying surrounding his LD]
I couldn't breathe. I felt trapped. I was trying so hard and wanted so desperately to be like everyone else. I had learned that year to hide in the bathroom to escape reading out loud. In the bathroom, I would stare at the mirror, hoping to God that no one walked in on me crying. But it only worked sometimes. Mrs. C often stopped the lesson until I got back from the bathroom. When I returned, I could feel everyone staring at me (Mooney & Cole, 2000, p. 31).

Jonathan's story demonstrates how daily exposure to LD stigma and discrimination increased his expectations of stigmatization from his peers and teacher. Similarly, Penland (2007) found that after experiencing years of LD stigma many students held elevated expectations of stigma, and as a result, "told white lies where disclosure seemed imminent," skipped classes, avoided the office of disability services completely, and frequently asked themselves, "how can I protect myself" (p. 229-231). Thus, many students with LDs have crafted creative plans through stigma consciousness in order to protect themselves from LD discrimination.

Stigma consciousness has also been linked to psychological distress within LD populations. Interviews with LD adults reported expectations of stigma such as a fear of "looking stupid" or fear of differential treatment to result in states of panic (Shessel & Reiff, 1999). For example, one participant reported, "I would say that, um, I'm always in a heightened state of fear. I hardly ever feel relaxed" (p. 310). Penland (2007) found feelings of depression and anxiety to be associated with expectations of stigma. For example, Frida discusses her reaction to being placed into a special education math class:

I just remember not even going in. I remember walking through, in the doorway, literally in the doorway, looked around, and said, "Whoops, this is the wrong class," and walked out. I ditched for a month and a half. And I stayed in the restroom, on the toilet, with my

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feet up crying. And it was the worse experience. It was so horrible (Penland, 2007, p. 232).

Frida's was so afraid of the stigma associated with being seen in a special ed class that she hid in the bathroom for over a month. Her story highlights the emotional and psychological costs of heightened expectations of LD stigma.

Although limited, past research supports preliminary links between expectations of LD stigma, perceived experiences of LD discrimination, and negative psychological outcomes. More research is needed to better understand the role of stigma consciousness within LD populations. As such, the current study aimed to explore the direct effect of expectations of LD stigma on the outcome variable psychological distress. In addition, the current study explored the mediating role of expectations of LD stigma on the relationship between the predictor variable, perceived experiences of LD discrimination and the outcome variable, psychological distress.

Internalized LD stigma. The verb *internalize* is defined as a process of taking outside values and incorporating them as part of the self. Exposure to negative stereotypes about one's group membership can lead an individual, through conscious learning or unconscious processes, to believe that they are in fact true about themselves—this process is known as *internalized stigma* (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989). Link and colleagues (1989) and Corrigan (1989) were some of the first to explore the process of internalized stigma in their work with stigma surrounding invisible disabilities such as mental illness. Both studies suggest that exposure to mental illness stigma (e.g., discrimination, stereotypes) lead to increased levels of internalization, which in turn lead to increased negative outcomes (e.g., loss of job, isolation, lower self-esteem, and increased psychological distress) for individuals diagnosed with mental illness.

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Within other invisible disability populations, the role of internalized stigma has been studied considerably with individuals diagnosed with HIV/AIDS. In utilizing a minority stress model, Rendina and colleagues (2016) found positive direct and indirect links between internalized HIV-stigma and negative mental health outcomes (i.e., depression, anxiety, sexual compulsivity) for HIV-positive gay and bisexual men. In a sample of 318 HIV-positive men and women, internalized HIV-stigma was higher for those who reported increased exposure to HIV-discrimination and stigma (Berger et al., 2001). Furthermore, internalized HIV-stigma contributed significantly to increased levels of depression, anxiety, and hopelessness after controlling for behavioral and mental health variables.

Within LD populations, personal narratives and qualitative studies provide preliminary support for the relationship between perceived LD discrimination and internalized LD stigma. In a 20-year-long longitudinal study exploring the development of 41 students diagnosed with LDs, a participant discusses the lasting negative impacts of being exposed to LD discrimination:

Your peers call you stupid and retarded. They make fun of you. You don't feel good about who you are. Your self-esteem goes down. You think of yourself as a stupid child. Because that's what everybody's projecting onto you. So there are more disadvantages to having a learning disability than there are advantages (Goldberg et al., 2003, p. 7).

This participant's account exhibits how experiences of LD discrimination can lead to a negative internalized aspect of self. In a series of personal narratives, Lynn recounts a long history of being teased, socially isolated, and treated unfairly by others due to her LD (Rodis, Garrod, & Boscardin, 2001). After years of experiencing LD stigma and discrimination Lynn states, "As I grew, I started to believe the negative stereotypes associated with my academic abilities. I was stupid! I couldn't do it! I accepted these stereotypes and let them define me. I erased myself" (p. 25). In sum, the personal narratives and stories from individuals with LDs suggest that experiences of LD discrimination can lead to processes of internalizing LD stigma.

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Internalization of LD stigma has also been linked to psychological distress within LD populations. Shessel and Reiff (1999) interviewed 14 adults with LDs, revealing direct links between holding a negative self-concept (e.g., I am a failure, I am stupid) and life-long mental health concerns (e.g., depression, anxiety, low self-esteem, and suicidal ideation). Internalized LD stigma has also been connected to feelings of helplessness through personal narratives of individuals with LDs. This is shown in Lynn's statement, "My self-efficacy, my belief about my competence, fell into the category of failure-accepting. I expected to fail, so I set no goals, believing my ability was set (I had none). Thus, I learned helplessness" (Rodis, Garrod, & Boscardin, 2001, p. 25). In another personal narrative Gretchen discusses the potency of being subjected to stereotypes and LD discrimination. She states, "I believed, and I became a sponge for other people's opinions. I never told anyone my feelings because I was so embarrassed about myself all the time" (p. 68). Gretchen goes on to discuss recurring episodes of depression and a long battle with substance abuse—which she attributes to believing others opinions of herself and years of repressing her emotions. Thus, it is evident that the process of internalizing negative stereotypes of LDs and experiences of LD discrimination can lead to increased psychological and emotional distress.

Although limited, past research supports preliminary links between internalized LD stigma, perceived experiences of LD discrimination, and negative psychological outcomes. More research is needed to better understand the role of internalized stigma within LD populations. As such, the current study aimed to explore the direct effect of internalized LD stigma on the outcome variable psychological distress. In addition, the current study explored the mediating role of internalized LD stigma on the relationship between the predictor variable, perceived experiences of LD discrimination and the outcome variable, psychological distress.

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Concealment of LD identity. The aspect of concealing a part of human identity was first discussed by Goffman (1967) in his book on stigma and identity. The book focused on disability populations, specifically those holding invisible disabilities. Goffman identifies *concealment* as an opportunity to hide and keep secret an identity that is stigmatized but not outwardly apparent upon initial interaction. Thus, for the stigmatized individual the question is, “To display or not to display; to tell or not tell; to let on or not let on; to lie or not to lie; and in each case to whom, how, when, and where” (p. 42). Although there are certainly negative consequences to concealment—such as psychological and emotional distress—there is the ever so tempting benefit of protection from harm. Concealment provides individuals with the opportunity to pass as “normal,” which may limit exposure to experiences of stigma and discrimination (p. 74). As such, the act of concealment holds both consequences and benefits, each related to elements of perceived discrimination and psychological distress.

Since Goffman’s work, research has continued to explore the relationships between concealment, discrimination, and psychological distress for individuals with invisible disabilities. In a review of disability literature on college students with hidden disabilities, Cesarei (2015) identifies past experiences of discrimination to be one of the main deterrents against disclosure. Many students believed that disclosure of their disability would subject them to increased experiences of discrimination and rejection. Similar findings have been verified with invisible disabilities in the workforce (Allen & Carlson, 2003; Santuzzi, Waltz, Finkelstein, & Rupp, 2014). In interviews with 13 participants Allen and Carlson (2003) found protection from discrimination to be a leading factor in participant’s decisions to conceal their hidden disability. In a longitudinal study, data from 2,500 participants with multiple sclerosis measured the psychological costs to concealing an invisible disability—as participant’s disability status

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increased, the psychological costs of concealment increased significantly (Cook, Salter, & Stadler, 2017). Similarly, Pachankis (2007) suggests that when individuals choose to hide their stigmatized identity (e.g., invisible disability), experiences of anxiety, depression, hostility, demoralization, guilt, and shame are likely to occur as a result. Thus, in line with a minority stress model, experiences of disability discrimination have been linked with increased concealment of identity and increased psychological distress.

Within LD populations, a number of studies provide preliminary support for the relationship between perceived LD discrimination and concealment of LD identity. A study with 86 LD identified college students utilized a repeated measures design (i.e., positive/negative X teacher/peer response) to explore the consequences of exposure to LD stigma and discrimination in relation to accessing accommodations (Hartman-Hall & Haaga, 2002). After receiving negative messages from both peers and teachers about use of accommodations (e.g., cheating the system, devaluation of work) participants were less likely to openly identify with the office of disability services. Penland (2007) found concealment of LD identity to be a major source of protection for adolescent girls with LDs. Specifically, personal experiences of LD discrimination (e.g., being called stupid) and awareness of LD stigma (e.g., hearing other students talk negatively about people with LDs) were the driving forces behind participants decision to conceal their LD identity. This finding was further supported in samples with college students with LDs (Denhart, 2010) and teachers with LDs in the workforce (Kitchura, 2008).

The relationship between LD concealment and psychological distress has also been supported through past research within LD populations. The psychological and emotional toll of concealing an LD diagnosis is a common theme in Rodis, Garrod, and Boscardin (2001) series of personal narratives. The authors state, “[i]ntrapsychically, the costs may be greater yet; that is,

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one may be anxious about being ferreted out, angry and unhappy at having to lie, and yearning for acceptance as one really is” (p. 218). The personal account of Lynn provides a raw depiction of such consequences:

Being LD must be similar to how some gay people feel. You spend so much time and energy trying to hide who you really are. You are ashamed of what you are, and at times you long to be like others, but you are who you are, and so you lead this double life. Some know you as LD, and others know you as one of them, but you are not one of them. You are just pretending. You hate yourself for being LD, and you hate yourself for being a fake. And in the end who are you? It is all very confusing. All the while you really just want to be you, without any fears. We LDs live a life of deceit—pretending to be like others—and shame—not wanting to be who we are (p. 25).

As evident in Lynn’s story, feelings of shame, confusion, self-hate, and anxiety are a few of the psychological costs associated with the act concealing an LD identity. These findings were further supported in a study with 224 adults with dyslexia looking at the relationship between perceived family support, concealment, and self-esteem (Nalavany, Carawan, & Sauber, 2015). Concealment of an LD identity was shown to have negative direct and indirect links with self-esteem.

Although limited, past research supports preliminary links between concealment of LD identity, perceived experiences of LD discrimination, and negative psychological outcomes. More research is needed to better understand the role of internalized stigma within LD populations. As such, the current study aimed to explore the direct effect of concealment of LD identity on the outcome variable psychological distress. In addition, the current study explored the mediating role of concealment of LD identity on the relationship between the predictor variable, perceived experiences of LD discrimination and the outcome variable, psychological distress. The following section operationalizes and discusses the outcome variable, psychological distress.

Mental Health Outcomes: Psychological Distress

Psychological distress is defined as a non-specific biological or emotional response to life events or situations that are deemed unpleasant and distressing to the individual (Masse et al., 1998). Psychological distress can produce a multitude of symptoms such as general distress (e.g., anxiety, sadness, anger, depression), performance difficulty, and somatic distress (Deane, Leathem, & Spicer, 1992). Within minority stress research, psychological distress has been tested extensively as an outcome variable with group-specific predictor variables (i.e., distal stressor: perceived discrimination) and group-specific mediating variables (i.e., proximal stressors: internalized stigma, expectations of stigma, and concealment of identity) in LGB populations (Goldbach, Tanner-Smith, Bagwell, & Dunlap, 2014; Lehavot & Simoni, 2014), ethnic and racial minorities (Alamilla et al., 2010; Wei, et al., 2011), social class minorities (Gamarel et al., 2012), and people with obesity (Sikorski et al., 2015). Within disability populations, use of minority stress theory mediation model was supported with invisible chronic illness, HIV/AIDS (Cramer et al., 2016; Rendina et al., 2016). For LD populations, Geiger and Brewster (2018) provide preliminary support for tenants of LD-specific minority stressors on psychological distress with college and graduate students. The next section will explore the presence of psychological distress specific to LD populations.

Mental health within LD populations. Although limited, past research has started to explore the existence of psychological distress as evidenced by heightened levels of anxiety, depression, suicidal ideation, and self-esteem in individuals with LDs. Most of this research within the US has focused on college age and childhood/adolescent age cohorts, leaving the mental health of adults with LDs unexplored. When looking at college students, those with LDs report significantly higher levels of anxiety compared to students without LDs (Davis et al.,

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2009; Hoy et al., 1997). When asked to reflect on their childhood, adults with LDs reported experiencing high levels of anxiety and severe panic attacks (Rodis, Garrod, & Boscardin, 2001).

Increased susceptibility has also been found for depression; multiple studies reported college students with LDs to have significantly higher levels of depression when compared to non-LD students (Davis et al., 2009; Lindsey et al., 2009; MacInnes & Broman, 2013). This finding was also discovered among middle school students (Martinez & Semrud-Clikeman, 2004), supporting the notion that psychological distress is experienced with LD students of younger ages as well. Qualitative findings looking at the life experiences of two individuals with LDs support the existence of chronic depression, suicidal ideation, and substance abuse (Mooney & Cole, 2000). Lastly, students with LDs have significantly lower levels of self-esteem as compared to non-LD students, at both college and elementary levels (Heyman, 1990; Saracolglu et al., 1989).

The psychological impact of LDs has also been studied outside the US. A recent study conducted in Italy found children and adolescents with reading disabilities to report higher levels of generalized anxiety, social anxiety, and depression in comparison to children and adolescents with typical neurocognitive development (Mammarella et al., 2016). In terms of adult mental health, two recent studies conducted in Canada provide considerable evidence for the continuation of mental health problems into adult life. Klassen, Tze, and Hannok (2013), through meta-analysis, found the presence of psychological distress (e.g., anxiety and depression) well into adulthood (i.e., >30) for individuals with LDs. Furthermore, there was little change in the magnitude of distress from childhood into adulthood, suggesting that the psychological distress for individuals with LDs persists throughout the lifespan. Fuller-Thomson and colleagues (2017) are among the first to empirically assess suicide rates of adults with LDs. After controlling for

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common risk factors (e.g., adverse childhood experiences, history of mental illness, substance abuse), adults with LDs were 46% more likely to have attempted suicide in comparison to adults without LDs. The findings from these studies are alarming and call for immediate attention within the field of psychology. Yet, due to differences in culture and definition, the generalizability of these findings to adults with LDs in the US is uncertain.

In sum, levels of psychological distress are disproportionately high for individuals with LDs. These findings have been documented across all age groups and across the globe. Yet, the reasoning for *why* disproportionate rates exist within LD populations remains largely unexplored. Pulling from minority stress theory, it is likely that experiences of LD-specific minority stressors may explain elevations in psychological distress. In fact, recent research provides preliminary support for the use of minority stress theory within LD populations. As such, the current study proposed to build upon these preliminary findings by assessing the direct and indirect effects of the above-mentioned LD-specific minority stressors on psychological distress for individuals with LDs.

Purpose of the Study

Despite substantial research support for experiences of LD discrimination and elevated levels of psychological distress within LD populations, there remains insufficient psychological research examining the link between experiences of discrimination and psychological wellbeing. Reasoning for the absence of such focus may be due to problematic conceptualizations of LDs through a medical model—limiting the application of LDs as a socio-cultural identity (May & LaMont, 2014). As such, minority stress theory is a valuable and applicable tool for exploring the psychological ramifications of perceived LD stigma and discrimination. Few studies have begun to link psychological distress with LD-specific minority stressors (Geiger & Brewster,

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2018; Nalavany et al., 2015; Rodis, Garrod, & Boscardin, 2001; Shessel & Reiff, 1999).

However, the findings are limited to college and graduate students and do not utilize a minority stress theory mediation model—providing a disjointed and contextually skewed understanding of how LD minority stressors impact psychological wellbeing. In order to effectively treat and promote psychological health within LD populations, researchers must understand the root cause of this distress. This study was designed to expand minority stress theory research through use a minority stress mediation model (Hatzenbuehler, 2009) on adults with LDs both in and out of the education system.

The proposed study aimed to answer the following research questions: (a) Does adaptation of Meyer's (1995, 2003) minority stress framework for LD minority stressors add to the understanding of the lived experiences of adults with LDs, (b) what is the psychological impact of LD-specific distal and proximal stressors, and (c) does LD-specific proximal stressors explain the relationship between LD discrimination and psychological distress? In an effort to explore these research questions, the proposed study aimed to examine both direct and indirect effects between group-specific distal stressors (i.e., LD discrimination) with group-specific processes (i.e., proximal stressors: expectations of LD stigma, internalization of LD stigma, and concealment of LD identity) and psychological distress through the use of bivariate correlations and structural equation modeling. The current study examined the following three sets of hypotheses:

1. The first set of hypotheses was grounded in Meyer's (1995, 2003) minority stress framework, in which the union of minority stressors with psychological distress was measured through bivariate correlations between the variables of interest. Specifically, it was hypothesized that the distal stressor (i.e., LD discrimination)

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would yield positive correlations with group-specific processes (i.e., proximal stressors: expectations of LD stigma, internalization of LD stigma, and concealment of LD identity), as well as positive correlation with psychological distress. Furthermore, it was hypothesized that each of the three group-specific processes (i.e., proximal stressors: expectations of LD stigma, internalization of LD stigma, and concealment of LD identity) would yield positive correlations with psychological distress.

2. The second set of hypotheses was also pulled from Meyer's (1995, 2003) minority stress framework, in which direct associations between variables of interest were explored through structural equation modeling and direct effects. It was hypothesized that the distal stressor (i.e., LD discrimination) would yield positive direct associations with group-specific processes (i.e., proximal stressors: expectations of LD stigma, internalization of LD stigma, and concealment of LD identity), and psychological distress. Additionally, it was hypothesized that the three group-specific processes (i.e., proximal stressors: expectations of LD stigma, internalization of LD stigma, and concealment of LD identity) would yield positive direct associations with psychological distress.
3. The third set of hypotheses was supported by Hatzenbuehler's (2009) minority stress integrative mediation model, which was used to explore indirect associations between variables of interest through structural equation modeling and interpretation of confidence intervals. It was hypothesized that group-specific processes (i.e., proximal stressors: expectations of LD stigma, internalization of

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LD stigma, and concealment of LD identity) would mediate the relationship between the distal stressor (i.e., LD discrimination) and psychological distress.

In testing these hypotheses, the aim of the current study was to spread awareness of LD minority stressors and identify these stressors as a serious and psychologically damaging occurrence for individuals with LDs. Secondly, it was hoped that the findings would help shape clinical interventions, theory, and future research for LD populations in efforts to mitigate the psychologically damaging effects of LD-specific minority stressors. See Figure 1 for a model of the hypothesized direct associations. Lines with (+) indicate positive direct effects.

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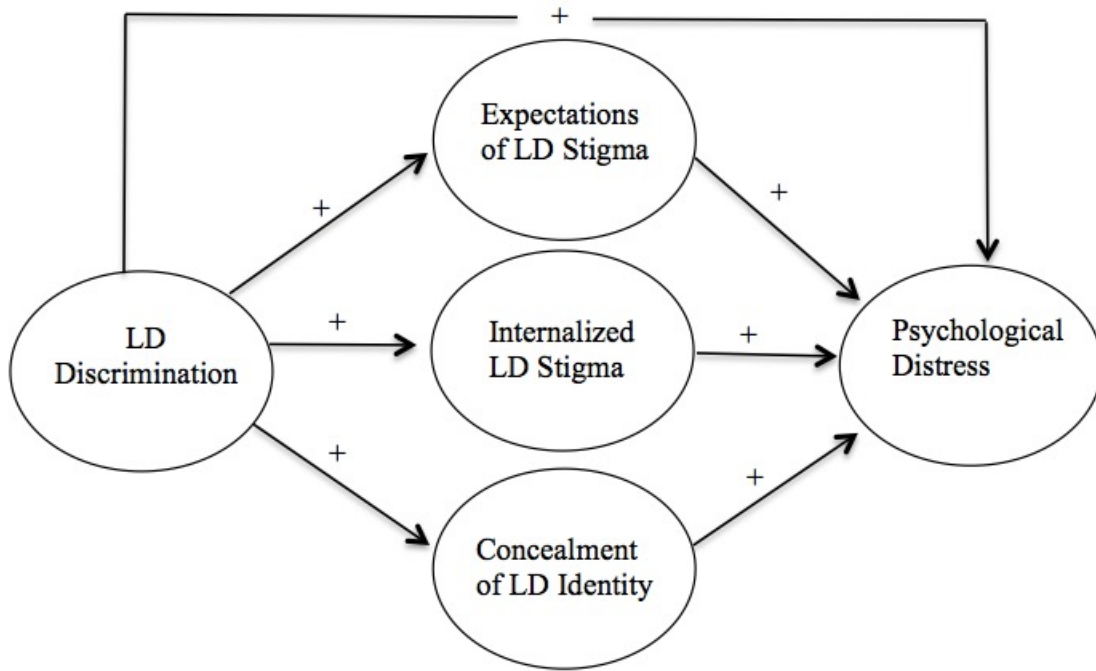


Figure 1. Hypothesized direct associations.

CHAPTER THREE

METHODS

Chapter three outlines the study methodology. The chapter begins with participants and recruitment procedures, including frequencies of participant identity and LD related characteristics of the sample. Next, the instruments used in the current study are identified and discussed in reference to past use with similar populations.

Participants

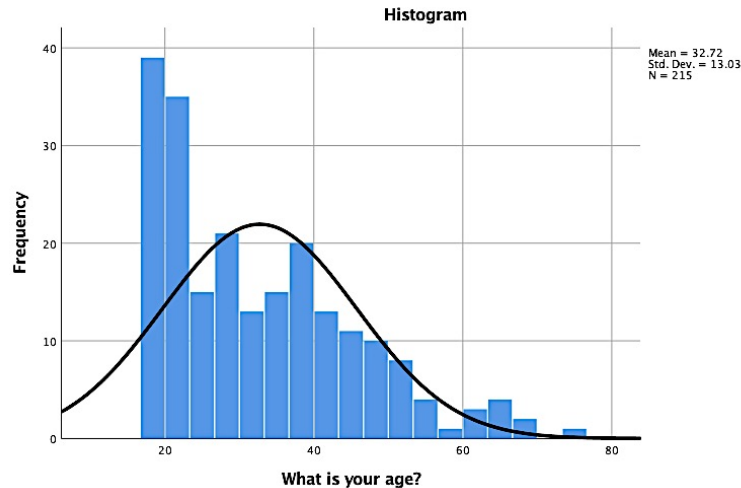
Data was collected from 227 individuals in the United States who self-identify as having an LD diagnosis. Participants were recruited via social networking sites, email, and online platforms for individuals with LDs. To participate in the online survey, participants were asked to confirm that they: (1) currently reside within the US, (2) self-identify as having received an LD diagnosis, and (3) are 18 years of age or older. To uphold confidentiality, all responses were recorded anonymously.

A total of 319 individuals started the survey, however, 84 entries were unusable because they were missing more than 20% of the data (excluding demographic questions) and were subsequently removed (Parent, 2013). The majority ($n = 71$) of these entries came from people who exited the survey immediately after consenting, completing no other items. A total of 13 entries exited half way through the survey, missing more than 20% of data (e.g., range from 26-33% missing). Four respondents were removed from the dataset because they were not from the US and two respondents were removed because they reported having a diagnosis other than an LD and/or ADHD (e.g., Autism, Asperger's, Intellectual Disability). Two participants identified as having Autism Spectrum Disorder, however they were retained because they reported a co-

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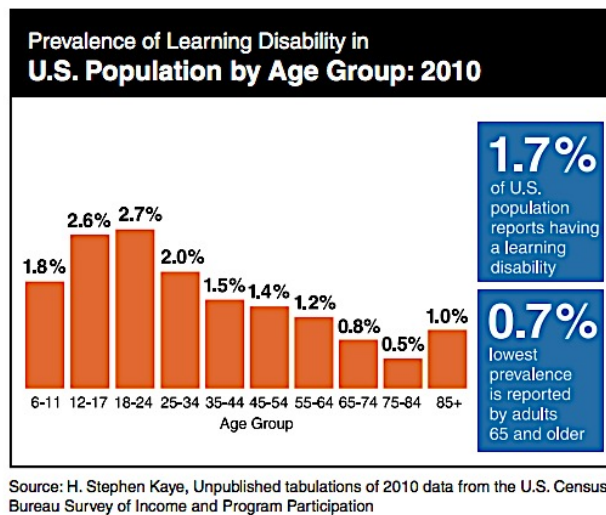
occurring LD diagnosis. These data cleaning procedures resulted in 227 participants remaining in the analytic sample.

Identity characteristics of the sample. The sample is described by frequency of identity characteristics. Participants ranged in age from 18 to 76 years old ($M = 32.72$, $SD = 13.03$, $Mdn = 30$). Of note, age was not normally distributed, with a peak age of 18-21 as shown below:



Graph 1: Age Distribution for Current Sample

However, this is consistent with age demographics of national LD populations as shown below:



Source: H. Stephen Kaye, Unpublished tabulations of 2010 data from the U.S. Census Bureau Survey of Income and Program Participation

Graph 2: Age Distribution for Learning Disabilities Nationally

When examining race, approximately 75% identified as White, 10% as multi-racial, 7% as Black/African American, 6% as Latino/a, <1% as Asian American or Pacific Islander, <1% as

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Native American, and 2% as other races or ethnicities (e.g., Middle Eastern). About 72% of the sample identified as women, 16% as men, 10% identified as transgender, and 2% as other gender (e.g., genderfluid, gender queer, gender nonconforming). In terms of sexual orientation, on a 1 to 5 continuum of exclusively lesbian or gay to exclusively heterosexual, approximately 53% of participants identified as exclusively heterosexual, 15% as other sexual orientation (e.g., asexual, pansexual), 14% as bisexual, 9% as mostly heterosexual, 8% as gay or lesbian, and 1% as mostly gay or lesbian. In terms of social class, 38% of participants identified as a member of the working class, 32% middle class, 16% upper-middle class, 11% lower class, and 2% upper class. For household income, self-reported by brackets of \$10,000, the mean annual income bracket was between \$50,001 and \$60,000; with majority of participants reporting \$10,001 to \$20,000 (15%), followed by \$20,001 to \$30,000 (14%) and less than \$10,000 (13%).

In terms of employment status, 31% were employed full-time, 22% employed part-time, 22% not employed, and 25% other (e.g., full-time student, self-employed, retired). For current education status, 60% of participants were not enrolled in school, 30% enrolled full-time, 8% enrolled part-time, and 2% other (e.g., taking semester off, on internship). In terms of highest level of education obtained, 30% completed some college, 22% bachelors level degree, 19% professional degree, 15% high school/GED, 9% associates degree, and 5% some high school. Participants reported living in 38 out of the 50 states, with most residing in New York (8%), California (6%), Illinois (6%), Texas (5%) and Pennsylvania (4%). Furthermore, about 48% of participants described their living environment as suburban, 31% as urban, and 21% as rural.

The current sample mirrors the composition of the US census data for LD populations in a number of ways including age, income, employment status, and level of education obtained. Age reports as outlined above are consistent with the US census breakdown with a peak age of

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18-24 for individuals with LDs (US Census Bureau, 2010). Additionally, the frequency of LDs for individual's ages 18 to 65 is significantly higher (1.2% difference) for those living in poverty. For the current sample, majority of participants (27%) reported an income at or below the poverty line and depending on the number of dependents in the home, this percentage could be closer to 42%. In terms of employment, only 46% of working-aged adults with LDs in the US are employed (combined full and part-time), which closely mirrors the current sample breakdown for employment (53% combined full and part). For education, only 21% of adults with LDs have completed a four-year college degree, which is also consistent with findings from the current sample (22% completed bachelors degree).

It is important to note that the current sample also differs from the composition of the US census data for LD populations. In terms of gender, majority of participants in the current sample identify as women (72%), which is disproportionately higher than the national gender breakdown for individuals with LDs between the age of 18-65, in which males tend to outnumber women (0.6% difference). In terms of race, majority of participants in the current sample identify as White (75%), which is disproportionately higher than the national race breakdown for individuals with LDs, in which multiracial, followed by Black/African American, and then White represent the largest racial groups within LD populations. There are no national data known to the author outlining demographic information on sexual orientation and state representation within LD adult populations.

LD and LD-Related characteristics of the sample. The sample is also described by frequency of LD and LD-related characteristics. In terms of LD diagnostic category, 52% reported having a formal diagnosis of ADHD, 50% with a Reading LD, 43% with a Math LD, 42% with a Writing LD, 27% with a Language based LD, and 9% with a Nonverbal LD

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diagnosis. Of the current sample, 48% have a solo LD diagnosis (i.e., without a comorbid ADHD diagnosis), 33% have combined LD and ADHD diagnosis, and 19% have a solo ADHD diagnosis. In terms of age when first diagnosed, 43% were diagnosed in early elementary school, 17% in college, 12% in high school, 10% before kindergarten, 7% in junior high/middle school, 7% after completing highest level of education, and 4% in graduate school.

For participants currently enrolled in school, 62% reported a GPA range of 3.01-4.0, followed by 30% with a range of 2.01-3.0 (30%), 7% with a range of 1.01-2.0, and 1% with <1.0 GPA. The current sample is notably high achieving, as the national GPA average for students with LDs was 2.2 GPA (Cortiella & Horowitz, 2014). In terms of documentation with disabilities services in school, 76% of participants reported that they are documented while 24% said they are not. Of those who were documented with disability services at their school, 58% said they currently use accommodations, 25% said they do not use accommodations, and 17% said they used to use accommodations but no longer do. This is significantly higher in comparison to large national samples of postsecondary students with LDs, in which only 17% reported accommodation use (Cortiella & Horowitz, 2014). For participants currently in the workforce, 82% said their LD is not documented with their place of work, while 17% have an LD that is documented at work. This is consistent with large national samples of adults with LDs, in which 19% reported that their LD is documented with their employer (Cortiella & Horowitz, 2014). Of participants who were documented within their place of work, 13% currently use accommodations and 5% said they used to use accommodations but no longer use them. This is significantly higher compared to large national samples of adults with LDs, in which only 5% reported accommodation use in the workplace (Cortiella & Horowitz, 2014). Lastly, 8% of the current sample reported that they used reading software assistance to complete the survey. See

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Table 1 below for identity and LD related demographics of the current sample:

Table 1

Identity and LD-Related Demographics of the Sample

Demographic Variable	Response Categories	<i>n</i>	%
Gender	Woman	159	72
	Man	35	16
	Other gender descriptor	27	12
Transgender Experience	Do you identify as transgender?		
	Yes	22	10
	No	195	90
Race	African American/Black	15	7
	Asian American/Pacific Islander	1	<1
	Native American/Indigenous American	1	<1
	Hispanic/Latino/a	13	6
	Multi-racial	22	10
	White	165	75
	Other race/ethnicity	4	2
Sexual Orientation	Gay or Lesbian	18	8
	Mostly Gay or Lesbian	3	1
	Bisexual	32	14
	Mostly Heterosexual	19	9
	Heterosexual	117	53
	Other	34	15
Employment Status	Employed Full-Time	70	31
	Employed Part-Time	48	22
	Not Employed	48	22
	Other	57	25
Yearly Household Income	Below \$10,000	26	12
	\$10,001 to \$20,000	32	15
	\$20,001 to \$30,000	31	14
	\$30,001 to \$40,000	14	7
	\$40,001 to \$50,000	19	9
	\$50,001 to \$60,000	12	6
	\$60,001 to \$70,000	11	5
	\$70,001 to \$80,000	9	4
	\$80,001 to \$90,000	12	5
	\$90,001 to \$100,000	10	5
	\$100,001 to \$110,000	9	4
	Above \$110,001	27	13
Social Class	Lower Class	25	11
	Working Class	83	38
	Middle Class	72	33
	Upper-Middle Class	37	16
	Upper Class	4	2

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Highest Education Completed	Some College	66	30
	Associates Degree	20	9
	Bachelors Level College	50	22
	Professional Degree	42	19
	High School/GED	34	15
	Some High School	11	5
Currently Enrolled in School	Full-Time Student	68	30
	Part-Time Student	17	8
	No	133	60
	Other	5	2
<i>GPA (for participants enrolled in school)</i>	0.0 - 1.0	1	1
	1.01 - 2.0	6	7
	2.01 - 3.0	27	30
	3.01 - 4.0	55	62
Learning Disability Documented with Disability Services at School <i>(for participants enrolled in school)</i>	Yes	68	76
	No	21	24
Accommodation Use in School <i>(for participants enrolled in school)</i>	Yes	52	58
	No	22	25
	Not currently but I used to	15	17
Learning Disability Documented with Place of Employment	Yes	25	18
	No	116	82
Accommodation at Work <i>(for participants currently in the workforce)</i>	Yes	18	13
	No	116	82
	Not currently but I used to	7	5
Age First Diagnosed with LD	Before Kindergarten	21	10
	Elementary School	96	43
	Jr. High/Middle School	16	7
	High School	27	12
	College	37	17
	Graduate School	8	4
	After Highest Level of Education Completed	16	7
Type of LD Diagnosis <i>(select all that apply)</i>	Language	61	27
	Reading	114	50
	Writing	96	42
	Math	98	43
	Nonverbal	20	9
	Attention ADD/ADHD	119	52
LD/ADHD Diagnosis Breakdown	Solo ADD/ADHD	43	19
	Combined ADD/ADHD and LD	76	33
	LD without ADD/ADHD	108	48
Additional Disability Status	Yes	31	14

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	No	196	86
Psychological Diagnosis	Yes	77	34
	No	150	66
Used Reading Software for Assistance While Taking This Survey	Yes	17	8
	No	199	92

Note. N = 227. Some values do not add up to 227 due to missing demographic data and select all that apply options.

Procedure

Approval for the current study was obtained through the Institutional Review Board (IRB) at Teachers College, Columbia University. Data was collected using Qualtrics online survey. Potential participants were recruited through distribution of the recruitment message with access to the survey link (Appendix C). The recruitment message was circulated via email to coordinators of LD groups, postings on social network sites (e.g., Facebook, Twitter, Tumblr), and postings to online LD websites and resources (e.g., ldamerica.org, ldonline.org, nlcd.org, understood.org). Social networking sites were selected by searching for profiles that produced LD-related posts and/or belonged to LD groups (e.g., women with dyslexia). The study was advertised as an opportunity for participants to discuss their experiences living with an LD diagnosis. The use of an online survey and Internet recruitment was ideal for the current study, as it allowed for a diverse sample and increased privacy. This is particularly important for reaching individuals who may be less “out” about their LD diagnosis and prefer the privacy an online survey provides. Lastly, Qualtrics online survey provides participants with vision impairment and severe dyslexia the opportunity to use computer accommodations such as screen readers (e.g., JAWS).

The first page of the survey included information about the study, informed consent (Appendix A), participant rights (Appendix B), and contact information for the primary investigator. Participants who confirmed that they met criteria for the study and consented to

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participate were directed to the survey introduction page. The introduction page provided participants with instructions for the survey and encouraged participants to respond carefully to all items in the survey. Following the introduction page, participants were directed and encouraged to complete the following self-report scales: Learning Disability/Difficulty Perceived Discrimination Scale; Collective Self-Esteem (modified for LD populations); The Lesbian, Gay, Bisexual Identity Scale—Internalization subscale (modified for LD populations); The Nebraska Outness Scale (modified for LD populations); Hopkins Symptom Checklist; and a demographics questionnaire. Survey items were grouped in blocks by the measures listed above and randomized to prevent serial positioning and priming.

Self-report measures were deemed appropriate for use in the current study, as the use of self-report measures has become increasingly popular within psychological research, particularly for assessing the relationship between experiences of discrimination and mental health outcomes (Lewis, Cogburn, & Williams, 2015) and have been utilized in past minority stress research (e.g., Breslow et al., 2015; Brewster, Velez, Foster, & Robinson, 2016; Lehavot & Simoni, 2011). Furthermore, recent research supports the validity of self-reported measures, which has been observed in both subjective and objective outcomes in both cross-sectional and longitudinal studies (Ainsworth et al., 2012; Piquero, Schubert, & Brame, 2014). Lastly, self-report measures were used to assess type of LD diagnosis (thus meeting criteria for the current study) as opposed to verification of a formal LD diagnosis. This method was deemed appropriate, as incentives that might support the use of deception (e.g., financial gain to participate) were low. Limitations surrounding the use of self-report measures in the current study are discussed in Chapter Five. The online survey took an average of 20-30 min to complete.

Instruments. The following instruments were used in the current study.

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LD discrimination. The 17-item Learning Disability/Difficulty Perceived Discrimination Scale (LDDPDS; Geiger & Brewster, 2018) was used to assess perceived experiences of LD discrimination (Appendix D). Participants used a 6-point Likert scale (from 1 = *never* to 6 = *almost all of the time*) to indicate how frequently they have experienced LD discrimination. The scale captures two domains of LD discrimination with sample items including: Inferior (e.g., *People have treated me like I am unable to learn because of my learning disability*) and Cheating the System (e.g., *People have assumed that I use my learning disability as an excuse to get out of work*). Item responses are averaged with higher scores indicating more frequent LD discrimination. Reliability has been demonstrated with a diverse sample of college and graduate students with LDs, LDDPDS items yielded Cronbach's alphas of .84-.93 for the two subscales and omega hierarchical coefficients of .55 to .62 for the full scale. Convergent validity of LDDPDS scores is supported through positive relations with awareness of public devaluation of people with LDs and concurrent validity is supported through positive relations with anxiety and negative relations with self-esteem. Cronbach's alpha for LDDPDS full-scale items with the current sample was .93.

Expectations of LD stigma. The Public Collective Self-Esteem subscale of the CSES (Luhtanen & Crocker, 1992) was adapted to assess expectations of LD stigma (Appendix E). The Public CSE is a four-item Likert-type measure (1 = *strongly disagree* to 7 = *strongly agree*) that assesses respondents' perceptions of how others value their group. For the present study, Public CSE items were modified to use with LD populations (e.g., *“Most people consider individuals with learning disabilities, on average, to be more ineffective than other social groups”*). Items reflecting positive perceptions toward LD groups were reverse scored, and all items were averaged; with higher scores indicating greater awareness of public devaluation. In a sample of

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diverse college and graduate students with LDs, the modified Public CSE items yielded Cronbach's alpha of .79 (Geiger & Brewster, 2018). In terms of validity, the modified Public CSE for LD populations is supported through positive relations with perceived public devaluation of LD groups and other measures assessing awareness of LD stigma. Cronbach's alpha for the modified CSE items with the current sample was .71.

Internalized LD stigma. The Internalized Homonegativity subscale of the Lesbian, Gay, and Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011) was adapted to assess internalized LD stigma (Appendix F). The Internalized Homonegativity subscale is a three-item Likert-type measure (1 = *disagree strongly* to 7 = *agree strongly*) that assesses LGB individuals' internalized homophobia and homonegativity. For the present study, the Internalized Homonegativity subscale was modified to use with LD populations. (e.g., "*If it were possible I would choose to not have an LD*"). Item responses were averaged with higher scores indicating greater internalized LD stigma. Concurrent validity of Internalized Homonegativity items is supported through negative relations with satisfaction of life and social state self-esteem. The LGBIS Internalized Homonegativity subscale has not been used with LD or other disability populations, however, it has demonstrated utility with other extensions of minority stress theory. For example, Internalized Homonegativity items yielded a Cronbach's alpha of .88 with a diverse sample of sexual minorities while testing tenants of minority stress theory (Mohr & Daly, 2008). Cronbach's alpha for the modified LGBIS items with the current sample was .79.

Concealment of LD identity. The Concealment subscale of the Nebraska Outness Scale (NOS-C; Meidlinger & Hope, 2014) was adapted to assess concealment of LD identity (Appendix G). The NOS-C is a five-item Likert-type measure (1 = *Never* to 11 = *Always*) that assesses the frequency of which LGB individuals' avoid topics related to their LGB identity with

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members of different groups (e.g., immediate family, strangers, people at work). For the present study, the NOS-C was modified to use with LD populations. Participants were instructed to respond to items (e.g., “*Members of your immediate family [e.g., parents and siblings]*”) while thinking of topics relating to their LD identity. Item responses were averaged with higher scores indicating greater concealment of LD identity. Convergent validity of the NOS-C is supported through negative relations with outness and concurrent validity is supported through negative relations with quality of life. The NOS-C has not been used with LD or other disability populations; however, it has demonstrated utility with other extensions of minority stress theory. For example, NOS-C items yielded Cronbach’s alpha of .86 with a sample of gay and bisexual men while testing tenants of minority stress theory (O’Conner, 2016). Cronbach’s alpha for the modified NOS-C items with the current sample was .75.

Psychological Distress. The Hopkins Symptoms Checklist-21 (HSCL-21; Green, Walkey, McCormick, & Taylor, 1988) was used to assess the potential mental health effects of minority stress for LD individuals through psychological distress (Appendix H). The HCL-21 is a 21-item Likert-type measure (1 = *Almost Never [0-10]* to 5 = *Almost Always [91-100%]*) that captures three domains of psychological distress. Sample items include: Affective Distress (e.g., “*Feeling lonely*”), Somatic Distress (e.g., “*Weakness in parts of your body*”), and Performance Difficulty (e.g., “*Your mind going blank*”). Items were averaged with higher scores indicating greater psychological distress. In terms of validity, the HCL-21 demonstrated concurrent validity through positive relations with the State Trait Anxiety Inventory and the Brief Hopkins Rating Scale. The HCL-21 has not been utilized with LD or other disability populations; however, it has demonstrated utility with other extensions of minority stress theory. For example, HCL-21 items yielded Cronbach’s alpha of .91 in a sample of Asian American college students (Su, Lee, &

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Vang, 2005) and .92 in a sample of sexual minorities (Brewster et al., 2016) while testing tenants of minority stress theory. Cronbach's alpha for the HCL-21 items with the current sample was .90.

Demographics. Characteristics of the current sample were assessed with a demographics questionnaire asking participants to identify their age, gender identity, sexual orientation, level of education, employment status, income, social class, race/ethnicity, and geographic region. Additionally, information about participants' LD diagnosis (e.g., year diagnosed, use of accommodations, specific LD diagnosis) were assessed (Appendix I).

CHAPTER FOUR

RESULTS

Chapter Four provides an overview of the data cleaning procedures, analyses and statistical techniques used, and the results of the current study. First, preliminary analyses are explored, which reviews data cleaning procedures, normality assumptions, and descriptive statistics. Next, primary analyses are explored, which reviews correlation analysis, model fit, direct effects, and indirect effects. These steps are outlined below and discussed in relation to the study's set of three hypotheses.

Preliminary Analyses

In the first phase, preliminary analyses were performed to prepare the data set for the primary analyses. This phase is outlined below and broken down into data cleaning procedures, normality assumptions, descriptive statistics, and correlation analysis.

Data cleaning procedures. Following data collection, the data was appropriately cleaned in SPSS 25 to prepare for data analysis. Violations of respondent eligibility and missing data, as outlined in the previous chapter, were assessed and respondents who violated the restrictions or were missing more than 20% of data were subsequently removed (Parent, 2013). These data cleaning procedures resulted in 227 participants remaining in the analytic sample. Of the remaining participants majority, 226 (99.5%) were missing zero data, and 1 participant was missing 0.06% of data (i.e., 3 data points). Little's Missing Completely at Random (MCAR) test was used to test the null hypothesis that data is missing completely at random, which helped to determine how to handle the missing data in the current sample (Little & Rubin, 2014). Results from MCAR test demonstrated that data from the current sample is missing completely at random and not due to systematic bias ($\chi^2 = 46.26, df = 47, p = .503$). In following best

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practices for handling missing data at random (Schafer & Graham, 2002), maximum likelihood (ML) was used to handle the 0.06% of missing data.

Normality assumptions. Following missing data procedures, assumptions of normality were assessed using SPSS 25. In following Weston & Gore (2006) guidelines, data were screened to determine if they met guidelines for univariate normality (i.e., skewness < 3.0, kurtosis < 10.0). All variables of interest met the benchmarks for univariate normality outlined by these guidelines. Next, the data was tested for outliers through use of Mahalanobis D^2 calculations. Through this procedure, no outliers were identified, as no case had a significant value of Mahalanobis D^2 ($p < .001$). As such, the data set met multivariate normality assumptions and is assumed to follow a normal distribution.

Descriptive statistics. SPSS 25 was used to compute descriptive statistics (i.e., range of scores, means, medians, modes, and standard deviations) for all scale and demographic items. Additionally, the reliability of scales were checked through computations of internal consistencies. Using Ponterotto and Ruckdeshel's (2007) matrix for interpreting internal consistency reliability, all scales demonstrated acceptable internal consistency, with alpha values ranging from .71 to .93. Of the five scales used, the CSES ($\alpha = .71$), LGBIS ($\alpha = .79$), and NOS-C ($\alpha = .75$) demonstrated acceptable internal consistency but were on the lower end of acceptability. However, alpha values in this range are likely explained by the small number of items used in each scale (e.g., 3-4 items), which can negatively impact internal consistency reliability values (Cortina, 1993).

Correlation analysis. Hypothesis 1 was tested by exploring bivariate correlations between the five variables of interest using SPSS 25. Bivariate correlations were used to assess the direction and strength of relationships between each variable. Correlation coefficients range

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from 0 to 1 and can be negatively (i.e., as one variable increases the other decreases) or positively related (i.e., as one variable increases the other increases). Due to the influence sample size has on the significance of correlation coefficients, Cohen's (1992) guidelines were used to interpret small ($r = .10$), medium ($r = .30$), and large ($r = .50$) effect sizes. All bivariate correlations in relation to Hypothesis 1 are shown in Table 2 and described below.

In terms of distal stressors, relations between LD discrimination and the other four variables of interest were explored. Consistent with hypotheses, LD discrimination yielded a significant medium positive correlation with expectations of LD stigma ($r = .35$), a significant small positive correlation with internalization of LD stigma ($r = .13$), a significant medium correlation with psychological distress ($r = .45$). Inconsistent with hypotheses, LD discrimination yielded a small nonsignificant correlation with concealment of LD identity. In terms of proximal stressors, relations between the three proximal stressors and the outcome variable were explored. Consistent with hypotheses, both expectations of LD stigma ($r = .15$) and internalization of LD stigma ($r = .18$) yielded significant small positive correlations with psychological distress. Inconsistent with hypotheses, concealment of LD identity yielded a nonsignificant small positive correlation with psychological distress.

Correlation analysis was also examined across six control variables: student status, employment status, race, age, social class, and ADHD diagnosis. Student status (0 = *non-student*, 1 = *student*) yielded a significant large negative correlation with concealment of LD identity ($r = -.53$). Race (0 = *White*, 1 = *person of color*) yielded a significant small positive correlation with psychological distress ($r = .16$). Social class (1 = *lower class* to 5 = *upper class*) yielded significant small negative correlations with LD discrimination ($r = -.20$), concealment of LD identity ($r = -.19$), and psychological distress ($r = -.28$). ADHD diagnosis (1 = *ADHD diagnosis*,

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2 = *no ADHD diagnosis*) yielded a significant positive correlation with psychological distress ($r = .17$). No other correlations involving student status, race, social class and ADHD diagnosis were significant. Additionally, no correlations involving education status and age were significant.

In determining what covariates to keep in the primary analyses, both theoretical and data driven approaches were considered (Spector & Brannick, 2011). Though limited, research suggests that the workforce environment provides a unique experience for adults with LDs as compared to educational settings (Cortiella & Horowitz, 2014; Gerber, 2012). Specifically, adults with LDs are less likely to document their disability with their employer and only 5% have requested accommodations in their place of employment as compared to the 17% of LD college students who receive accommodations within educational settings. In the current study, 58% of participants reported receiving accommodations at school while only 13% of participants reported receiving accommodations at work. The lack of acknowledgement and awareness of LDs within the workforce, as compared to educational settings, is estimated to negatively impact adults with LDs psychological wellbeing (Gerber, 2012). Research has also begun to legitimize the existence of systemic LD oppression through ADA work place discrimination reports, which provides additional support that adults with LDs in the workforce may experience unique forms of LD discrimination (McMahon et al., 2016; Sevak, Stapleton, & O'Neill, 2017). In terms of age, research suggest that within eight years of graduating formal schooling, 69% of adults with LDs considered themselves to no longer qualify as having a disability (Cortiella & Horowitz, 2014). Such shifts in identity salience also have potential to affect the relationship between perceived LD discrimination and psychological wellbeing. These findings suggest that employment status, student status, and age are likely to influence the relationship between

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experiences of LD discrimination and psychological distress, and as such, were deemed essential covariates to keep in the primary analyses.

A data driven approach using bivariate correlations and independent sample t-tests was used to determine the remaining covariates of interest (Spector & Brannick, 2011). First, bivariate correlations between demographic variables and the outcome variable (i.e., psychological distress) were explored. As previously stated, psychological distress yielded significant correlations with race, social class, and ADHD diagnosis. Next, independent sample t-tests were used to compare means for the dichotomous demographic variables race and ADHD diagnosis. For the covariate race, there was a significant difference in the level of psychological distress reported for people of color ($M = 2.72$, $SD = 0.52$) and White participants ($M = 2.53$, $SD = 0.57$); $t(219) = 2.19$, $p = .030$. In terms of ADHD diagnosis, there was a significant difference in the level of psychological distress reported for participants with ADHD ($M = 2.73$, $SD = 0.53$) and participants without ADHD ($M = 2.43$, $SD = 0.55$); $t(225) = 4.19$, $p < .000$ ¹. As such, the demographic variables race, social class, and ADHD diagnosis were also included as covariates for the primary analyses due to significant relationships with the outcome variable, psychological distress. Bivariate correlations between the variables of interest and six covariates are also shown in Table 2.

¹ Independent sample t-tests were also conducted with the variable ADHD across the four LD-specific minority stress variables of interest. No significant differences were found in levels of

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Table 2

Bivariate Correlations, Descriptive Statistics, and Cronbach's Alpha for Variables of Interest

Variable	1	2	3	4	5	<i>M</i>	<i>SD</i>	Range	Alpha
1. LD Discrimination	1					3.34	1.03	1 - 6	.93
2. Expectations of LD Stigma	.35***	1				4.76	1.02	1 - 7	.71
3. Internalized LD Stigma	.13*	.02	1			5.04	1.70	1 - 7	.79
4. Concealment of LD Identity	.13	.12	.14*	1		6.14	2.50	1 - 11	.75
5. Psychological Distress	.45***	.15*	.18**	.12	1	2.59	0.56	1 - 5	.90
6. Student Status	.04	.13	-.53*	.02	.07	0.40	0.49	0 - 1	-
7. Employment Status	-.09	-.02	-.00	.00	-.02	0.78	0.41	0 - 1	-
8. Race	-.03	.12	-.02	-.11	.16*	0.25	0.44	0 - 1	-
9. Age	-.08	-.06	.04	-.02	-.05	32.61	12.95	18-76 ^a	-
10. Social Class	-.20**	.05	-.19**	-.06	-.28***	2.60	0.96	1 - 5 ^b	-
11. ADHD Diagnosis	.13	.08	-.03	.01	.17*	0.52	0.50	0 - 1	-

Note. *N* = 227.

In line with theoretical support, age, student status, and employment status were examined as covariates and were included in the final model. Student Status, Employment Status, Race, Age, Social Class, and ADHD Diagnosis were used as covariates; however, Social Class was removed from the final model due to model fit concerns.

^a 18 - 76 is the observed range of age

^b 1 = lower class to 5 = upper class

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

Primary Analyses

In the second phase, primary analyses were performed to test the study's remaining hypotheses. This phase is outlined below which reviews the procedure and results of the structural equation modeling, including model fit, direct effects (i.e., Hypothesis 2), and indirect effects (i.e., Hypothesis 3).

Structural equation modeling. The study used Structural Equation Modeling (SEM) to determine the goodness of fit of the proposed minority stress model and hypothesized relationships between the variables of interest (Hypotheses 2 & 3). SEM is used in psychological research to test multivariate models by examining potential causal associations between one or more dependent variable and two or more independent variables (Weston & Gore, 2006). In following best practice, as suggested by Weston and Gore, SEM was conducted in a six-stage process: 1) model specification, 2) identification, 3) data preparation, 4) estimation, 5) evaluation and fit, and 6) modification/testing alternative models. The first two steps were prepared prior to data collection and outlined in earlier chapters. As previously discussed, the model was both specified and identified to support the use of the minority stress integrative mediation model for adults with LDs through past research findings and theoretical support. The third step was completed following data collection and outlined earlier in this chapter, which included screening, cleaning, and assessing for normality. In addition, multicollinearity was investigated using bivariate correlations to assure that the variables of interest were not highly correlated (i.e., $> .85$) and therefore redundant. Multicollinearity was not found and thus, all five variables were retained. Step four is the process of choosing an estimation procedure, in which normality assumptions and missing data procedures are considered. As previously stated, maximum likelihood estimation (ML) was used for the current study to handle low-level missing data. This

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is one of the more robust forms of estimation and commonly used with sample sizes as small as $N = 200$. As such, the current sample size ($N = 227$) was deemed sufficient for the analyses and estimation procedures.

The final two steps, *evaluation and fit* and *testing alternative models*, first required the creation of latent variables. SEM allows for the testing of theoretical relationships between latent variables; a variable that is observed and serves as an indicator of the construct of interest (Weston and Gore, 2006). To form latent variables, there are two types of manifest variables that are assessed through SEM analysis: 1) *exogenous variables* in which variance is not explained or represented by other variables in the model (i.e., LD discrimination) and 2) *endogenous variables* in which variance is explained and represented, in part, by other variables in the model (i.e., expectations of LD stigma, internalization of LD stigma, concealment of LD identity, and psychological distress). Latent variables were created using a data-based correction that transforms variable means into latent variables. With this procedure, a variable's standardized error is fixed to a value computed based on the measure's sample variance and internal consistency reliability estimate (Brown, 2006). For the current study, full-scale means were used to create latent variables for all five variables of interest. This method is argued to be a robust and effective way to create latent variables for the use of SEM as opposed to prior methods such as item parceling (Cole & Preacher, 2014).

These final steps in conducting SEM also required the exploration of the effects between latent variables. SEM allows for two types of effects: 1) *direct effects* (i.e., the direct effect of one variable onto another) and 2) *indirect effects* (i.e., the effect one variable has on another variable that in turn effects a third variable) (Weston & Gore, 2006). The study used direct and indirect effects to assess the direct associations between the five variables of interest (i.e., Hypotheses 2) and the indirect effects, or mediation model, where proximal stressors were

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projected to mediate the relationships between the independent and dependent variable (i.e., Hypothesis 3). Lastly, SEM analysis provided information regarding the model fit, which is assessed through the identification of model parameters. Significance and goodness of fit for the model was determined through analysis of path coefficients and goodness of fit statistics.

Mplus version 8.0 (Muthén & Muthén, 2017) was used to conduct SEM for the current study. Theoretical support from minority stress theory (Hatzenbuehler, 2009; Meyer, 1995, 2003) was used to support the relationships between the five latent variables of interest (i.e., Hypotheses 2 and 3). Specifically, SEM tested the hypothesized direct (i.e., Hypothesis 2) and indirect (i.e., Hypothesis 3) relationships between one exogenous variable (i.e., LD discrimination) and four endogenous variables (i.e., expectations of LD stigma, internalized LD stigma, concealment of LD identity, and psychological distress). Discussion surrounding support for Hypotheses 2 and 3 are provided in the next section through report of the following results: 1) model fit, 2) direct effects, and 3) indirect effects.

Model fit. In testing both direct and indirect effects, model fit was determined by using Weston and Gore's (2006) model fit guidelines. Criteria for acceptable fit are CFI > .90 and RMSEA and SRMR < .10 (e.g., Hu & Bentler, 1995) with more stringent criteria of CFI > .95, and RMSEA and SRMR < .05 (e.g., Hu & Bentler, 1999; Quintana & Maxwell, 1999). Mplus' MLR estimator will also be used to calculate corrected/scaled chi-square test statistic (S-B χ^2 ; Satorra & Bentler, 1988) for the model. In traditional SEM analysis, a measurement model (i.e., the relationship between the indicators and the construct) is assessed prior to conducting the structural model (i.e., relationship between the latent variables) (Weston & Gore, 2006). For the currently study, latent variables were created using a data-based correction that transforms variable means into latent variables as opposed to traditional methods such as item parceling. As

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such, a measurement model was not needed and the structural model was assessed immediately following the creation of the five latent variables using data-based correction (Cole & Preacher, 2014).

The structural model was first run with the five variables of interest in addition to all six covariates analyzed in the preliminary analyses (i.e., student status, employment status, race, age, social class, ADHD diagnosis). The structural model was deemed to be a good fit to the data as outlined by Weston and Gore (2006): $\chi^2(9) = 14.057, p = .120$; CFI = .95; RMSEA = 0.052 (90% CI = 0.000, 0.102); SRMR = 0.039. Despite acceptable fit, many of the hypothesized relations were found to be non-significant.² As such, the structural model was run with the five variables of interest and different iterations of the six control variables for model comparisons³. Across ten model comparisons, many of the hypothesized relations were found to be non-significant when the covariate social class was included. Additionally, when social class was included as the only covariate in the model, the fit was negatively impacted and no longer met acceptable fit criteria: $\chi^2(4) = 14.878, p < .05$; CFI = .90; RMSEA = 0.111 (90% CI = 0.055, 0.174); SRMR = 0.060. It is likely that the measure of social class (i.e., 1 = *lower class* to 5 = *upper class*) used in the current study lacked the specificity needed to assess a complex construct that was both valid and reliable. Research suggests that in quantifying social class, the variable should contain a combination of three main elements: cultural, social, and economic factors (Healy & Clinch, 2004). As such, the variable social class used in the current study was deemed to lack validity and thus removed from the model. The structural model with the remaining

² The structural model was also tested using the two subscales of the LDDPDS and with the HSCL-21 general distress subscale. Neither model provided fit improvement. Supplemental materials documenting fit statistics for these models are provided in Appendix J.

³ The structural model was tested using ten different covariate iterations. Model comparisons between the ten models are provided in Appendix K.

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covariates (i.e., school status, employment status, race, age, ADHD diagnosis) was deemed to be an exceptional fit to the data, meeting stringent criteria: $\chi^2(8) = 6.923, p = .545$; CFI = 1.000; RMSEA = 0.000 (90% CI = 0.000, 0.074); SRMR = 0.027.

For model comparisons, model fit was interpreted using Akaike information criterion (AIC) and Bayesian information criterion (BIC) to compare models. Smaller AIC and BIC values suggest improved model fit. The following guidelines were used to evaluate AIC and BIC values: AIC difference of ≤ 2 indicate no substantial difference, 3–9 indicate some difference, and > 10 provide strong evidence of difference (Burnham & Anderson, 2002); BIC difference of < 2 provide weak evidence of difference, 2–5 indicate some difference, 6–9 provide strong evidence of difference, and > 10 provide very strong evidence of difference (Raftery, 1995). Although both models (i.e., structural model with all six covariates and structural model with the covariate social class removed) provided an adequate fit to the data, AIC and BIC value comparisons between the first model (AIC = 3,260.39 ; BIC = 3396.83) and the second model (AIC = 3,271.10; BIC = 3394.23) suggest that the first model was preferable, Δ AIC = -10.7 and Δ BIC = -2.6. Despite this finding, the validity and reliability of the covariate social class was considered to be a significant concern, and as such, the second model (i.e., model with the covariate social class removed) was deemed superior (Healy & Clinch, 2004). Direct and indirect effects were thus estimated with the second model.

Direct effects. In terms of direct effects, the author hypothesized positive relations between LD discrimination and expectations of LD stigma, LD discrimination and internalized LD stigma, LD discrimination and concealment of LD identity, LD discrimination and psychological distress, expectations of LD stigma and psychological distress, internalized LD stigma and psychological distress, and concealment of LD identity and psychological distress

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(i.e., Hypothesis 2). Direct effects are described below; see Figure 2 for standardized path coefficients of direct effects in the final model.

Consistent with Hypothesis 2, the predictor variable LD discrimination yielded a significant positive effect on the outcome variable psychological distress, in addition to proximal stressors expectations of LD stigma and concealment of LD identity. Consistent with Hypothesis 2, the proximal stressor internalization of LD stigma yielded a significant positive effect on psychological distress. Inconsistent with hypotheses, LD discrimination yielded a non-significant positive effect on the proximal stressor internalization of LD stigma. Additionally, the proximal stressor concealment of LD identity yielded a non-significant positive effect on psychological distress, and expectations of LD stigma yielded a non-significant negative effect on psychological distress.

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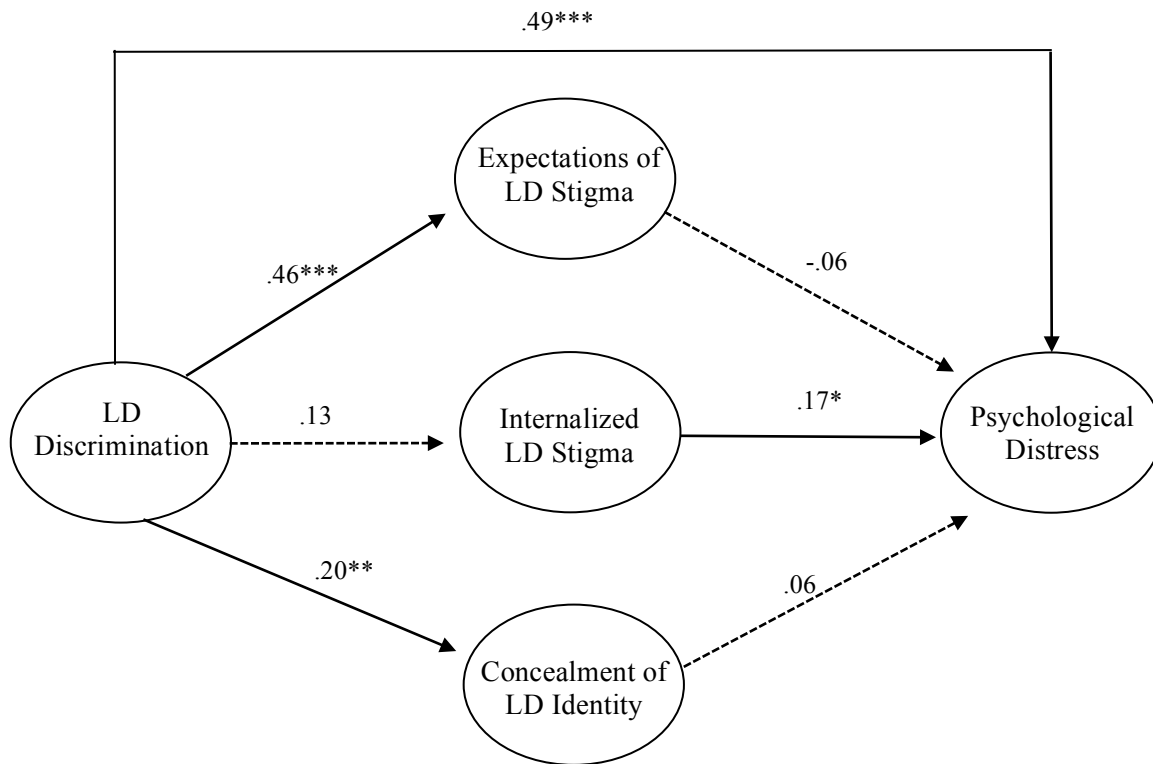


Figure 2. SEM analysis of hypothesized mediation relations with direct relations of latent variables. Values reflect standardized coefficients. Dashed lines indicate nonsignificant paths. Not depicted in the model are the following demographic covariates: student status, employment status, race, age, and ADHD diagnosis.
* $p < .05$, ** $p < .01$, *** $p < .001$

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Indirect effects. Indirect effects were then tested through partial mediation in line with the integrative mediation model of minority stress (Hatzenbuehler, 2009) by testing the potential mediating roles expectations of LD stigma, internalized LD stigma, and concealment of LD identity have on the relationship between LD discrimination and psychological distress (i.e., Hypothesis 3). To determine the significance of indirect effects, 95% confidence intervals (CIs) were examined. Specifically, if the CI did not contain zero, the indirect effect was considered to be significant at least at the $p < .05$ value (Mallinckrodt, Abraham, Wei, & Russell, 2006). The indirect effects were non-significant for all three hypothesized mediations. Specifically, partial mediation of the relationship between LD discrimination and psychological distress was insignificant for all three proximal stressors (i.e., expectations of LD stigma, internalization of LD stigma, and concealment of LD identity). All indirect effects are shown in Table 3.

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Table 3

Magnitude and Significance of Total Indirect Effects

Predictor	Mediators	Criterion	Standardized Indirect Relation		Unstandardized Indirect Relation		95% CI, Uns. Indirect Relation	
			β	<i>SE</i>	<i>B</i>	<i>SE</i>	Lower Bound	Upper Bound
LD Discrimination	Expectations of LD Stigma	Psychological Distress	-.027	.048	-.014	.025	-.062	.040
	Internalization of LD Stigma	Psychological Distress	.023	.020	.012	.011	-.001	.044
	Concealment of LD Identity	Psychological Distress	.011	.020	.006	.011	-.007	.032

Note. Indirect effects presented are of the final model and includes the following demographic covariates: Student Status, Employment Status, Race, Age, and ADHD Diagnosis.
 For CIs that do not contain 0, the indirect association is significant at least $p < .05^*$

Summary of Findings

The study's findings demonstrate partial support for the author's hypotheses. Overall, the final model demonstrated excellent fit to the data, indicating that minority stress theory (Meyer, 1995, 2003) is an adequate and effective framework for understanding the psychological ramifications of LD discrimination on adults with LDs. LD discrimination played a significant role in the model, yielding direct effects with two of the three proximal stressors (i.e., expectations of LD stigma and concealment of LD identity) and a direct effect with the outcome variable, psychological distress. These findings suggest that perceived experiences of LD discrimination is associated with increased expectations of LD stigma, concealment of LD identity, and psychological distress. The proximal stressor internalization of LD stigma also played a significant role in the model, yielding direct effects with psychological distress. However, contrary to the study's hypotheses, the direct effect of LD discrimination on internalization of LD stigma was not supported, and the direct effects of proximal stressors expectations of LD stigma and concealment of LD stigma on the outcome variable were not supported. Also contrary to the study's hypotheses, partial mediation of the relationship between LD discrimination and psychological distress was not supported for all three proximal stressors. As such, support for the use of Hatzenbuehler's (2009) integrative mediation model of minority stress with adults with LDs was not found in the present study.

Overall, the findings support the extension of minority stress theory to be used on LD populations and confirm that LD discrimination is associated with psychological distress, in addition to LD-specific proximal stressors (i.e., expectations of LD stigma and concealment of LD identity). The findings also support the association of internalized LD stigma with psychological distress. However, the main purpose of the study was to understand *why* LD

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discrimination is associated with psychological distress. Specifically, it was hypothesized that LD-specific proximal stressors would help to explain this relationship through mediation. Yet, results were unable to provide clarity on the specific processes that drive the relationship between LD discrimination and psychological distress. Table 4 provides a visual picture of the findings broken down by each of the three hypotheses. The following chapter will provide a discussion of the results in the context of future research, continued use of minority stress theory with LD populations, and implications for clinical practice.

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Table 4

Results and Support for Hypotheses: Bivariate Correlations, Direct Effects, Indirect Effects

Hypothesis Number	Test	Predictor	Mediator	Outcome	Direction of Relationship	Supported	Not Supported
Hypothesis 1	Bivariate Correlations	LD Discrimination		Expectation of LD Stigma	+	✓	X
				Internalization of LD Stigma	+	✓	
				Concealment of LD Identity	+		
				Psychological Distress	+	✓	
		Expectation of LD Stigma		+	✓		
		Internalization of LD Stigma		+	✓		
		Concealment of LD Identity		+		X	
		Psychological Distress		+		X	
Hypothesis 2	Direct Effects	LD Discrimination		Expectation of LD Stigma	+	✓	X
				Internalization of LD Stigma	+		
				Concealment of LD Identity	+	✓	
				Psychological Distress	+	✓	
		Expectation of LD Stigma		+		X	
		Internalization of LD Stigma		+	✓		
		Concealment of LD Identity		+		X	
		Psychological Distress		+		X	

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Hypothesis 3	Indirect Effects	LD Discrimination	Expectation of LD Stigma	Psychological Distress	+		X
		LD Discrimination	Internalization of LD Stigma	Psychological Distress	+		X
		LD Discrimination	Concealment of LD Identity	Psychological Distress	+		X

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CHAPTER FIVE

DISCUSSION

Chapter Five expands on the results discussed in the previous chapter by contextualizing the findings with the intention of developing future research and clinical practice. The chapter begins with a brief summary of the purpose of the current study, followed by a discussion of the major findings as it relates to the lived experiences of adults with LDs. Next, implications are discussed in regard to future research and clinical practice. Limitations of the current study are also reviewed in addition to how these limitations may influence future research with LD populations. The chapter concludes with an overall summary of the present study.

Summary of the Research Study

The purpose of this study was to gain insight on the lived experiences of individuals with LDs by conceptualizing LD as a cultural and marginalized identity. Specifically, a sociocultural framework was used to build upon on previous research documenting the existence and pervasive nature of LD stigma and discrimination (Denhart, 2008; Geiger & Brewster, 2018; May & Stone, 2010). Additionally, the study aimed to enhance the understanding of previous research documenting the disproportionately higher rates of psychological distress (e.g., depression, anxiety, suicide attempts) within LD populations (Davis et al., 2009; Fuller-Thomson et al., 2017; Lindsey et al., 2009; MacInnes & Broman, 2013; Martinez & Semrud-Clikeman, 2004).

Despite substantial research support for experiences of LD discrimination and elevated levels of psychological distress within LD populations, there remains insufficient psychological research examining the link between experiences of discrimination and psychological wellbeing (Geiger & Brewster, 2018). To address this gap in the literature, the study used minority stress

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theory—a theory that examines the intricate relationship between discrimination and psychological distress for marginalized populations (Meyer, 1993, 2003). An adapted version of the *integrative mediation model* proposed by Hatzenbuehler (2009), with LD-specific minority stress variables, was used to understand the impact perceived experiences of LD discrimination have on the psychological well-being of adults with LDs. Specifically, the study examined the association between one predictor variable (i.e., LD discrimination) and one outcome variable (i.e., psychological distress), as mediated by three proximal stressors (i.e., expectations of LD stigma, internalization of LD stigma, and concealment of LD identity) through both direct and indirect relations.

Support of the current study's hypotheses varied. Results provided mixed support for bivariate correlations and direct effects between the five minority stress variables of interest, and support for mediation of the three proximal stressors was not established. Still, findings support the use and adaptation of minority stress theory with LD adult populations, which have important implications for the conceptualization of LDs, future research, and clinical practice.

Overview of Findings

The current section reviews the results as organized by the study's three main hypotheses. Results are discussed in terms of statistical significance, connection to past literature, and how findings relate to the lived experiences of adults with LDs. Prior to this review, it is important to explore the larger theoretical purpose of the study, which was to conceptualize LDs within a sociocultural identity framework, moving away from the use of a medical model that has historically been used to understand LDs (May & LaMont, 2014). This shift was achieved through adaptation of minority stress theory (Meyer 1993, 2003; Hatzenbuehler, 2009) through examination of the relationships between LD-specific minority stress variables. The

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hypothesized minority stress model depicted in Figure 1 provided exceptional fit to the data. This finding suggests that conceptualizing LDs as a socially constructed, marginalized identity is an accurate and effective way to understand the lived experiences of adults with LDs. This poses meaningful implications for the future of LD research and clinical practice. Particularly, the importance of understanding one's LD as intricately tied to social and cultural factors and highlighting the psychological consequence of exposure to LD stigma and discrimination.

In addition to theoretical advancement, the study aimed to test the following associations between the five LD-specific minority stress variables of interest: 1) Hypothesis 1: bivariate correlations, 2) Hypothesis 2: direct effects, and 3) Hypothesis 3: indirect effects. The subsequent sections consider the study's three main hypotheses as it relates to findings and implications.

Hypothesis 1: Bivariate Correlations. Hypothesis 1 was grounded in Meyer's (1993, 2003) theoretical stance that the union of distal and proximal minority stressors contributes to understanding the disproportionate rates of psychological distress within marginalized populations. The correlational patterns among the five variables of interest were consistent with prior minority stress research and the hypothesized relationships, with the exception of the variable concealment of LD identity. Correlations between the five variables of interest and covariates of interest are discussed.

As expected, LD discrimination yielded a significant positive correlation with proximal stressor expectations of LD stigma. This finding is consistent with prior minority stress research on LD college students, where LD discrimination was positively correlated with expectations of LD stigma (Geiger & Brewster, 2018). Thus, individuals who reported high levels of LD discrimination also reported an increased expectation that others held stigmatized views of their

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LDs. Furthermore, the magnitude of the correlation in the current study was consistent with past research, both demonstrating medium effect sizes. This finding also mirrors qualitative research, in which students with LDs noted that exposure to discrimination increased their expectation that their peers and teachers would hold unfavorable views of their LD, resulting in the use of creative strategies (e.g., avoiding association with the office of disability services, skipping class to avoid further discrimination) (Mooney & Cole, 2000; Penland, 2007). As hypothesized, LD discrimination also yielded a significant positive correlation with proximal stressor internalization of LD stigma. Past research with LD populations has yet to examine this relationship quantitatively. Notably, the finding is consistent with past disability research on people with HIV, where exposure to HIV discrimination was positively correlated with internalized HIV stigma (Berger et al., 2001). The magnitude of the relationship in the current study is markedly smaller in comparison to the large effect sizes in previous disability research. However, the finding of the current study is the first to build off of narratively based LD research, which has established preliminary support for this relationship (Goldberg et al., 2003; Rodis et al., 2001). Consistent with qualitative findings, when exposure to LD discrimination was high, so was internalized LD stigma. Taken together, these findings suggest that exposure to LD discrimination may be associated with expectations that others will hold negative beliefs about their LD, in addition to internalized negative beliefs about having a LD diagnosis.

As hypothesized, distal stressor LD discrimination and proximal stressors expectations of LD stigma and internalization of LD stigma yielded significant positive correlations with the outcome variable psychological distress. These findings are consistent with past qualitative research indicating that past experiences of LD discrimination, expectations of LD stigma, and internalized LD stigma were connected to participant's current and past struggles with mental

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illness including symptoms of depression, anxiety, suicidal ideation, and psychiatric hospitalizations (Shessel & Reiff, 1999). Similarly, this finding is consistent with past quantitative research, where LD discrimination and expectations of LD stigma were positively correlated with anxiety and negatively correlations with self-esteem (Geiger & Brewster, 2018). Furthermore, the magnitudes of these correlations in the current study were generally consistent with past research, demonstrating small to medium effect sizes. For adults with LDs, results suggest that perceived exposure to LD discrimination, expectations that others hold negative beliefs about one's LD, and internalized stigma about one's LD may be associated with negative mental health outcomes.

Contrary to hypotheses, LD discrimination did not yield a significant correlation with concealment of LD identity and concealment of LD identity did not yield a significant correlation with psychological distress. Past research utilizing a repeated measures design found that students with LDs who were exposed to LD discrimination were less likely to openly disclose their LD to the office of disability services, as compared to students who were not exposed to LD discrimination (Hartman-Hall & Haaga, 2002). Relatedly, qualitative research found that students with LDs identified past experiences of LD discrimination as a leading factor behind their efforts to conceal their LD (Denhart, 2010; Kitchura 2008; Penland, 2007). Although limited, research has also found support for the relationship between concealment of one's LD and psychological distress, through personal narratives (Rodis et al, 2001) and negative correlations with self-esteem (Nalavany et al., 2015). As such, the non-significant relationships with the variable concealment of LD was a surprising result and may be indicative of the complexity of navigating an invisible identity that necessitates visibility to access support and accommodations (Cortiella & Horowitz, 2014). For example, within educational systems, a

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student may attempt to conceal their LD from their professors; however, if the student chooses to access accommodations (e.g., extra time on testing), their professors will be notified about the accommodation use and could likely assume that the student has a LD. Thus, in these situations, concealment of one's LD may be perceived as an unattainable option.

In regard to covariates used in the final model, student status yielded a significant negative correlation with internalized LD stigma, suggesting that students with LDs reported lower levels of internalized stigma. This may reflect an important distinction between the experiences of adults with LDs in and out of the education system, in which students may be less susceptible to internalized stigma. However, past research has commonly studied internalized LD stigma with students and has identified educational systems as an environment likely to enhance the internalization process (Goldberg et al., 2003). It is important to note that the current sample was remarkably higher achieving and more connected to support systems in comparison to national averages (Cortiella & Horowitz, 2014), which may partly explain this finding and speak to potential moderating variables (e.g., academic achievement, access to accommodations). Alternatively, it is possible that the internalized stigma experienced in educational settings is conceptually different from the internalized stigma experienced in the work force. For example, internalized stigma in school settings may be more connected to negative beliefs about one's intelligence, while internalized stigma in the workforce may be more connected to negative beliefs about performance. Unfortunately, the adapted measure used in the current study was not specific enough to capture these potential differences. Additional research exploring the unique processes of internalized LD stigma in these two environments is needed.

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Covariates race and ADHD diagnosis yielded significant positive correlations with psychological distress, suggesting that people of color and people with an ADHD diagnosis reported higher rates of psychological distress. In terms of race, this finding is consistent with past literature documenting systemic racial oppression in LD diagnostic procedures and the many ways in which students of color with LDs are treated unfairly (e.g., limited access to resources) in comparison to their White counterparts (Blanchette, 2006). Substantial literature exists supporting the relationship between racial discrimination and psychological distress (for a review see Mays, Cochran, & Barnes, 2006), in addition to recent research on the intersectionality of disability and race with psychological distress (Mereish, 2012). However, in terms of ADHD diagnosis, this finding is inconsistent with past research. A study comparing clinical levels of depression and anxiety between participants with solo ADHD and participants with combined ADHD/LD showed no significant difference in psychiatric conditions, as assessed by the Personality Assessment Inventory (PAI), a 344-item reliable and valid measure of psychopathology (McGillivray & Baker, 2009). Such discrepancies may reflect measurement limitations, as the 21-item scale used in the current study likely lacked the specificity needed to differentiate overlap between ADHD symptoms and common symptoms of anxiety and depression (e.g., worrying about carelessness, difficulty concentrating). This has important implications for future assessment of psychological distress in ADHD populations and should be considered when selecting measurements for future research.

Hypothesis 2: Direct Effects. Following examination of bivariate correlations, similar relations were assessed through direct effects between the five minority stress variables of interest. Analogous to Hypothesis 1, direct effects were modeled after Meyer's (1993, 2003) minority stress framework. Direct effects largely supported hypothesized associations and

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mirrored bivariate correlations, with LD discrimination playing a significant role in the model and yielding the highest number of direct effects. Consistent with core tenants of minority stress theory, perceived exposure to LD discrimination was associated with increased expectations of LD stigma and efforts to conceal LD identity; additionally, LD discrimination and internalized LD stigma were associated with increased psychological distress (Meyer, 1993, 2003). For adults with LDs, these findings suggest that LD discrimination and internalized LD stigma may contribute to elevations in psychological distress.

Some variation between bivariate correlations and direct effects were found, which may speak to the strength of particular variables when analyzed within a model and with the inclusion of covariates. LD discrimination yielded a significant positive effect with concealment of LD identity, consistent with hypothesized relations and past research, suggesting that exposure to LD discrimination is associated with increased efforts to conceal one's LD diagnosis (Denhart, 2010; Hartman-Hall & Haaga, 2002; Kitchura; Penland, 2007). Surprisingly, expectations of LD stigma did not yield significant effects with psychological distress and LD discrimination did not yield significant effects with internalized LD stigma, both previously supported with bivariate correlations in the current study and in past LD research (Geiger & Brewster, 2018; Goldberg et al., 2003; Rodis et al., 2001). Such differences may be explained by measurement limitations with the selection of scales used in the present study, as expectations of LD stigma and internalized LD stigma were assessed with adapted, small item scales not originated for the use of LDs. Further discussion surrounding measurement limitations for these variables will be discussed later on in implications for future research.

Hypothesis 3: Indirect Effects. In effort to understand why LD discrimination is associated with psychological distress, Hatzenbuehler's (2009) integrative mediation model was

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adapted to explore the mediating roles of three LD-specific proximal stressors: 1) expectations of LD stigma, 2) internalization of LD stigma, and 3) concealment of LD identity. The hypothesized mediations of all three proximal stressors were not supported in the present study, suggesting that insight into the relationship between LD discrimination and psychological distress was not provided through mediation of LD-specific proximal stressors. Although this was the first known study to examine the mediation of LD-specific proximal stressors, the findings are inconsistent with minority stress literature (Breslow et al., 2015; Feinstein, Goldfried, & Davila, 2012) and contrary to past LD research that has provided preliminary support for associations between LD discrimination and psychological distress with all three proximal stressors (Denhart, 2010; Geiger & Brewster, 2018; Kitchura, 2008; Penland, 2007; Shessel & Reiff, 1999).

There are a number of considerations that may help to understand the lack of support found for the hypothesized mediation, of which may also provide insight into contradictory direct effects and bivariate correlations discussed in the previous sections. Measurement limitations for all three proximal stressors pose noteworthy concern and may have impacted the mediation findings. As previously indicated, the mediating role of expectations of stigma and internalization of stigma are strongly supported in minority stress literature (Breslow et al., 2015; Feinstein, Goldfried, & Davila, 2012). However, this body of research has primarily measured these variables with scales specifically created for use with LGB populations. It is likely that the adaptation of scales used for LGB populations did not fully capture the experience of group-specific processes for adults with LDs. This is further supported by the significant effects LD discrimination demonstrated in the model. The LDDPD, the scale used to measure LD discrimination, was the only measurement used in the current study that was created for the

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specific use of individuals with LDs. As such, the mediating role of expectations of LD stigma and internalization of LD stigma may have played a larger role in the model if measurements created for this specific population were available for use.

The mediating role of concealment on the other hand has mixed support in minority stress literature, and as a result is less surprising (Feldman & Wright, 2013; Morris, Waldo & Rothblum, 2001). In the current study, participants were connected to accommodations at almost double the rate of the national averages (Cortiella & Horowitz, 2014); yet, the mean average for the NOS-C scale was twice as large as the means used across three samples of sexual minorities (Meidlinger & Hope, 2014). Thus, the current sample was more likely to disclose their LD to access accommodations but also reported significantly higher concealment than past minority stress research using the same scale with LGB populations. This finding is perplexing and poses the question; are we capturing the numerous ways in which adults with LDs conceal their identity?

In LD literature, only one known study has explored the mediating role of concealment, in which concealment of dyslexia was found to mediate the relationship between perceived familial support and self-esteem (Nalavany, Carawan, & Sauber, 2015). Specifically, individuals who perceived high levels of support from their family members were more likely to disclose their dyslexia to others, and in turn reported higher self-esteem. Although family support and self-esteem are separate constructs from those used in the present study, the measurement of concealment is noteworthy. Nalavany and colleagues created their own four-item scale to measure concealment of dyslexia with items addressing experiences specific to having an LD (e.g., “I keep up my guard about having dyslexia because I feel that people might hurt my feelings”). This example item is unique from traditional LGB concealment scales used in

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minority stress research, as it takes into consideration that disclosure is necessary for access to accommodations (e.g., use of “keep up my guard” instead of “avoid conversations about”) and also integrates the proximal stressor expectations of LD stigma (e.g., use of “might hurt my feelings”). In the current study, traditional concealment measures were used instead of the dyslexia-specific concealment measure, as to differentiate proximal stressors (i.e., due to overlap with expectations of LD stigma). However, this choice resulted in similar measurement concerns discussed above, as the full complexity of LD concealment might not have been accurately assessed in the present study.

Lastly, in creating latent variables, indicators were created using only one scale (i.e., scale items from one measure served as indicators), two of which consisted of only three item scales. For optimal results, Weston and Gore (2006) recommend using at least three measures of the same construct to create the latent variable. Thus, the full-scale mean of each measure would serve as an indicator as opposed to each item of a scale. It is possible that the use of multiple measures (i.e., multiple measures as indicators for each latent variable) may have yielded better results in the integrated mediation model.

Implications

Implications for Research. This is the first known study to adapt a minority stress integrative mediation framework for adults with LDs. As such, the findings from the current study pose critical implications for future research with LD populations. First and foremost, findings support recent efforts to conceptualize LDs as a socially constructed and marginalized identity (May & LaMont, 2014). Historically LD research has been influenced heavily by the medical model, which has prohibited the understanding of LDs as a function of human diversity and reinforced the problematic belief that LDs are something to be “fixed” (Denhart, 2008; May

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& LaMont, 2014). On the other hand, the medical model has provided important growth in the areas of interventions and treatment for LDs. Thus, this is not to say that the medical model should be eradicated, but rather that the impact of social and cultural factors cannot be ignored. Findings from this study highlight the critical need for continued research on the nuanced processes of LD-specific minority stressors. Furthermore, LD intervention and treatment research could benefit from integrating minority stress variables, as this could provide a holistic understanding of the efficacy and need for specific interventions, in addition to how minority stress variables may moderate successful outcomes. For example, questions such as, “does internalized LD stigma moderate the relationship between intervention and performance outcome,” are worth exploring. Such shifts may also help to establish LDs within the larger disability community, as LDs have historically been discounted as “non-traditional” within the disability movement (May & LaMont, 2014).

Secondly, findings from the current study encourage continued exploration of LDs outside educational environments. LD is an innate disability that impacts the individual across the lifespan; yet, the majority of LD research is conducted on school populations, creating the impression that LDs do not impact adults post formal education and/or in the workforce (Cortiella & Horowitz, 2014). The current study provides support for the expansion of LD research to include adult populations both in and out of the education system, as findings suggest that LD stigma and discrimination are associated with psychological distress across settings (e.g., adults in school, in the workforce, and those who are unemployed). Still, a more nuanced examination of adults with LDs outside of school settings is needed. For example, age, school status, and employment status were used as covariates in the current study due to preliminary but notable differences that may shape individuals’ exposure to and experience of LD discrimination

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(Cortiella & Horowitz, 2014; Gerber, 2012). For instance, 69% of adults within eight years of graduating formal schooling considered themselves to no longer qualify as having a learning disability (Cortiella & Horowitz, 2014). Yet, adults with LDs have higher rates of unemployment, are less likely to secure high-performing jobs, are less likely to seek accommodations at work (Cortiella & Horowitz, 2014), and continue to represent a large portion of ADA discrimination complaints (McMahon et al., 2016; Sevak, Stapleton, & O'Neill, 2017). Furthermore, research suggests that internalized LD stigma is maintained through adulthood, regardless of age, education level, or academic attainment (Klassen et al., 2011). Future research should aim to better understand the experience of adults with LDs outside educational settings. Specifically, the role of identity salience and the level of acceptance/understanding of LDs in workforce culture may provide valuable insight.

A third implication for future research is the current study's inclusion of adults with non-traditional LDs (e.g., executive functioning deficits, processing speed), solo ADHD, and comorbid ADHD/LD diagnoses. The present study made a strategic effort to utilize a hybrid model in identifying LDs and determining inclusion criteria (Fletcher, et al., 2013). This was an attempt to capture the lived experiences of individuals who learn differently, and as such have been labeled or self-identify as having an LD. In understanding the social impact of LDs, it is vital that those who identify as part of the LD community have a voice and are not restricted by the narrow diagnostic criteria commonly used in the fields of psychology and education. In the current study, differences between participants with ADHD and without ADHD were analyzed across distal and proximal minority stress variables. No significant differences were found, suggesting that the experiences of LD-specific minority stressors for individuals with ADHD and individuals without ADHD were comparatively similar. Application of the hybrid model may

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present a worthwhile shift in the field's understanding of LDs and should be expanded upon in future research. Additionally, research with ADHD populations should consider symptom overlap between ADHD and psychiatric disorders such as depression and anxiety when using general psychological distress measures. Reported psychological distress in the current study was significantly higher for individuals with ADHD, which is likely explained by items in the measurement used that overlap with ADHD symptoms (e.g., difficulty concentrating, concern about carelessness). Future research should look to use measures with less overlap or consider ADHD as a covariate of interest when overlap is inevitable.

Similarly, a fourth implication for future research addresses measurement concerns and limitations. Social class has been identified as an influential construct impacting the lives of individuals with LDs, with notable differences among access to accommodations and systemic oppression in school settings (Blanchett, 2010; Cortiella & Horowitz, 2014), in addition to increased levels of psychological distress for low SES populations (Fryers, Melzer, & Jenkins, 2003). As such, social class would have been an essential covariate to include in the primary analyses. Yet, due to measurement limitations, the assessment of social class in the current study was deemed to lack validity, as it did not quantify cultural, social, and economic factors (Healy & Clinch, 2004). Future research should look to follow Healy and Clinch's guidelines for measuring social class. Additionally, future research may want to include assessment of mother's level of education, as such information has been used successfully in educational LD research to assess aspects of social class (DaDeppo, 2009).

As previously discussed, the current study used adapted scales to measure the three LD-specific proximal stressors. Adaptation may have hindered the validity and efficacy of these variables in the integrative mediation model, which in part may explain some of the

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contradictory findings. It is possible that adapting a measure originally created to assess minority stressors for LGB populations may not have adequately captured the unique experiences of adults with LDs. Although invisible disability and queer populations share some common elements (e.g., invisibility of identity, familial rejection/disbelief), there are also a number of differences between them (e.g., societal understanding of identity, severity of discrimination, need for accommodations) (Sherry, 2004). For example, when looking at qualitative research on internalized LD stigma, majority of participants reported holding internalized beliefs that they were “stupid,” “dumb,” “lazy,” and “a failure” (Goldberg et al., 2003; Shessel & Reiff, 1999). For the current study, adapted items (e.g., “I wish I did not have a learning disability”) lacked key elements heightened in past LD research, such that internalized beliefs in the adapted scale were not connected to themes of intelligence and accomplishments. The creation and psychometric validation of scales measuring expectations of LD stigma, internalized LD stigma, and concealment of LD identity are *necessary* for continued advancement of LD minority stress research.

A fifth and final implication for future research is influenced by the unsupported role of mediation in the adapted minority stress model. As previously discussed, measurement limitations may provide insight into why the three mediated relationships were not supported. Alternatively, the lack of support may be indicative of alternative models that may better explain the associations between LD minority stressors. First, moderating variables were not assessed in the current study. It is possible that variables not measured in the study may have moderated the mediations. This is particularly relevant for the associations between proximal stressors and psychological distress, as these were the least supported in direct effects. Notably, the current sample was highly connected to accommodations and collected from LD online community

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groups (many of which encouraged advocacy and collective action). It is possible that the current sample had higher levels of acceptance of their LD, in addition to self-advocacy skills. Research on college students with LDs suggests that acceptance of one's LD, along with self-advocacy and conflict resolution skills, were associated with increased use of accommodations and support systems (Anctil, Ishikawa, & Scott, 2008), of which have been connected to greater well-being (Goldberg et al., 2003). Thus, LD identity development/acceptance, self-advocacy skills, and connection to support may have acted as buffers against psychological distress within the current sample. The potential moderating role of these variables should be explored in future research.

Research also suggests that when comparing students with and without LDs, students with LDs had lower levels of emotional intelligence (e.g., ability to identify and regulate one's emotions) (Hen & Goroshit, 2014). This finding is particularly relevant when considering Hatzenbuehler's (2009) pathways of mediation. Hatzenbuehler proposed two pathways for the integrated mediation model: 1) *general psychological processes* (e.g., rumination, emotional regulation) and 2) *group-specific processes* (i.e., proximal stressors). The current study used the more traditional path (i.e., group-specific processes), however, it is possible that the general psychological processes may have better explained mediation of LD-specific minority stressors. Future exploration of this model may provide helpful insight into the relationship between LD discrimination and psychological distress.

Implications for Practice. The findings of the current study have practical implications for clinical work with adult LD populations. In psychological literature, guidelines for mental health practice with LD populations in the US are nonexistent. This is alarming, as research suggests that individuals with LDs report higher levels of depression, anxiety, low self-esteem (Davis, Nida, Zlomke & Nebel-Schwalm, 2009; Lindsey, Fabiano, & Stark, 2009; MacInnes &

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Broman, 2013; Martinez & Semrud-Clikeman, 2004), and attempted suicide (Fuller-Thomson, Carroll, and Yang, 2017). Findings from the present study provide insight into such elevations and may help to guide therapeutic interventions with LD populations. Notably, findings confirm that understanding LDs as a sociocultural identity aid in understanding the lived experiences of adults with LDs. Therapists working with patients who have LDs could benefit from conceptualizing LDs in this manner. Doing so could allow for fruitful processing of LD minority stressors, as they relate to psychological distress and well-being. Specifically, findings from the study support associations between perceived experiences of LD discrimination and internalized LD stigma with psychological distress. Thus, therapeutic interventions addressing LD discrimination and internalized LD stigma may be especially healing for adults with LDs. Interventions may consist of providing space to process experiences of discrimination, identifying coping strategies such as advocacy and self-care, and exploring positive aspects of having an LD. Such interventions have been effective in psychological practice with a number of marginalized populations (Sue & Sue, 2012). Additionally, findings add to past research highlighting the need for inclusion of disability in psychology training programs (Artman & Daniels, 2010; Foley-Nicpon & Lee, 2012; Olkin & Pledger, 2003), with the current study providing support for increased focus on LDs.

Findings also present implications for the advancement of evaluation and assessment of LDs. Within the fields of education and psychology, the process of evaluating and diagnosing LDs is rapidly changing (Hallahan, Pullen, & Ward, 2013). Conceptualizing LDs as a marginalized identity may help to apply a more holistic picture of LD functioning. Research suggests that psychological processes such as anxiety and depression have negative impacts on performance and academic functioning (Owens, Stevenson, & Hadwin, 2012). Research also

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suggests that internalization of LD stigma can take place prior to receiving a formal diagnosis, as the individual is typically aware that something is “wrong” with them (Klassen et al., 2011). As such, assessment of LD minority stressors (e.g., internalized stigma, discrimination) may be useful additions to testing batteries, as they may provide insight into psychological processes that may hinder performance. This may be particularly relevant for re-assessment, as individuals have typically lived with a formal LD diagnosis for 6 or more years by the time they are re-assessed (Owens, Stevenson, & Hadwin, 2012). Lastly, conceptualizing LDs as a marginalized identity may help to influence testing recommendations. For example, recommendations for psychotherapy, advocacy skills, and engagement in LD communities may be helpful additions.

In addition to psychotherapy and assessment, the current study also presents implications for school and workforce environments. Findings suggest that LD stigma and discrimination are associated with psychological distress across school and work settings. Research suggests that holding stereotypical views of a marginalized group is a significant predictor of engaging in overt and/or implicit discriminatory behavior towards a member of that group (Sekaquaptewa, Espinoza, Thompson, Vargas, & Hippel, 2002; Stephan & Stephan, 2000). Thus, it is likely that findings from the current study reflect the current cultural climate for school and workforce environments, which is further supported by past research documenting LD stigma and discrimination in school (Geiger & Brewster, 2018; May & Stone, 2010) and work (McMahon et al., 2016) environments. In efforts to shift cultural climates, school and work administration may look to include conversations about LD stigma and discrimination into diversity programming and training. Efforts to change cultural climates will aid in challenging commonly held LD stereotypes and provide a more welcoming environment for adults with LDs.

Limitations and Future Directions

Findings from the present study should be interpreted with regard to a number of limitations. First, despite advantages of online recruitment (e.g., access across geographical locations, anonymity, ease of access), Internet recruitment also poses limitations. Participants were mainly recruited from social network sites and online communities for people with LDs, in which members openly identified as having an LD and were connected (at least electronically) to an LD community. As such, participants in the current sample may have higher identity salience and feel more connected to community. This may also help to explain the use of accommodations (76% in school; 18% at work) in the present study, which exceeded national averages (Cortiella & Horowitz, 2014). Despite connections to accommodations, perceived experiences of LD discrimination in the current study were high and consistent with mean averages in past minority stress research (Brewster et al., 2013). It is possible that individuals who are less connected to accommodations may have a more severe relationship with discrimination. Thus, findings should be interpreted with caution, as the sample is not characteristic of adults with LDs with lower identity salience and who are less connected to support systems. Future research should aim to collect a more representative sample of adults with LDs. Research may also look to explore differences of LD minority stressors between adults who are highly connected and those that are not connected to support systems.

Second, demographics of the current study pose important limitations. Participants were mostly White (75%) women (72%), which is also inconsistent with the gender and racial profile of adults with LDs in the US, where men tend to outnumber women (0.6% difference) and multiracial and Black/African Americans represent the two largest racial groups (Cortiella & Horowitz, 2014). Although inconsistent with LD population demographics, findings are consistent

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with trends in survey research, in which White women engage in surveys (e.g., online and phone) at significantly higher rates as compared to men (Curtin, Presser, & Singer, 2000) and people of color (Groves, Singer, & Corning, 2000; Voight, Koepsell & Daling, 2003). Thus, the present findings must be interpreted with caution when considering applicability to people of color and men with LDs. The demographic variable social class also poses limitations, as the measurement of social class in the current study was deemed to lack validity, as it did not quantify cultural, social, and economic factors (Healy & Clinch, 2004). As such, the impact of social class on the variables used in the current study could not be assessed. Future research replicating the application of minority stress theory with racially, gendered, and socioeconomically diverse samples is greatly needed. Such research can also help to address gaps in the literature on the intersectionality of LDs with other marginalized identities.

Thirdly, the current study utilized self-report measures, which carry additional limitations. Self-report measures have become increasingly popular within psychological research, particularly for assessing discrimination and mental health outcomes (Lewis, Cogburn, & Williams, 2015). They have also been used with minority stress research (e.g., Breslow et al., 2015; Brewster, Velez, Foster, & Robinson, 2016; Lehavot & Simoni, 2011) and have validity support (Ainsworth et al., 2012; Piquero, Schubert, & Brame, 2014). Despite all of this, concerns surrounding validity, reliability, influence of self-desirable response, and subjective bias are inevitable when self-report data is used (Conway, 2002). As such, the findings should be interpreted with caution, as the researcher was not able to obtain objective measures of the variables. Findings from the current study should be replicated with objective measures (e.g., observation of LD discrimination, confirmation of formal LD diagnosis) to endorse the validity and reliability of the findings.

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Related to the use of self-report, it is important to consider that marginalization may not be experienced by all members of a stigmatized group. Across the 17-item scale used to assess perceived LD discrimination, as little as 5% (e.g., item: “I have been made to feel stupid because of my LD”) to as high as 27% (e.g., item: “I have been socially ostracized because of my learning disability”) of the sample endorsed "never" for experiences of discrimination. Thus, a limitation is that the degree of discrimination perceived in these self-report measures cannot be controlled for. It is recommended that future research apply a more controlled and observed measure of LD discrimination. Alternatively, research may want to explore the differences between these groups. For example, what is different about the individuals who responded “never” and are there any protective factors they have that can be identified in future work?

A fourth limitation of the current study is the cross-sectional nature of the data, which cannot provide causation due to a variety of confounding variables (Weston & Gore, 2006). The current study offers valuable insight into the current experiences of adults with LDs. However, the understanding of how associations between LD minority stress variables manifest overtime and how one variable “causes” another remains unknown. This is particularly relevant in understanding directionality, as cross-sectional data cannot determine the order of variables (i.e., which variable came first). It is recommended that future LD research incorporate time-series and longitudinal designs to address this issue.

Lastly, a fifth limitation of the study addresses the use of adapted instruments. Although heavily discussed throughout this chapter, it is important to further acknowledge the limitations posed by using adapted measures. Measures for all three proximal stressors were adapted scales, originally created for the use of LGB populations. As discussed, adaptation of the scale items may have negatively impacted validity, as they may have lost important and unique factors

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specific to the experiences of adults with LDs. This likely explains many of the contradictory findings in the present study and should be a major focus for future research. In order to best understand the impact minority stressors have on LD populations, access to measurements designed to capture these experiences are greatly needed. Future research should aim to create and psychometrically validate scales that measure expectations of LD stigma, internalized LD stigma, and concealment of LD identity. A body of qualitative research already exists on these constructs, which can be used to create such measurements (as demonstrated by the creation of the LDDPD; Geiger & Brewster, 2018). The advancement of LD minority stress research is dependent on progress in this area.

Summary and Conclusions

The purpose of this study was to gain insight on the lived experiences of individuals with LDs by conceptualizing LD as a cultural and marginalized identity. People with LDs represent the largest disability identity within the educational system (Cortiella & Horowitz, 2014) and many adults claiming disability (Census Bureau, 2010). Despite the large presence of LDs, psychological research on the lived experiences of adults with LDs has been largely absent, particularly as it pertains to holding a marginalized identity (Foley-Nicpon & Lee, 2012; Olkin & Pledger, 2003). To address this gap and to understand the disproportionate rates of psychological distress within LD populations (Davis et al., 2009; Fabiano & Stark, 2009; Fuller-Thomas et al., 2017), the current study adapted minority stress theory (Meyer, 1995, 2003) to explore the relationship between LD minority stressors and psychological distress. Specifically, the study adapted the integrative mediation model proposed by Hatzenbuehler (2009) to examine the association between LD discrimination and psychological distress, as mediated by three proximal

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stressors (i.e., expectations of LD stigma, internalization of LD stigma, and concealment of LD identity) through both direct and indirect relations.

Results support the expansion of minority stress theory as a helpful theoretical frame for understanding the lived experiences of adults with LDs. Importantly, the study provides support for fundamental shifts in the conceptualization of LDs, highlighting the utility of positioning LDs as a marginalized identity. In particular, the findings suggest that exposure to LD minority stressors such as perceived experiences of LD discrimination and internalized LD stigma are associated with psychological distress. The current study is the first known study to apply minority stress theory through an integrative mediation model for adults with LDs. The study adds to existing literature documenting the existence and pervasive nature of LD minority stressors, in addition to spearheading psychological research on the relationship between minority stressors and psychological health for adult LD populations. Findings from the current study pose important implications for clinical practice and future LD research. Two major implications taken from the study are: 1) the necessity for increased attention to LD minority stress in psychological training and care and 2) the need for psychometrically validated scales created specifically for use with LD populations.

The purpose of psychological research is to promote growth and enhance understanding. Individuals with LDs have historically expressed a desire to be seen and understood (Stage & Milne, 1996). This desire is further demonstrated by a student with dyslexia's statement, "It's just a scary thought to think that people don't understand me" (Penland, 2007, p. 176). It is hoped that the results of this study aid in promoting awareness and acceptance of the unique factors that come with navigating a life with LDs. Furthermore, it is hoped that future use of

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minority stress theory can provide a platform for individuals with LDs to be seen and understood. After all, what is learning without understanding?

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APPENDICES

APPENDIX A

Informed Consent

Teachers College, Columbia University

DESCRIPTION OF THE RESEARCH:

You are invited to participate in a research study with the purpose of learning more about the life experiences of students diagnosed with a learning disability/disabilities in the United States of America. Participation in this study is limited to individuals aged 18 years or older, who has been diagnosed with a learning disability/disabilities, and resides in the United States of America. This study is being conducted by Elizabeth Geiger, a doctoral student in the Counseling Psychology program at Teachers College, Columbia University.

This study has been approved by the Institutional Review Board of Teachers College, Columbia University (Protocol #XX-XXX).

RISKS AND BENEFITS:

It is possible that participants may recall experiences and events involving stigmatization and discrimination that may be unpleasant or uncomfortable. In order to help minimize any discomfort, participants may skip questions or leave the survey at any time without penalty.

If you have any questions or concerns related to the survey, you are encouraged to contact Elizabeth Geiger, the Principal Investigator of this study by phone at (212) 678-7441 or via email at efg2116@tc.columbia.edu.

There are no direct benefits from participating in this study, although the information you provide may help to improve the researchers' understanding of the lived experiences of students diagnosed with a learning disability/disabilities, which in turn, can help to explore clinical implications and spread awareness.

DATA STORAGE TO PROTECT CONFIDENTIALITY:

All survey responses will be confidential. No identifiers (e.g., name, address, e-mail, date of birth, social security number) will be collected in this survey. Data will be saved electronically, encrypted, and password protected. Only the Primary Investigator will have access to the data.

TIME INVOLVEMENT:

Your participation will take approximately 20-30 minutes.

HOW WILL RESULTS BE USED:

The results of the study may be presented at conferences and/or published in journal articles and used for educational purposes.

APPENDIX B

Participants Rights

- I have read and discussed the Research Description with the researcher. I have had the opportunity to ask questions about the purposes and procedures regarding this study.
- My participation in research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements.
- The researcher may withdraw me from the research at his/her professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- If at any time I have any questions regarding the research or my participation, I can contact the principle investigator, Elizabeth Geiger (efg2116@tc.columbia.edu) who will answer my questions.
- If at any time I have comments or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Teachers College, Columbia University Institutional Review Board /IRB. The phone number for the IRB is (212) 678-4105. Or, I can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.
- I should receive a copy of the Research Description and this Participant's Rights document.

Please indicate your choice below to begin participating in the study:

_____ Yes, I have read and understood the above, am aged 18 years or older, have been diagnosed with a learning disability/disabilities, and reside in the United States of America. By choosing this option and clicking next, I agree to participate in the study.

_____ No, I have read and understood the above, and I do not wish to participate in the study. Clicking next will record your response and terminate the survey.

APPENDIX C

Recruitment Message

Do you have a learning disability? Share your experiences by taking this survey!

Participate in a new study about the marginalization of people with learning disabilities. Stigma and stereotypes surrounding learning disabilities continue to affect people's lives in complex ways, and we are interested in hearing from YOU about how you deal with stigma and identity related to your learning disability.

We are a group of community members and researchers from identityLORE: The Laboratory for Oppression, Resilience, and Empowerment at Teachers College, Columbia University. We are looking to hear from individuals who are interested in participating in a survey about the life experiences of people with learning disabilities. This survey should only take about 20-30 minutes.

After reading below, if you are willing and eligible, please just click on the link below. Thank you in advance for your time and input and for sharing your story! We would really appreciate it if you could pass this message along to anyone else that you think may be eligible and willing to participate, it would be greatly appreciated.

Eligibility Criteria:

- 18 years old
- Diagnosed with a learning disability/disabilities
- Live in the U.S.

If you meet the above criteria and are interested in participating, please click on the link below to begin the short survey.

[Qualtrics Survey Link]

***This study has been approved by the Teachers College, Columbia University Institutional Review Board: Protocol #XX-XXX. If you have any complaints, questions, concerns, or would like to know the results, please feel free to contact us via e-mail at efg2116@tc.columbia.edu

APPENDIX D

Learning Disability/Difficulty Perceived Discrimination Scale (LDDPDS; Geiger & Brewster, 2018)

INSTRUCTIONS: Please rate how often the experience reflected in each of the following items has happened to you personally because of your learning disability. In addition, please rate how stressful the experience reflected in each item was for you. We are interested in your personal experiences as an individual diagnosed with a learning disability and realize that each experience may or may not have happened to you. To tell us about your experiences, please rate each item using the scales below:

<i>This has NEVER happened to me</i>	<i>This has happened to me ONCE IN A WHILE (less than 10% of the time)</i>	<i>This has happened to me SOMETIMES (10%-25% of the time)</i>	<i>This has happened to me A LOT (26%-49% of the time)</i>	<i>This has happened to me MOST OF THE TIME (50%-70% of the time)</i>	<i>This has happened to me ALMOST ALL OF THE TIME (more than 70% of the time)</i>
1	2	3	4	5	6

ITEMS:

1. People have talked down to me because I have a learning disability.
2. People have acted like I will never be as smart as someone without a learning disability.
3. People have treated me like I am unable to learn because of my learning disability.
4. Others have expected me to fail because I have a learning disability.
5. I have been made to feel stupid because of my learning disability.
6. Others have teased me about being slow because of my learning disability.
7. I have been treated like I am inferior because of my learning disability.
8. People have questioned my intelligence because of my learning disability.
9. I have been told that I will never be able to keep up academically because of my learning disability.
10. I have been socially ostracized by others because of my learning disability.
11. I have been undervalued because of my learning disability.
12. People have treated the help (i.e., accommodations, assistance) I receive for my learning disability as an unfair advantage.
13. Others have made me feel bad for the help (i.e., accommodations, assistance) I request for my learning disability.
14. My rights to reasonable accommodations have not been taken seriously by others.
15. People have assumed that I use my learning disability as an excuse to get out of work.
16. People have told me that if I worked hard enough I would not need help (i.e., accommodations, assistance) for my learning disability.
17. People have not believed that I have a learning disability even when I tell them I do.

APPENDIX E

The Public Collective Self-Esteem subscale of the CSES (adapted for use with LDs)
(Luhtanen & Crocker, 1992)

INSTRUCTIONS: We are all members of different social groups or social categories. Some of such social groups or categories pertain to gender, race, religion, ability/disability, and socioeconomic class. We would like you to consider your membership as an individual with a learning disability/disabilities, and respond to the following statements on the basis of how you feel about this membership. There are no right or wrong answers to any of these statements; we are interested in your honest reactions and opinions.

RESPONSE OPTIONS:

Click 1 –If you strongly disagree

Click 2 –If you disagree

Click 3 – if you somewhat disagree

Click 4 – If you are neutral

Click 5 – If you somewhat agree

Click 6 – If you agree

Click 7 – If you strongly agree

ITEMS:

1. Overall individuals with learning disabilities are considered good by others.
2. Most people consider individuals with learning disabilities, on average, to be more ineffective than other social groups.
3. In general, people respect individuals with learning disabilities.
4. In general, others think that individuals with learning disabilities are unworthy.

APPENDIX F

*The Internalized Homonegativity subscale of the Lesbian, Gay, and Bisexual Identity Scale
(adapted for use with LDs)
(LGBIS; Mohr & Kendra, 2011)*

INSTRUCTIONS: For each of the following questions, please mark the response that best indicates your current experience as a person with learning disabilities. Please be as honest as possible: Indicate how you really feel now, not how you think you should feel. There is no need to think too much about any one question. Answer each question according to your initial reaction and then move on to the next.

RESPONSE OPTIONS:

Click 1 –If you strongly disagree

Click 2 –If you disagree

Click 3 – if you somewhat disagree

Click 4 – If you somewhat agree

Click 5 – If you agree

Click 6 – If you strongly agree

ITEMS:

1. If it were possible, I would choose to not have a learning disability.
2. I wish I did not have a learning disability.
3. I believe it is unfair that I have a learning disability.

APPENDIX G

*The Concealment subscale of the Nebraska Outness Scale (adapted for use with LDs)
(NOS-C; Meidlinger & Hope, 2014)*

INSTRUCTIONS:

How often do you avoid talking about topics related to or otherwise indicating your learning disability (e.g., not talking about your learning disability diagnosis, hiding your accommodations) when interacting with members of these groups?

RESPONSE OPTIONS:

Click 1 – Never

Click 2 –

Click 3 –

Click 4 –

Click 5 –

Click 6 – Half of the time

Click 7 –

Click 8 –

Click 9 –

Click 10 –

Click 11 – Always

ITEMS:

1. Members of your immediate family (e.g., parents and siblings)
2. Members of your extended family (e.g., aunts, uncles, grandparents, cousins)
3. People you socialize with (e.g., friends and acquaintances)
4. People at your work/school (e.g., coworkers, supervisors, instructors, students)
5. Strangers (e.g., someone you have a casual conversation with in line at the store)

APPENDIX H

Hopkins Symptom Checklist-21
(Green, Walkey, McCormick, & Taylor, 1988)

INSTRUCTIONS: Below is a list of problems and complaints that people sometimes have. Please read each one carefully. After you have done so, please select a number to the right that best describes HOW MUCH THAT PROBLEM HAS BOTHERED OR DISTRESSED YOU DURING THE PAST WEEK INCLUDING TODAY. Mark only one numbered space for each problem and do not skip any problems.

RESPONSE OPTIONS:

- 1 = Not at all
- 2 = A Little
- 3 = Quite a Bit
- 4 = Extremely

ITEMS:

1. Difficulty in speaking when you are excited
2. Trouble remembering things
3. Worried about sloppiness or carelessness
4. Blaming yourself for things
5. Pains in the lower part of your back
6. Feeling lonely
7. Feeling blue
8. Your feelings being easily hurt
9. Feeling others do not understand you or are unsympathetic
10. Feeling that people are unfriendly or dislike you
11. Having to do things very slowly in order to be sure you are doing them right
12. Feeling inferior to others
13. Soreness of your muscles
14. Having to check and double check what you do
15. Hot or cold spells
16. Your mind going black
17. Numbness or tingling in parts of your body
18. A lump in your throat
19. Trouble concentrating
20. Weakness in parts of your body
21. Heavy feelings in your arms and legs

APPENDIX I

Demographic Questionnaire

What is your age? _____

How do identify your gender?

- 1 Woman
2. Woman of transgender experience
3. Man
4. Man of transgender experience
5. Other gender (e.g., androgynous, genderqueer), please specify _____

Please select the highest level of education that you have completed

1. Some College
2. Associates Degree
2. Bachelors Level College Degree (e.g. B. A., B.S.)
3. Professional Degree (e.g., MBA, MS, Ph.D, M.D.)

Please select your current employment status

1. Employed Full Time
2. Employed Part Time
3. Not employed
4. Other, please specify _____

Please select your yearly household income (the income of those on whom you rely financially, including yourself)

1. Below \$10,000
2. \$10,001 to \$20,000
3. \$20,001 to \$30,000
4. \$30,001 to \$40,000
5. \$40,001 to \$50,000
6. \$50,001 to \$60,000
7. \$60,001 to \$70,000
8. \$70,001 to \$80,000
9. \$80,001 to \$90,000
10. \$90,001 to \$100,000
11. \$100,001 to \$110,000
12. Above \$110,001

Please select your current social class.

1. lower class
2. working class
3. middle class
4. upper-middle class
5. upper class

Please select your race/ethnicity.

1. African American/Black
2. Asian American/Pacific Islander
3. Native American/Indigenous American
4. Hispanic/Latino/a
5. Multi-racial
6. White/Caucasian
7. Other race/ethnicity (please specify): _____

Please select your sexual orientation:

1. Gay or lesbian
2. Mostly gay or lesbian
3. Bisexual
4. Mostly heterosexual
5. Heterosexual
6. Other (e.g., queer or pansexual): _____

Please select when were you first diagnosed with a learning disability?

1. Before Kindergarten
2. Elementary School
3. Jr. High/Middle School
4. High School
5. College
6. Graduate School
7. Other _____

Please fill in the approximate age of when you were first diagnosed with a learning disability _____

Please select the type of learning disability you have been diagnosed with (select all that apply):

1. Language
2. Reading
3. Writing
4. Math
5. Nonverbal
6. Attention (ADD or AD/HD)
7. Other (please specify): _____

If you are a student, is your learning disability documented with Disability Services at your institution?

1. Yes
2. No

If you are in the work force, is your learning disability documented at your place of work?

1. Yes
2. No

Do you currently receive accommodations for your learning disability?

1. Yes
2. No

If yes, please list the accommodations you use:

If no, have you received accommodations for your learning disability in the past?

1. Yes
2. No

If applicable, please list any formal psychological diagnoses _____

If applicable, please list any additional disability diagnoses _____

Would you describe the region in which you live as:

1. Rural
2. Urban
3. Suburban

We would like to obtain information regarding the geographic location of our sample. This information will remain confidential. Please fill in the city and state in which you currently reside below.

City: _____

State: _____

Please feel free to leave any other comments or remarks about the survey:

APPENDIX J

Model Comparisons with Subtests

Table 5

Model Comparisons of Variables of Interest with Subscales Variations

Subtests Used	χ^2	<i>df</i>	CFI	RMSEA	SRMR	AIC	BIC	Meet Fit Criteria
HSC-21 subscale: General Distress	5.57	3	.96	.06	.03	3699.994	3758.218	Yes
LDDPD subscales: Inferior Cheating the System	5.55	3	.99	.06	.03	4194.072	4276.271	Yes

Note. χ^2 = Chi-square; CFI = Conditional Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence interval; SRMR = Standardized Root Mean Square Residual. HSC-21 subscale = subscale of 21-item scale assessing psychological distress. LDDPD subscales = two subscales (Inferior and Cheating the System) assessing types of perceived LD discrimination. Variables of interest in the models: LD Discrimination, Expectations of LD Stigma, Internalization of LD Stigma, Concealment of LD Identity, and Psychological Distress.

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

APPENDIX K

Model Comparisons with Control Variables

Table 6

Model Comparisons with Variables of Interest and Control Variable Variations

Control Variables used in Model	χ^2	df	CFI	RMSEA	SRMR	AIC	BIC	Meet Fit Criteria
No control variables used	5.57	3	.97	.06	.03	3568.935	3627.160	Yes
Race, Age, Social Class, School, Employment, ADHD	14.06	9	.95	.05	.04	3260.387	3396.830	Yes
Race, Age, School, Employment, ADHD	6.92	8	1.00	.00	.03	3271.096	3394.228	Yes
Race, Social Class, ADHD	11.17	6	.95	.07	.04	3246.463	3342.971	Yes
Race, Social Class, ADHD, School	11.81	7	.96	.06	.04	3249.651	3359.471	Yes
Race, Social Class, ADHD, School, Employment	12.62	8	.96	.05	.04	3253.468	3376.599	Yes
Race, Age, Social Class, ADHD	12.78	7	.95	.06	.04	3253.082	3362.901	Yes
Race, Age, Social Class, ADHD, Employment	13.82	8	.95	.06	.04	3257.080	3380.212	Yes
Race, ADHD, School, Employment, Age, LD diagnosis	14.93	13	.98	.03	.03	3291.389	3481.078	Yes
Social Class	14.88*	4	.90	.11	.06	3467.546	3538.908	No

Note. χ^2 = Chi-square; CFI = Conditional Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence interval; SRMR = Standardized Root Mean Square Residual. The following variables of interest were used in each of the 10 model comparisons: LD Discrimination, Expectations of LD Stigma, Internalization of LD Stigma, Concealment of LD Identity, and Psychological Distress.

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