CONTENT DEVELOPMENT AND INITIAL PSYCHOMETRIC ANALYSIS OF THE PROBLEMATIC HYPERSEXUALITY SCALE (PHS)

By

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To my Parents and Grandparents for providing me with endless love and support in the pursuit of my dreams
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By

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Chair: Kristina DePue
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The purpose of this investigation was to develop the Problematic Hypersexuality Scale (PHS), which was designed to address the limitations of existing measures of problematic hypersexuality (PH) and gather psychometric evidence to support the intended uses of and claims drawn from this instrument. The study focused on addressing limitations of preexisting measures related to the structure and content of items, lack of psychometric evidence, and lack of diversity in development sample. Evidence centered design (ECD) was used to develop the PHS to ensure evidence gathered from administering the PHS supported the intended uses and claims for this assessment. To address issues related to the development sample, this author ensured a diverse sample by using a nonclinical, stratified sample (based on gender) of 357 adults that was consistent with the population in the United States (US). Finally, factor analysis and Rasch modeling techniques were used to gather psychometric evidence for the PHS. The findings supported a multidimensional factor structure of the PHS and high internal consistency for the entire scale and each of its subscales was found within the development sample. The results indicate the need to further explore the external criterion validity of the PHS, the psychometric
properties of the PHS within a clinical sample of adults and adults with demographic characteristics that were not well represented in the development sample.
CHAPTER 1
INTRODUCTION

Sexual activity is a normal and healthy part of intimate and romantic relationships. However, there are instances in which individuals may develop uncontrollable, problematic sexual behaviors that cause them to experience impairment in various aspects of their life including social, vocational, relational, and other important areas of functioning (Short, Wetterneck, Bistricky, Shutter, & Chase, 2016). These behaviors can be either solo or relational in nature, and examples can include spending large amounts of time masturbating, frequently seeking sexual fulfillment on the Internet, and engaging in high rates of sexual intercourse with other individuals (Marshall & Briken 2010). This symptomology and its presenting behaviors have gained the attention of scholars for over 200 years. Throughout the years, this clinical syndrome has been known by many names, including “excessive sexual behaviors” (Rush, 1812/1979, p.345), hyperesthesia sexual (Kraft-Ebbing, 1886/1988), sexual addiction (Carnes, 1983), sexual compulsivity (Kalichman & Rompa, 1995), sexual impulsivity (Barth & Kinder, 1981), and hypersexuality (Kingston & Firestone, 2008; Reid, Garos, & Carpenter, 2011). For the purposes of this study, the researcher has chosen to characterize this clinical syndrome as problematic hypersexuality (PH). Although the theoretical framework of PH mirrors that of sexual addiction, this author has chosen to use the term PH due to the controversy towards characterizing PH as an addiction, as well as, to differentiate between PH, which causes an individual to experience impairment in their life, from hypersexuality, which may be related to a high sex drive and not cause impairment.

The presence of the previously discussed terms used to characterize PH represents the lack of a unified definition for this construct amongst mental health professionals. Scholars have viewed this lack of definitional clarity as a potential barrier that hinders research and assessment
regarding PH (Stewart & Fedoroff, 2014). A consequence of this lack of clarity in defining PH is the inability to establish reliable prevalence estimates for PH. Researchers have estimated that PH affects 3% to 16.8% of adults in the United States (US; MacLaren & Best, 2010; Seegers, 2003), whereas others have estimated this range to be much smaller, stating 3% to 6% of adults are affected (Freimuth et al., 2008; Kaplan & Krueger, 2001). Another consequence regarding the lack of definitional clarity is the lack of formalized diagnostic criteria for PH, which could hinder the assessment process for this construct. Hypersexual Disorder (HD; Kafka, 2010), which was the proposed diagnostic term with associated criteria for PH, was an attempt to create a unified definition for this construct. The diagnostic criteria was proposed for inclusion into the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-V; American Psychiatric Association [APA], 2013), but was later rejected due to lack of empirical evidence for the PH construct (Kafka, 2014). A solution for this barrier could be the development of sound diagnostic instruments, which researchers state are imperative to further the research on PH, in addition to providing counselors with the necessary tools to work with individuals presenting with PH (Turner, Schöttle, Bradford, & Briken, 2014).

Despite the definitional confusion regarding PH, researchers have continued to develop assessments targeting clients with PH for the last 25 years. These assessments have been structured around the objective and subjective symptomology of PH and consequences that individuals often experience because of their PH, which are common themes across the multiple definitions of the PH construct (Hook, Hook, Davis, Worthington Jr., & Penberthy, 2010). However, there have been some concerns identified within these assessments. There have been two systematic reviews regarding the pre-existing assessments of PH, which helped to elucidate these concerns. The first review focused on the theoretical structure, development sample, and
psychometric properties of 17 existing measures of PH (Hook et al., 2010). The researchers found that a majority of the instruments analyzed had some potential for clinical use and initial psychometric evidence supporting the use of these measures in practice; however, there is concern that these measures may be limited by the lack of theory supporting the PH construct and their inability to accurately diagnose PH. Additionally, it was found that the development sample for these assessments were limited in that they lacked diversity within the sample, thus limiting the generalizability of the results obtained from these assessments (Hook et al., 2010). The second review examined the items on the existing measures of PH and compared the content of these items to the proposed diagnostic criteria for HD (Womack, Hook, Ramos, Davis, & Penberthy, 2013). The researchers found that several of the instruments they reviewed aligned exactly with aspects of the diagnostic criteria; however, none of the assessments captured all aspects of the diagnostic criteria. Additionally, this author conducted a review of existing measures of PH in regards to the presence of biases (contiguity, connotation, and omission) towards minority respondents. Results from this review showed that a majority of the existing measures of PH contained some form of bias towards minority respondents, which could invalidate results obtained from these individuals. The results of the three previously discussed reviews serve as the foundation for the rationale of the present study. The remainder of this chapter discusses the purpose for conducting the present study, research hypotheses, definitions of terms and methodological assumptions relevant to the study, and ethical considerations for conducting the study.

**Statement of Purpose**

Assessment is essential to all aspects of the counseling process (Neukrug, Perterson, Bonner, & Lomas, 2013), especially during the diagnostic phase, which illustrates the need for counselors to have reliable and valid measures to ensure accurate diagnosis. Using assessments
with bias-inducing items and less than adequate psychometrics could jeopardize the safety of clients and research participants because scores could be interpreted incorrectly and misdiagnosis can occur (Urbina, 2014). Therefore, the purpose of this investigation was to develop the Problematic Hypersexuality Scale (PHS) to address the limitations of existing measures of PH and gather psychometric evidence to support the intended uses of and claims drawn from this instrument. To address the limitations related to assessment structure, the current researcher used evidence-centered design (ECD; Mislevy, Steinberg, & Almond, 2003) as the methodological framework for the instrument development process. In using this framework, the author was able to align the items on the PHS with the intended uses and claims drawn from this assessment. In addressing the concerns related to the internal structure of the PHS, this author used Rasch modeling and confirmatory factor analysis (CFA) to obtain a wide range of psychometric data on the PHS. Finally, a significant gap in the PH literature is related to the prevalence of PH across different demographic characteristics, especially amongst gender, race, and other cultural identities (Hook et al., 2010; Reid, 2013; Wery et al., 2016). To bridge this gap in the literature, this study incorporated a stratified sample based on gender (to include more than the traditional male/female binary) that was consistent with the US population’s breakdown for gender. More specifically, the stratified sample followed the current breakdown of gender for the US, which is 49% male and 51% female (U.S. Census Bureau, 2017). Additionally, this researcher captured a wide range of demographics that included respondent’s race, sexual orientation, and relationship status to gather evidence on PH in diverse populations.

**Research Hypotheses**

**Research Hypothesis 1**

The PHS, which will be used to measure the PH construct, will have a unidimensional factor structure (Figure 1-1) in a nonclinical sample of adults.
Research Hypothesis 2

The Cronbach’s alpha coefficient of reliability for the PHS will meet or exceed a value of .80 within a nonclinical sample of adults. A value of 0.80 is suggested when clinical decisions are being made regarding the results of an assessment (Erford, 2013).

Research Hypothesis 3

The omega coefficient of reliability for the PHS will meet or exceed a value of .80 within a nonclinical sample of adults. A value of 0.80 is suggested when clinical decisions are being made regarding the results of an assessment (Erford, 2013).

Definition of Terms

CFA. A statistical procedure that is used to confirm a factor structure that is hypothesized by a researcher according to predetermined latent variables (Agresti & Finlay, 2009).

Connotation Bias. A form of assessment bias that occurs when items carry a negative connotation and reference minority groups (Chernin & Holden, 1997).

Contiguity Bias. A form of assessment bias that occurs when instruments used to assess for psychopathology appear alongside scales describing minority groups (Hays, 2017).

PH. PH is a clinical syndrome that is characterized by an individual’s experiences of reoccurring obsessions with sexual urges, fantasies, and behaviors that lead to negative consequences and impairment in multiple areas of functioning (Kafka, 2010).

PHS. An instrument developed in the present study to aid counselors in assessing for the presence of problematic hypersexuality in their clients. The PHS is a 34-item assessment that asks clients to respond to each item using a 6-point Likert-type scale.

Omission Bias. A form of assessment bias that occurs in items that ignore the possibility that a respondent belongs to a minority group (Hays, 2017).
**Rasch Modeling.** A statistical framework that analyzes item responses to estimate a latent trait (Rasch, 1960).

**Assumptions**

1. Members of the expert panel will specialize in the study and treatment of PH, specialize in scale development to ensure sound methodology was used in the development of the PHS, and specialize in literacy to ensure clients will be able to comprehend the information contained on the PHS.

2. The partial credit model (PCM) assumes unidimensionality and local independence. The PCM forces all items to have a discrimination parameter of one.

3. CFA assumes multivariate normality, independence of observations, and the covariance matrix is positive definite.

**Ethical Considerations**

To ensure the utility of the PHS and its applicability to a diverse population, this author took multiple steps to ensure the PHS was developed with a theoretical framework that supported the uses and claims drawn from the scale and in accordance to ethical standards for working with diverse populations. To begin, this author received approval from the institutional review board (IRB) at the University of Florida prior to conducting this study. Regarding the intended uses and claims drawn from the PHS, this author used ECD, which is a methodological framework that ensures researchers are collecting and interpreting the data obtained from the instrument in the way that was intended and aligns with the purpose and theory underlying the assessment (Mislevy, Almond, & Lukas, 2003). Additionally, the concept of fairness as defined in the Standards for Educational and Psychoeducational Testing (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014) was followed throughout the instrument development, administration, and scoring processes. Abiding by the fairness principle allows the
PHS to be sensitive to minority individuals and minimize false interpretations of the claims drawn from the PHS for these populations.

To further support the fairness standard, this author used various counseling standards that were developed for working with minority groups including the American Counseling Association’s (ACAs) Multicultural and Social Justice Counseling Competencies (MSJCCs; Ratts, Singh, Nassar-McMillan, Butler, & MuCullough, 2015), Standards of Care in Assessment of Lesbian, Gay, Bisexual, Transgender, Gender Expansive, and Queer/Questioning (LGBTGEQ+) Persons (Goodrich et al., 2017), and the Standards of Care for Research With Participants Who Identify as LGBTQ+ (Griffith et al., 2017). These standards are pertinent to the development sample that was used because of the wide range of demographics collected by this researcher to address the limitation of low diversity in development samples of pre-existing scales of PH. It was with these ethical considerations that the PHS was developed to protect the clients and research participants that will be administered the PHS in this study and beyond.

**Chapter Summary**

The content of this chapter provided an introduction to the PH construct and the lack of clarity regarding how this clinical syndrome is defined amongst mental health professionals. Existing literature regarding the assessment of this construct was briefly discussed, along with the limitations of these instruments, in order to provide a foundation for the development of the PHS. The limitations discussed were referenced in two published reviews of existing measures of PH and gathered from a review this author conducted regarding the presence of bias-inducing items on these instruments. The following chapter will present a full literature review to illustrate the need for the present study, which is followed by a chapter that contains the manuscript presentation of the current study. The manuscript chapter will include a brief literature review followed by the methodology and results of administering the PHS to a nonclinical sample of
adults. A brief discussion of the clinical and research implications of the PHS will follow this information.
Figure 1-1. Hypothesized factor structure of PHS
CHAPTER 2
LITERATURE REVIEW

This comprehensive literature review begins with a review of the problematic hypersexuality (PH) construct, which includes a discussion on the etiology, presenting symptomology, and prevalence of this clinical syndrome. This is followed by an overview of various theoretical models, or perspectives, used to explain conceptualize the PH construct. This overview ties into the history and literature pertaining to the trends in the assessment of PH, which includes the various instruments that have been developed over the past 25 years. The most widely cited assessments of PH are then explored, which includes an analysis of these assessments of the PH construct in terms of three main components of the assessments: (1) development sample, (2) items, and (3) psychometric properties. Through conducting this analysis, the researcher provides a rationale supporting the development of the Problematic Hypersexuality Scale (PHS), which will be a universal assessment of PH. Finally, the chapter concludes with a review of measurement considerations related to the development of the PHS and utilizing this assessment tool to assess for the presence of PH in clients.

Problematic Hypersexuality

Understanding PH

PH is a term used to denote a clinical syndrome that is characterized by frequent and uncontrollable sexual behaviors that cause an individual to experience impairment in their social, vocational, relational, and other important areas of functioning (Short, Wetterneck, Bistricky, Shutter, & Chase, 2016). The presenting symptomology of PH is both observable and subjective in nature, with additional manifestations of negative life consequences and significant impairment experienced by the individual engaging in PH behaviors (Hook, Hook, Davis, Worthington, & Penberthy, 2010). Some consequences of PH are consistent with healthy sexual
behaviors and include acquiring sexually transmitted diseases (STDs)/sexually transmitted infections (STIs) and unplanned pregnancies (Långström & Hanson, 2006; McBride, Reece, & Sanders, 2008). The personal consequences that individual’s with PH often experience include those related to conflict within their relationships, isolating oneself, issues related to self-worth, vocational issues, financial strain, and legal issues (Hall, 2013; Parsons, Kelly, Bimbi, Muench, & Morgenstern, 2007; Reid, Carpenter, Draper, & Manning, 2010).

The PH construct, as it is conceptualized today, has evolved over the past 200 years. The first recorded cases of individuals presenting with PH were in the writings of Benjamin Rush, a medical doctor, in 1812. He characterized these individuals as experiencing “excessive sexual behaviors” (Rush, 1812/1979, p. 345), and in one instance reported that the distress one patient was experiencing from engaging in his frequent sexual behaviors led him to request a medical doctor make him impotent (p. 347). In the late 1800’s, the term hyperesthesia sexual was used to characterize individuals who had increased sexual desire and these individuals were characterized as corrupt individuals who experienced sexual affective states because of their increased sexual behaviors (Krafft-Ebbing, 1886/1988). The current definition of PH, and how PH will be used throughout this study, began to take shape in the work of Orford (1978), where he illustrated similarities between PH and alcohol addiction. He stated that hypersexual behaviors are maladaptive and reported that individuals continue to engage in their behaviors associated with despite the negative consequences they may experience. More recently, researchers have provided neurobiological evidence to support the idea that PH is similar to substance use disorders (SUDs). This evidence has demonstrated that individuals who experience PH have similar activation patterns within the brain and similar patterns of neuroplasticity over time, when compared to individuals who experience SUDs (Blum et al., 2000; Hartman, Ho,
The present use of the term PH mirrors the conceptualization of sexual addiction, which was popularized in Out of the Shadows: Understanding Sexual Addiction (Carnes, 1983). This work served as the foundation for interest and research in the area of PH (Gold & Heffner, 1998). Additionally, researchers have developed other terms to characterize this clinical syndrome, including: hypersexuality (Kingston & Firestone, 2008; Reid, Garos, & Carpenter, 2011), compulsive sexual behavior (Coleman, 1991), sexual compulsivity (Kalichman & Rompa, 1995), and sexual impulsivity (Barth & Kinder, 1987).

The presence of different terms used to characterize PH has developed out of the perspective that researchers take when conceptualizing the PH construct. This has created issues regarding the research process for PH because it has created confusion regarding how to define PH and has made it difficult to establish reliable prevalence rates for individuals with PH (Stewart & Fedoroff, 2014; Walton, Cantor, Bhullar, & Lykins, 2017). Researchers have viewed this confusion as a barrier to the progression of research regarding the assessment, diagnosis, and treatment of PH (Stewart & Fedoroff, 2014). One barrier is being able to determine the etiology of PH, which will be discussed following a brief section of the prevalence data that has been published on PH.

**Prevalence of PH**

The establishment of reliable prevalence rates for PH is difficult to obtain due to the multiple perspectives on PH (Walton et al., 2017) and the lack of epidemiological studies on individuals presenting with PH (Kafka, 2010). Some researchers have stated that prevalence estimates for PH range from 3% to 16.8% (i.e. Cook, 1987; Cooper, Morahan-Martin, Mathy, & Maheu, 2002; MacLaren & Best, 2010; Seegers, 2003), whereas other researchers have narrowed the prevalence estimate to 3% to 6% (i.e. Freimuth et al., 2008; Gilliand, South, Carpenter, &
Hardy, 2011; Krueger & Kaplan, 2001). In addition to the lack of prevalence information, there is a lack of data regarding the demographic characteristics of clients presenting with PH, especially how PH manifests itself across different cultural groups (Reid, 2013). The most widely studied client demographic for PH is gender and multiple research studies have demonstrated a relationship between gender and PH, with a higher prevalence in males than females (e.g., Erez, Pilver, & Potenza, 2014; Grant et al., 2014).

**Etiology of PH**

The etiology of PH is not entirely known, but researchers have conducted research on various potential explanations for the development of PH. The presence of a genetic component for the development of PH is one such explanation that has been explored by researchers. Evidence from twin studies demonstrated that sexually promiscuous behaviors had a 33% heritability rate in both genders (Zietsch, Verweij, Bailey, Wright, & Martin, 2010). In another study on a sample of twins, 77% of the variability in problematic masturbatory behaviors was accounted for through genetic contributions, with 13% of the variance being attributed to non-shared environmental factors (Långström, Grann, & Lichtenstein, 2002). The researchers were able to determine the genetic link through the use of the Child Behavior Checklist (CBCL; Achenbach, 1991), which contained items describing children’s sexual behavior problems and items regarding potential genetic and environmental influences on these behaviors. A study conducted using 88 married couples with PH found high occurrences of first-degree relatives with SUDs (40%), eating disorders (30%), or pathological gambling (7%; Schneider & Schneider, 1996). Additionally, environmental influences on PH have been discussed as a potential catalyst for the development of PH. A study found that adults who experienced sexual trauma as a child were more likely to experience sexual compulsions (Cohen et al., 2010), increased sexual preoccupation, (Noll, Trickett, & Putnam, 2003), and increased likelihood of
acting out sexually (Leibowitz, Laser, & Burton, 2011). Additional research is needed in order to develop a sound model of the potential origins of PH to improve the treatment individual’s with PH receive.

**Diagnosis of PH**

In addition to the inability to establish reliable prevalence rates and a sound etiological model, the lack of formalized diagnostic criteria for PH is another issue that has been observed to the lack of clarity regarding the conceptualization of PH. Initially, clinicians would use the diagnosis of sexual disorder not otherwise specified (NOS; American Psychiatric Association [APA], 1987) contained within the Diagnostic and Statistical Manual of Mental Disorders – III – R (DSM-3-R; APA, 1987) to diagnose and treat PH. Clinicians continued to use this diagnostic code for those clients presenting with PH because a formal diagnosis for PH was not included in either version of the DSM-IV (DSM-4; APA, 2000). Although this was a common practice, it is noteworthy to mention that the diagnostic criteria for sexual disorder NOS is not adequate in working with individuals presenting with PH. Researchers have stated that there are two main distinctions between PH and sexual disorder NOS: (1) there is a lack of control over sexual behaviors in those individuals with PH, and (2) continued engagement in PH behaviors is observed despite the presence of negative consequences (Goodman, 1998).

Hypersexual Disorder (HD; Kafka, 2010), which was Kafka’s attempt at creating a formal definition for this clinical syndrome, was proposed to be included in the DSM-5 (APA, 2013) as a way to diagnose PH. The definition that he proposed clinicians to use characterized characterized PH as a “repetitive and intense preoccupation with sexual fantasies, urges, and behaviors, leading to adverse consequences and clinically significant distress or impairment in social, occupational, or other important areas of functioning” (Reid, Garos, & Carpenter, 2011, p. 30). Six subtypes of hypersexual behaviors were proposed to serve as specifiers for HD,
including masturbation subtype, pornography subtype, sexual behavior with consenting adults, cybersex, telephone sex, and strip clubs (Kaplan & Krueger, 2010). In addition to the six types of hypersexual behaviors previously listed, Kafka (2010) added an additional type, which he named, other. In the end, HD was excluded from the DSM-5, with the work group stating that there was a lack of empirical evidence regarding PH and that the diagnosis could potentially be misused in legal settings (Kafka, 2014).

### Theoretical Models of PH

As previously mentioned, there are multiple perspectives in the PH literature that attempt to conceptualize the PH construct. What follows is a discussion of a selection of the different theoretical models of PH, which furthers the discussion on these multiple perspectives of conceptualizing PH. The models included are the sexual addiction, sexual compulsivity, neurobiological, and the dual control models.

#### Sexual Addiction

The sexual addiction model was developed to illustrate the similarities between the characteristics of PH and the diagnostic criteria for SUDs from the DSM-5 (APA, 2013; Vesga-Lopez, Schmidt, & Blanco, 2007). Sexual addiction and its associated behaviors are viewed by researchers as being somewhat problematic to criminal in nature (Miles, Cooper, Nugent, & Ellis, 2016). Such behaviors can include excessive viewing of pornography, sexual assault, compulsive masturbation, and multiple affairs to name a few (Carnes & Schneider, 2000). Individuals whom support viewing PH through an addictions framework argue that these behaviors should be treated similarly to SUDs (Schneider & Irons, 2001). The data that is available on PH (e.g., Kor, Fogel, Reid, & Potenza, 2013) supports the utility of an addictions framework when treating PH.
Support for this model came after the American Society of Addiction Medicine (ASAM) amended their definition of addiction to include sexual addiction (2011). Sexual addiction researchers have been actively trying to gain necessary empirical evidence to support the use of an addictions framework for the conceptualization of PH. Some researchers have proposed that individuals with PH experience withdrawal symptoms when discontinuing the engagement or reducing the frequency of sexual behaviors through negative emotional (e.g., Garcia & Thibaut, 2010; Kraus, Voon, & Potenza, 2016), which counters the argument made by those who oppose the use of an addictions framework in that there is an absence of withdrawal symptoms. Additionally, researchers conducted a field trial to determine the reliability and validity of the proposed HD diagnostic criteria for PH (Reid et al., 2012). The researchers found that the proposed HD diagnostic criteria had good validity when compared to theoretically relevant measures of sexual addiction, which demonstrates that the diagnostic criteria can be applied to a clinical population of PH clients.

Despite the evidence supporting the use of an addictions framework for conceptualizing PH, there are individuals who are opposed to the use of an addictions framework. As previously discussed, researchers have proposed that there is a lack of withdrawal symptoms experienced by individuals with PH once they discontinue or reduce the frequency of their sexual behaviors in addition to the lack of development of a tolerance to the engagement in sexual behaviors (Garcia & Thibaut, 2010). Another criticism of using this model is that there is the lack of clinical and diagnostic thresholds for sexual addiction that are commonly found in SUDs (Reid, 2015). The American Association of Sexuality Educators, Counselors, and Therapists (AASECT) released the following statement voicing their opinion on the use of an addictions framework for PH:

AASECT 1) does not find sufficient empirical evidence to support the classification of sex addiction or porn addiction as a mental health disorder, and
2) does not Psych. Therefore, it is the position of AASECT that linking problems related to sexual urges, thoughts or behaviors to a porn/sexual addiction process cannot be advanced by AASECT as a standard of practice for sexuality education delivery, counseling or therapy. (AASECT, 2016)

AASECT’s perspective regarding the lack of empirical evidence to promote a formal diagnosis for sexual addiction aligns with the majority of opinions of those who discount the concept of sexual addiction, and was one of the reasons for excluding the HD diagnosis from the DSM-5 (APA, 2013; Kafka, 2014). However, the second concern describing how counselors and treatment modalities for PH are lacking in their knowledge of human sexuality has not been widely discussed in the PH literature. More research into the training of certified sexual addiction therapists (CSATs) will be required in order to provide evidence supporting or refuting this claim. Despite this ongoing debate, the use of the term sexual addiction is the most widely used terminology to characterize PH.

**Obsessive-Compulsive Spectrum Disorder**

To begin discussing this model, one must first have an understanding of the clinical definition of obsessive-compulsive disorder (OCD), which characterizes an individual’s experience with obsessive, and often intrusive, thoughts and repetitive behaviors (Vaghi et al., 2017). Researchers who are in support of this model discuss the obsessive and compulsive nature of PH and it’s associated behaviors and how these behaviors could fall into the broader continuum of OCD (Kaplan & Krueger, 2010). Researchers have hypothesized that PH is influenced by an individual’s inability to control their impulses and is used as a mechanisms to reduce anxiety (Coleman, 1991). More specifically, individuals with PH may engage in sexually repetitive behaviors to relieve symptoms of anxiety or distress instead of using sex as a means for pleasure (APA, 2013). Researchers have shown that obsessive sexual thoughts are common amongst individual’s presenting with OCD (Kaplan & Krueger, 2010). Researchers examined
293 individuals with an OCD diagnosis and found that 24.9% had reported a history of sexually obsessive thoughts and 13.3% had reported current sexually obsessive thoughts (Grant et al., 2006). Although the aforementioned research illustrated how PH could fall into the spectrum of OCD, it is important to mention that the compulsions an individual with PH experiences is not used to cope with unwanted obsessions, much like the compulsions in OCD (Gordon, 2002; Schwartz & Abramowitz, 2003).

**Neurobiological Model**

The neurobiological model for PH has gained supporting evidence from brain imaging techniques to gain an understanding of its etiology. Researchers have found that individuals with PH have higher activation in the superior frontal region of the brain compared to those individuals without PH (Miner, Raymond, Mueller, Lloyd, & Lim, 2009). This model also illustrates how different medical conditions can result in the development of PH symptomology. Such conditions that researchers have found to be linked to PH symptomology includes dementia (Fedoroff, Peyser, Franz, & Folstein, 1994), Tourette’s (Kerbeshian & Burd, 1991), and methamphetamine (Mansergh et al., 2006; Semple, Zians, Strathdee, & Patterson, 2009) and cocaine (Washton & Zweben, 2009) use. This model and evidence that researchers have provided illustrates the importance of neurobiological factors in the development of PH, which could aid in the treatment of individuals with PH.

**Dual Control Model**

The dual control model was developed out of the work of Bancroft and his colleagues (Bancroft, 1999; Bancroft, Graham, Janssen, & Sanders, 2009) and has influenced the conceptualization of PH (Bancroft et al., 2009; Kingston & Firestone, 2008). This model is also the most empirically supported model of PH (Samenow, 2010). The dual-control model posits that an interaction between the excitatory and inhibitory processes of the brain is essential in
determining an individual’s pattern of sexual behavior (Reid, Berlin, Kingston, 2015). PH occurs when an imbalance between these two brain processes is present; that is an individual has a high excitatory process and low inhibitory process (Bancroft, 2009). This model illustrates how individuals without PH have decreased sexual desire when experiencing negative mood states and individuals with PH experience heightened sexual desire when experiencing negative mood states (Bancroft & Vukadinovic, 2004).

**Assessment of PH**

**Overview of Assessment and Bias**

Assessment serves an important role within the counseling process and counselors should use assessments continuously throughout all stages of the therapeutic process (Neukrug, Peterson, Bonner, & Lomas, 2013; Vacc, 1982). In regards to PH, researchers have been developing instruments assessing the various conceptualizations of PH for over 25 years. Researchers have estimated that there are currently 32 self-report instruments available to assess for variations in the PH construct (Walton et al., 2017; Womack, Hook, Ramos, Davis, & Penberthy, 2013). As previously mentioned, the researcher conducted a review of these assessments and found that a majority of the instruments contained biased items that could severely limit the ability to accurately draw inferences from these instruments to minority clients. The Standards for Educational and Psychological Testing (American Educational Research Association [AERA], 2014) includes two forms of bias to consider in psychological testing: bias in test content, and bias in response processes. The standards characterize bias in test content as an inappropriate selection of test items and bias in response process as participants responding to the items on a test in a way that was not intended by the test. When looking at the assessment of diverse populations, there appears to be three main forms of bias that present themselves in these assessments: omission, connotation, and contiguity bias (Chernin & Holden, 1997; Hays, 2017).
Omission bias refers to items that ignore the potential for a participant to be a member of a minority group (Hays, 2017). Connotation bias refers to items that have negative connotations and reference minority groups (Chernin & Holden, 1997). Contiguity bias refers to instruments that assess for a mental disorders appearing alongside instruments that illustrate characteristic of a minority group (Hays, 2017). The discussion of these forms of biases is essential to the critique of existing instruments of PH that follows.

**Assessment with Minority Populations**

Since assessment is critical to the counseling process, it is imperative that counselors consider issues related to diverse populations throughout the assessment process (Oberheim, Swank, & DePue, 2017; Peterson, Lomas, Neukrug, & Bonner, 2014). That is, counselors and counselor educators should consider aspects of culture and diversity throughout the instrument development process, administering the instrument, scoring, and interpretation of the results (Padila & Borsato, 2008). In order to address this limitation in the present study, the researcher used resources regarding the assessment of culturally diverse people provided by the American Counseling Association (ACA). What follows is a brief overview of the standards used during the present study. The primary framework used to minimize the presence of bias in item development was developed Association for Assessment in Counseling and Education (AACE), which published a set of standards for multicultural assessment (AACE, 2012). Additionally, guidelines provided by the Association for Lesbian, Gay, Bisexual, and Transgender Issues in Counseling (ALGBTIC) were used to ensure the current study was sensitive to the unique needs of the LGBT community. More specifically, the competencies for counseling Lesbian, Gay, Bisexual, Queer, Questioning, Intersex, and Ally individuals (LGBQQIA; ALGBTIC LGBQQIA Competencies Taskforce, 2013), competencies for counseling with transgender clients (ALGBTIC, 2009), the Standards of Care in Assessment of Lesbian, Gay, Bisexual,
Transgender, Gender Expansive, and Queer/Questioning (LGBTGEQ+) Persons (Goodrich et al., 2017), and the Standards of Care for Research with Participants Who Identify as LGBTQ+ (Griffith et al., 2017) were used to inform the present study. These standards were developed to promote the use of culturally sensitive research and assessment procedures with clients who identify as members of the LGBT+ community.

Another important consideration the culturally aware counselor must consider during the assessment process is how and for whom the construct of PH has been defined (Moe, Finnerty, Sparkman, & Yates, 2015). This concept can also be extended to other minority clients, especially because of the lack of data on the demographic characteristics of PH clients. The development of this awareness in counselor educators is the first step towards building culturally sensitive PH assessments that can be used with a wide range of samples. Culturally sensitive assessments are critical to this process in addictions counseling due to the potential harm that item bias could cause due to inaccurate assessment. What follows is an analysis of some of the most widely cited instruments used to assess for various forms of PH, which were selected based on the number of times they were cited in the literature regarding PH. A brief overview of each instrument will be provided and then discussed in terms of the instrument’s development sample, evidence of bias in items, and psychometric properties.

**Compulsive Sexual Behavior Inventory (CSBI)**

The Compulsive Sexual Behavior Inventory (CSBI; Coleman, Miner, Ohlerking, & Raymond, 2001) is a 28-item scale with a Likert-type scale with a 5-point response format, with responses ranging from 1 (very frequently) to 5 (never). The CSBI was developed to assist clinicians and researchers in being able to distinguish between clients who meet threshold for pathological compulsive sexual behaviors (CSB) and those who do not (Coleman et al., 2001). Lower scores on the assessment indicated higher levels of CSB and higher scores indicated lower...
levels of CSB. The CSBI’s development sample consisted of a paraphilic group (35 male participants with a diagnosis of pedophilia), a non-paraphilic group (15 male participants), and a control group (42 male participants). The development sample lacked diversity, with 85 of the 92 total participants identifying as Caucasian, which limits the generalizability of the results obtained from the CSBI. Items on the CSBI contain evidence of connotation and omission bias. The CSBI yielded a three-factor structure, with subscales labeled control, abuse, and violence. Cronbach’s alpha values for each of the subscales were reported as 0.96 for control, 0.91 for abuse, and 0.88 for violence (Coleman et al., 2001). The authors employed a linear discriminant analysis to determine if the CSBI could discriminate between those whom have issues with CSB and those who do not. The results of this analysis found that 92% of the cases in the initial study were accurately classified (Coleman et al., 2001). The psychometric properties of the CSBI are strong, but the inability to generalize to populations other than Caucasian males severely limits the utility of this instrument in clinical practice.

The CSBI was later revised by researchers translating it into Spanish, omitting the abuse subscale, and using a sample of 1,026 Latino men who have had sex with men (MSM; Miner, Coleman, Center, Ross, & Rosser, 2007). The criteria for being in the sample was that the participant had to identify as a Latino male, have sexual contact with men, and be a United States resident. Although this is a novel population for the CSBI, the researchers did not distinguish between the sexual and gender identities of the participants, which would be beneficial for the purposes of generalizability. Since the items were the same as the original CSBI, there is still the presence of connotation and omission bias. The authors conducted a confirmatory factor analysis (CFA) and confirmed that the two-factor model (control and violence) was a good fit for their sample. Equivalency of forms was established for the English and Spanish forms of the CSBI (r
= 0.88, \( p \leq 0.001 \)) and test-retest reliability was calculated for the English version \((r = 0.86, \ p \leq 0.001)\) and Spanish version \((r = 0.93, \ p \leq 0.001)\). Validity evidence supports that notion that the control subscale measures the lack of control and sexual coping an individual has regarding their sexual behaviors, but there was an issue with the violence subscale, which appeared to measure a dimension that was not intended to be measure.

**Hypersexual Behavior Inventory**

The Hypersexual Behavior Inventory (HBI; Reid, Garos, Carpenter, 2011) is a 19-item scale that was intended to assess for the presence of hypersexuality. The scale utilized a Likert-type scale with a 5-point response format, with responses ranging from 1 (never) to 5 (very often). Higher scores on the HBI indicated elevated levels of hypersexuality, with a cutoff score \( \geq 53 \), which was established through averaging values from the halfway cut point method (Jacobson & Truax, 1991) and 1.5 standard deviations above the control, being the benchmark for elevated hypersexuality in men (Reid et al., 2011). The development of the HBI was conducted over a series of two studies, both of which will be discussed below.

**Study One.** The development sample consisted of 324 male patients in outpatient treatment clinics, with 302 of the participants being Caucasian and 305 identifying as heterosexual. The items contain evidence for the presence of connotation and omission bias. Results of an exploratory factor analysis (EFA) yielded a three-factor structure, which the researchers labeled these factors as control, coping, and consequences. The factors accounted for 66% of the total variance (Reid et al., 2011). Reliability for the HBI was reported using Cronbach’s alpha, and high internal consistency was found for the overall scale \((\alpha = 0.95)\), control subscale \((\alpha = 0.94)\), coping subscale \((\alpha = 0.90)\), and consequences subscale \((\alpha = 0.87)\). Content validity for the HBI was established through the use of an expert review panel and
preliminary support for construct validity was established through the results of the EFA conducted.

**Study Two.** The development sample consisted of 203 male patients in outpatient treatment clinics, with 198 of the participants being Caucasian and 186 identifying as heterosexual. A CFA supported the three-factor structure that was established in study one, with high internal consistency for the overall scale (α = 0.96), control subscale (α = 0.95), coping subscale (α = 0.91), and consequences subscale (α = 0.89; Reid et al., 2011). Test-retest reliability was calculated for the entire scale (r = 0.91, p ≤ 0.01), and each of its subscales (r = 0.89 [control], r = 0.88 [coping], and r = 0.90 [consequences]). Evidence for concurrent and discriminant validity was established for HBI scores.

Although the psychometrics of the HBI are strong for the development sample, the generalizability of inferences drawn from the scores on the HBI are limited due to the lack of diversity in the development sample and presence of bias in the assessment items. Maybe here review/summarize one more time the only participants represented in the studies.

**Hypersexual Disorder Questionnaire (HDQ)**

The Hypersexual Disorder Questionnaire (HDQ; Reid et al., 2012) is a 10-item self-report assessment of HD that was developed using the diagnostic criteria for HD. The scale uses a 6-point Likert-type scale (0 = Never true to 5 = Almost always true), which was intended to quantify each of the symptoms of HD as measured by the HDQ. The development sample consisted of 207 individuals in outpatient clinics, 187 of which were Caucasian, 178 were male, and 180 identified as heterosexual. Reliability was calculated for the sample used and a Cronbach’s alpha value of 0.95 was obtained, demonstrating high internal consistency (Reid et al., 2012). No further psychometric evidence was provided for this instrument by the researchers.
Due to the lack of psychometric evidence and limited ability to generalize results, researchers and clinicians should be cautious when interpreting scores gathered from this assessment.

**Sexual Addiction Screening Test (SAST), Sexual Addiction Screening Test for Women (WSAST), and Sexual Addiction Screening Test for Gay Men (G-SAST)**

The Sexual Addiction Screening Test (SAST; Carnes, 1989) is a 25-item assessment of sexual addiction that became the first published instrument to assess for the presence of sexually addictive behaviors. The SAST has respondents select a box indicating either a “yes” or “no” response to the items, with total scores computed by adding the number of “yes” responses. Scores on the SAST range from 0 to 25; with scores of 13 or higher indicating the presence of sexual addiction and suggesting those with scores of 10 or more receive additional assessment (Carnes, 2002). The development sample for the SAST has not been discussed in the literature regarding the creation of the original SAST, which makes it difficult for researchers to determine which populations the results can be generalized to. The SAST is a unidimensional scale that has high internal consistency in sample sexually addicted men, with a Cronbach’s alpha of 0.92 and a Cronbach’s alpha of 0.85 in a sexually non-addicted male sample, and had the ability to discriminate between male with PH and a male control group (Carnes, Green, & Carnes, 2010). However, in a sample of male college students the SATS had a Cronbach’s alpha value of 0.66 (Abell, Steenbergh, & Boivin, 2006). The variability in the alpha values demonstrates the instability of the SAST across different samples. The items on the SAST contain omission bias. Other limitations of the SAST include its lack of consistency and inability to adequately discriminate with the female and gay male samples (Carnes et al., 2010). In order to address these initial limitations of the SAST, two additional forms of the SAST were developed: The Sexual Addiction Screening Test for Women (W-SAST; Carnes & O’Hara, 1994) and the Sexual Addiction Screening Test for Gay Men (G-SAST; Carnes & Weiss, 2000). However, it is
noteworthy that the reliability and validity of these scales has not yet been studied (Carnes et al., 2010; Coleman-Kennedy & Pendley, 2002; Dhuffar, Pontes, & Griffiths, 2015).

**Sexual Addiction Screening Test – Revised (SAST-R)**

The most recent form of the SAST is the Sexual Addiction Screening Test – Revised (SAST-R; Carnes et al., 2010). The researchers stated that the SAST-R was developed to consolidate the three versions of the SAST into one assessment to ease the administration, explanation, and research regarding the scale. The SAST-R is a 45-item assessment of sexual addiction and has respondents select a box indicating either a “yes” or “no” response to the items, with total scores computed by adding the number of “yes” responses. The items on the SAST-R contain evidence of contiguity, omission, and connotation biases (Moe, Finnerty, Sparkman, & Yates, 2015). The SAST-R contains a core scale of 20-items and four subscales: Internet, men, women, and gay men, which were included in the design of the instrument so that a direct comparison of the features of sexual addiction across populations could be gathered (Carnes et al, 2010). The cut-off score was found to be at a score of six on the core scale, with this cut-off score accurately classifying 86% of men and 83.8% of women in the sample. Reliability estimates exceed 0.79 for the SAST-R (Spenhoff, Kruger, Hartmann, & Kobs, 2013). More reliability and validity evidence is needed to demonstrate the utility of the SAST-R as a strong clinical assessment.

**Sexual Compulsivity Scale (SCS)**

The Sexual Compulsivity Scale (SCS; Kalichman et al., 1994) is a 10-item measure used to assess for the presence of sexual compulsivity. Individual’s respond to the items on the SCS using a 4-point Likert-type scale (1 = Not at all like me to 4 = Very much like me). Total scores are computed by summing the responses to each item, with total scores ranging from 10 to 40. Multiple studies have found that a cut score of 24 distinguishes those with heightened levels of
sexual compulsivity from those who do not (Grov, Parsons, & Bimbi, 2010; Parsons, Bimbi, & Halkitis, 2001; Rendina, Golub, Grov, & Parsons, 2012). Items included on the SCS contain omission bias. The initial development sample consisted of 160 self-identified gay men; with results demonstrating the SCS had high reliability, with a Cronbach’s alpha value of 0.89 (Kalichman et al., 1994). Kalichman and Rompa used the SCS in a sample of gay men and African American men and women and found similarly high levels of internal consistency (α =0.86 or gay men and α = 0.87 for African American men and women; 1995). Evidence for the SCS has demonstrated higher levels of internal consistency across 30 samples and has been found to have good reliability and validity (Hook et al., 2010).

**Sexual Dependency Inventory and Sexual Dependency Inventory – Revised**

The Sexual Dependency Inventory (SDI; Carnes, 1991) is a 113-item assessment used in clinical settings to assess for problematic sexual behaviors. The items describe specific sexual behaviors and respondents are asked to answer with the frequency of engaging in each behavior using a 5-point Likert-type scale (one time, seldom, periodically, often, and very often). The development sample consisted of 932 sexually addicted clients and their partners (Carnes, 1991). Data was analyzed using factor analysis procedures and in one study a 10-factor model was found (Carnes, Nonemaker, & Skilling, 1991) and in another study an 11-factor model was found (Carnes, 1991). Initial analyses demonstrated that the SDI had some ability to distinguish between sexually addicted individuals and a control group, but little has been done to collect reliability and validity evidence (Carnes et al., 1991), and there is still a lack of reliability and validity evidence for the original SDI. The SDI is currently on its fourth revision and each revision will be discussed briefly.

The Sexual Dependency Inventory – Revised (SDI-R; Carnes & Delmonico, 1996) contains 207 items and asks respondents to use two 6-point Likert-type scales, one to measure
the frequency (0 = Never to 5 = Very often) an individual engages in the behaviors and the other to assess for the level of power (0 = No power to 5 = Very high power) the behaviors have over them. Delmonico, Bubenzer, and West (1998) conducted a study to examine the reliability and validity of the SDI-R. The sample consisted of three groups: sexually addicted individuals (n = 73), sexual offenders (n = 55), and those who did not identify as sexually addicted or sexual offender (n = 42). The researchers did not provide the gender of their participants when reporting their demographics, but the majority of the sample was identified as Caucasian and heterosexual. The SDI-R used the 10-factor model from the SDI, with Cronbach’s alpha values ranging from 0.900 to 0.996 for the frequency subscale and 0.907 to 0.996 for the power subscale (Delmonico et al., 1998). The researchers reported alpha values for test-retest reliability over a one-week period as ranging from 0.665 to 0.976. Evidence for criterion validity was founded in the relationship between the SDI-R and the SAST and construct validity was demonstrated because the SDI-R was able to distinguish the sexually addicted individuals and sexual offenders from those who did not identify as a sex addict or sex offender (Delmonico et al., 1998). This analysis and its findings illustrate the need for the development of a new measure of PH. In the following section is an overview of the methodologies used to develop a new measure of PH, the Problematic Hypersexuality Scale (PHS), which were used to minimize the presence of the issues discovered in pre-existing measures of PH.

Development of the PHS

The methodology for the structure and content for the PHS will follow the frameworks established by Develis (2016), Crocker and Algina (1986), and principles from Evidence Centered Design (ECD; Mislevy, Steinberg, & Almond, 2003). The framework provided by ECD is built on the use of evidentiary reasoning to provide sound methodology for the development of an assessment (Mislevy, Steinberg, & Almond, 2003) and the needs of
administering assessments (Almond, Steinberg, & Mislevy, 2002). In using this framework during the instrument development process, researchers ensure they are collecting and interpreting the data obtained from the instrument in the way that was intended and aligns with the purpose and theory underlying the assessment (Mislevy, Almond, & Lukas, 2003). This author created an assembly model (Table of Specifications; Table 1) to determine the relative weight given to each of the HD diagnostic categories. Following the development of the assembly model, the researcher developed a task model (Figure 1), which has the sole purpose of allowing researchers who develop instruments to describe each of the tasks included on an instrument (Mislevy, Behrens, Dicerbo, & Levy, 2012).

This author developed these models to align with the intended uses of the PHS and the claims are to be drawn from the PHS. The PHS is intended for clinicians to detect the presence of PH in their clients and determine the level of severity of the client’s PH to determine appropriate treatment interventions. Clinicians will be able to draw the following inferences from using the PHS with their clients: (1) client repeatedly experiences intense sexual fantasies, urges, and behaviors, (2) the client has experiences significant personal distress related to their PH, (3) the client’s PH is unrelated to substance use, other mental disorder, and/or medical condition, and (4) if the first three claims are true for the client, then the clinician can infer that the client is experiencing HD. The scale can also be used by researchers to further the literature regarding PH, specifically in the areas of establishing prevalence rates and ability to use with diverse populations, which is a limitation of the existing instruments.

In addition to using ECD, the PHS will be developed using guidelines established by Develis (2016). Develis’ eight steps to instrument development include (1) determine clearly what it is that you want to measure, (2) generate item pool, (3) determine the format of the
measurement, (4) have initial item pool reviewed by experts, (5) consider inclusion of validation items, (6) administer items to a development sample, (7) evaluate the items, and finally (8) optimize scale length. Application of Oberheim et al.’s (2017) best practices for developing instruments for transgender clients will be extended to include other minority clients and applied during the development of the PHS so that it can be used as a universal measure of PH. The researcher selected the aforementioned methodology to ensure the PHS is built on sound measurement principles and the items were crafted to reflect the literature and the inferences intended for use of the PHS.

**Chapter Summary**

The content of this chapter provided a comprehensive literature review regarding the PH construct. The discussion began with a detailed overview of the construct, with specific information provided on the prevalence, etiology, and diagnostic considerations regarding PH. Next, the researcher presented an overview of models to explain PH. This discussion then shifted to a detailed overview of assessing for PH and the bias the assessments contained, which was followed by a critique of select measures of PH to illustrate the need to a new measure of PH. The chapter concluded with an overview of evidence-centered design and how it was used to develop the PHS.
Table 2-1. Table of specifications for PHS item development based on HD diagnostic criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Number of Items</th>
<th>Observable Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Recurrent and intense sexual fantasies, sexual urges, and sexual behaviors</td>
<td>16 (to capture Criterion A)</td>
<td>See A.1 through A.5 behaviors</td>
</tr>
<tr>
<td>A.1 – A great deal of time is consumed by sexual fantasies and urges and by planning for and engaging in sexual behavior</td>
<td>4</td>
<td>Thinking about/engaging in sex/masturbation, using phone apps (Grindr, Tinder, etc.) or online chat rooms to look for partners/fulfill these urges, sexting</td>
</tr>
<tr>
<td>A.2 – Repetitively engaging in these sexual fantasies, urges, and behaviors in response to dysphoric mood states</td>
<td>4</td>
<td>Using masturbation, engagement in sex, viewing pornography, soliciting sex workers/escorts in order to deal with anxiety, depression, and/or other negative mood states.</td>
</tr>
<tr>
<td>A.3 – Repetitively engaging in sexual fantasies, urges, and behaviors in response to stressful life events</td>
<td>4</td>
<td>Using sex/masturbation, viewing pornography, attending strip clubs or bath houses as a means to cope with a stressful day at work, a fight with a spouse, etc.</td>
</tr>
<tr>
<td>A.4 – Repetitive but unsuccessful efforts to control or significantly reduce these sexual fantasies, urges, and behaviors</td>
<td>2</td>
<td>Trying to cut down on frequency of sex/masturbation, trying to reduce frequency of attendance to bath houses or strip clubs, trying to reduce spending on escorts/sex workers and/or pornographic material</td>
</tr>
<tr>
<td>Criterion</td>
<td>Number of Items</td>
<td>Observable Behaviors</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>A.5 – Repetitively engaging in sexual behavior while disregarding the risk for physical or emotional harm to self and others</td>
<td>2</td>
<td>Unprotected sex, sex with vulnerable individuals, viewing child pornography</td>
</tr>
<tr>
<td>B. There is clinically significant personal distress or impairment in social, occupational or other important areas of functioning associated with the frequency and intensity of these sexual fantasies, urges, and behaviors.</td>
<td>4 (to capture Criterion B)</td>
<td>Engaging in sex/masturbation at work or other public place, relational issues, illegal sexual practices, financial issues</td>
</tr>
<tr>
<td>C. These sexual fantasies, urges, and behaviors are not due to the direct physiological effect of an exogenous substance or to manic episodes</td>
<td>2 (to capture Criterion C)</td>
<td>Drug use, medications, mental health diagnoses,</td>
</tr>
</tbody>
</table>
Figure 2-1. Example task model from PHS development.
Problematic hypersexuality (PH) characterizes an individual’s experiences of intense and reoccurring sexual fantasies, urges, and behaviors, which lead to the individual experiencing adverse consequences and impairment in social, vocational, and other important areas of functioning (Kafka, 2010). Researchers have found multiple issues regarding the PH construct, some of which include the lack of clarity in defining the construct, lack of accurate prevalence estimates, and researchers’ varying perspectives on conceptualizing the pathology of hypersexual behavior (Walton, Cantor, Bhullar, & Lykins, 2017). These issues occur within the PH literature because researchers have developed multiple perspectives on how to conceptualize PH (Stewart & Fedoroff, 2014), some of which include viewing PH through an addiction framework (Carnes, 1983) or as an Obsessive Compulsive Disorder (OCD; Kaplan & Krueger, 2010). Furthermore, these varying perspectives create a sense of confusion among mental health professionals regarding the behaviors, affective states, and cognitions characteristic of PH, which has hindered the progression of research conducted on the assessment, diagnosis, and treatment of PH.

Researchers have been developing instruments used to assess for PH over the past 25 years, and multiple limitations have been cited within these pre-existing measures. Limitations have included the structure of items (e.g., double-barreled or item excludes certain hypersexual individuals), limited generalizability because of a lack of diversity in the development sample, lack of dimensionality and psychometric evidence, and lack of norming data (Hook, Hook,
Davis, Worthington Jr., & Penberthy, 2010; Reid, Garos, Carpenter, 2011). In addition to these findings, this author reviewed and analyzed existing measures of PH for the presence of bias (connotation, omission, and contiguity) and found that a majority of these instruments contained bias-inducing items. The presence of these limitations create the potential for clinicians and researchers to cause harm to their clients/participants due to drawing false claims from the scores obtained and the increased risk for misdiagnosis (Urbina, 2014). Therefore, the purpose of this investigation was to develop and provide initial psychometric evidence for the Problematic Hypersexuality Scale (PHS), an instrument used to assess for PH that addresses the limitations of pre-existing measures. The researcher used confirmatory factor analysis (CFA) and Rasch models to gather psychometric evidence supporting the utility of the PHS.

**Problematic Hypersexuality**

Although PH was defined earlier in this article, it is important to note that there are additional terms used in the literature to label the construct. These terms include, but are not limited to, sexual addiction (Carnes, 1983), compulsive sexual behavior (Coleman, 1991), and hypersexuality (Kingston & Firestone, 2008; Reid, Garos, & Carpenter, 2011). It is noteworthy to mention that these terms were developed to align with the different theoretical perspectives on conceptualizing PH, which were previously discussed. As such, this author will use the term PH for the remainder of this study to refer to the construct being measured by the PHS. In addition, the theoretical framework used to conceptualize PH mirrors the sexual addiction framework. An addictions framework was used due to the similarities between the experiences of people with sex addition and those with PH. This use of multiple perspectives and terminology to conceptualize PH has created issues related to establishing prevalence rates for PH (Karila et al., 2014). Specifically, researchers estimate the prevalence for PH to range from 3% to 16.8% (Cook, 1987; Cooper, Morahan-Martin, Mathy, & Maheu, 2002; MacLaren & Best, 2010;
Seegers, 2003), with another series of studies claiming that the prevalence ranges from 3% to 6% (Freimuth et al., 2008; Krueger & Kaplan, 2001; Kuzma & Black, 2008). Additionally, there is a significant gap regarding the prevalence of PH across different demographic characteristics, especially amongst gender, race, and other cultural identities (Hook et al., 2010; Reid, 2013; Wery et al., 2016). To narrow this gap, this author collected a wide range of demographic variables including gender (to include more than the traditional male/female binary), race, and sexual orientation to name a few.

The lack of a unified definition for PH affects the ability to obtain reliable prevalence rates for this clinical syndrome; however, researchers have still been able to identify a common set of themes regarding the consequences individual’s often experience because of their PH. These consequences transcend the multiple definitions and terminology used to characterize this construct. As a clinical disorder, PH manifests itself through observable and subjective symptoms, negative consequences, and the experience of psychological impairment (Hook et al., 2010). More specifically, consequences of PH can include an individual contracting a sexually transmitted infections (STIs) and/or unplanned pregnancy (Långström & Hanson, 2006; McBride, Reece, & Sanders, 2008). Additional negative experiences an individual may face include conflict within relationships, isolating oneself, weakened self-esteem, loss of employment, financial strain, and legal issues (Hall, 2013; Parsons, Kelly, Bimbi, Muench, & Morgenstern, 2007; Reid, Carpenter, Draper, & Manning, 2010). Despite the growing awareness of the effect PH has on those experiencing its symptoms, there are currently no formal diagnostic criteria for this clinical syndrome.

An attempt to capture this construct and create a unified definition for PH was observed in Kafka’s (2010) proposed diagnostic criteria for Hypersexual Disorder to the Diagnostic and
Despite the exclusion of the hypersexual disorder diagnostic criteria, research regarding the assessment of PH has been growing (Kafka, 2010). As of 2013, a review of existing measures of PH found that there were currently 32 separate measures for PH in existence (Womack, Hook, Ramos, Davis, & Penberthy, 2013). It is noteworthy to mention that each of these measures was developed to measure the PH construct; however, the researcher/s may have defined the construct differently based on their perspective of the etiology of PH (i.e., obsessive-compulsive, addictive) when developing the assessment (Stewart & Fedoroff, 2014).

Previous researchers have conducted two reviews of the pre-existing measures for the PH construct, with each analyzing different aspects of these instruments. The first review targeted the existing 17 instruments used to assess PH with a specific focus on each instrument’s theoretical structure, development sample and additional norming samples, and the instrument’s existing psychometric evidence (Hook et al., 2010). The results of this review found that many of the instruments had potential and demonstrated some psychometric evidence but were limited in generalizability due to a lack of diversity in the development sample. Additionally, existing instruments may also be limited by the lack of theory supporting the PH construct and their
inability to adequately assess for PH. These issues might be attributed to the lack of diagnostic criteria and a formalized definition for PH. However, despite these limitations, prior researchers were able to provide recommendations about which instruments could be used to advance PH research (Hook et al., 2010). The second review analyzed 32 PH assessments and compared the proposed diagnostic criteria for HD to the items on each assessment. The researchers found that several of the instruments had items that conformed perfectly to the criteria (Womack et al., 2013). However, the researchers discussed how the majority of the instruments reviewed were created prior to the development of the empirically supported diagnostic criteria and urged clinicians and researchers to use caution when using these assessments for clinical and research purposes. As such, the PHS was developed to align with the empirically supported HD diagnostic criteria, which is a strength that the PHS has over pre-existing measures of PH. Additionally, the discussion of these two critical analyses served as the rationale for developing the PHS, with additional evidence provided in the following section.

**Rationale for Development of the PHS**

In addition to the limitations discussed in the previous section, existing measures of PH appear to be lacking in their consideration of diversity within the development sample and additional norming samples. In using PH assessments, it is imperative that clinicians and researchers are aware for whom the PH construct was defined (Moe, Finnerty, Sparkman, & Yates, 2015). This is especially important when developing and selecting instruments that clinicians and researchers will use in clinical settings and for research purposes. However, when this does not occur, we may observe instances of omission, connotation, and/or contiguity bias in the instrument, which creates problems for minority individuals who are taking an assessment (Oberheim, Swank, DePue, 2017). Omission bias refers to an item that is phrased in such a way that it ignores the possibility of a respondent belonging to a minority group, whereas contiguity
bias occurs when an instrument used to assess for psychopathology appears alongside an instrument used to describe characteristics of a minority group (Hays, 2017). Finally, connotation bias occurs when items have words with negative connotations associated with a reference to a minority group (Morin & Charles, 1983). To address each form of bias, this author developed items that minimizes omission and connotation bias and structured the PHS in such a way that it minimizes contiguity bias.

Furthermore, to determine if these forms of item bias were present in existing measures of PH, this author conducted an analysis of the 32 measures identified by Womack et al. (2014). Items were examined and compared to the previously mentioned definitions of omission, connotation, and contiguity bias to determine if an item was bias inducing. This author found that a majority of the pre-existing instruments had these biases present. For example, the researcher found evidence for omission bias in an item that read, “I do things sexually that are against my values and beliefs.” This item is considered bias-inducing because it may not be interpreted the same way by a member of the lesbian/gay/bisexual/transgender (LGBT) community who may view their engagement in same-sex sexual behaviors as going against their values and beliefs versus how the researchers intended the question, which is related to PH. An example of connotation and contiguity bias was found in an instrument that integrated shame and guilt with PH and included a subscale related to members of a minority group (based on both gender and sexual orientation). More specifically, connotation bias was observed within this instrument because the items associate feelings of shame and guilt with being a member of a minority group (i.e. these items are on a subscale that is labeled for a sexual minority group), and contiguity bias is present because there is a subscale labeled for a minority group present on the scale which is used to screen for PH. Although these instruments served their intended purpose,
the present study has expanded on pre-existing measures to allow the results obtained from the PHS to be more generalizable.

Due to the limitations present within existing instruments, there is a need for the development of the PHS. Following the guidelines for instrument development established by measurement scholars (e.g., Crocker & Algina, 1986; DeVellis, 2016) and using Evidence Centered Design (ECD; Mislevy, Steinberg, & Almond, 2003) to develop the PHS, the current author intends to minimize bias across minority populations and address the limitations previously discussed by Hook et al. (2010) and Reid et al. (2011). In addition, there will be an emphasis on collecting a diverse development sample. The research hypotheses that will guide the present study include: (1) The PHS, used to measure the PH construct, will have a unidimensional factor structure, (2) The Cronbach’s alpha coefficient of reliability for the PHS will meet or exceed a value of .80 within a nonclinical sample of adults. A value of .80 is suggested when clinical decisions are being made regarding the results of an assessment (Erford, 2013), and (3) The omega coefficient of reliability for the PHS will meet or exceed a value of .80 within a nonclinical sample of adults.

Method

Initial Item Development

As previously noted, the content of the PHS is rooted in the sexual addiction framework used to conceptualize PH. Additionally, this author employed ECD as the methodological framework for the development of the PHS. To begin, an assembly model, or table of specifications, was developed following the proposed diagnostic criteria for HD. Researchers have demonstrated that using instruments that align with the diagnostic criteria for HD, which has been found to be reliable and valid in a clinical population (Reid et al., 2012), are useful in providing an accurate assessment of PH (Womack et al., 2013). Following the development of
the assembly model, the researcher developed task models for each claim clinicians and researchers can draw from an individual’s total score on the PHS. The claims intended to be drawn from scores on the PHS include: (1) the individual experiences intense and recurring sexual fantasies, urges, and/or behaviors, (2) the individual uses their sexual behaviors as a means to cope, (3) the individual has lost control and/or experienced consequences because of their PH, and (4) if the first three claims are true, then the individual is at heightened risk for developing PH. The task model aids the researcher in developing items such that they provide the evidence needed to support the claims being drawn (Mislevy et al., 2003). Crocker and Algina’s (1986) guidelines for writing Likert-type items were an additional resource used in the item development phase. These guidelines provide suggestions such as using present tense in item stems, avoiding the use of universals (i.e., always, all), and avoiding items that everyone will endorse or not enough individual’s will be able to endorse. These procedures were used to develop the initial item pool for the PHS, which consisted of 34-items. The respondents answer each item using a 6-point Likert-type scale based on frequency (0 = Decline to Answer, 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Very Often), with a total score being calculated for each subscale and total scores being calculated by summing across all subscales.

Following development of the initial item pool, this researcher conducted a series of cognitive interviews to gain evidence for response process validity. Questions that were asked during the cognitive interviews included “Would you feel comfortable answering the items honestly?” and “Do you feel any of the items were unfair to you?” Within this sample (N = 10) one participant identified as male (10%), eight identified as female (80%), and one participant identified as transgender (10%). Regarding the race of these participants, five identified as white (50%), three identified as black (30%), one identified as Asian or Pacific Islander (10%), and one
identified as other (10%). Ages for the sample ranged from 20 – 46 years (M= 29, SD= 8.12). Six participants identified as Christian (60%), one identified as Jewish (10%), and three identified as other (30%). In regards to sexual orientation, seven participants identified as heterosexual (70%), one identified s bisexual (10%), and two identified as other sexual orientation not listed (20%). Six participants identified as being single (60%), two identified as having a significant other (20%), one identified as being married (10%), and one identified as being divorced (10%).

Looking at use of alcohol in the past six months, three participants identified as never using (30%), one identified as using once or twice (10%), one identified as using monthly (10%), four identified as using weekly (40%), and one identified as using daily (10%). Eight participants identified as never using illicit drugs in the past six months (80%), one participant identified using illicit drugs once or twice (10%), and one participant identified using illicit drugs monthly (10%). Regarding non-medical use of prescription drugs in the past six months, eight participants reported never using these drugs (80%), one participant reported using weekly (10%), and one participant reported using daily (10%). One participant identified as having a mental health diagnosis (10%) and nine participants reported no diagnosis (90%). All 10 participants reported that they lived in an urban area (100%). Regarding employment status, one participant identified as being unemployed (10%), three identified as being employed part-time (30%), and six participants identified as being employed full-time (60%). Additionally, one participant identified their annual household income as less than $10,000 (10%), one identified their income as $10,000-$19,999 (10%), two identified their income as $20,000-$29,999 (20%), two identified their income as $30,000-$39,999 (20%), three identified their income as $40,000-$49,999 (30%), and one identified their income as $60,000-$69,999 (10%). Finally, one participant identified as having a high school diploma or GED (10%), three identified as having
an Associate’s degree (30%), four identified as having a Bachelor’s degree (40%), and two identified as having a Master’s degree (20%).

Based on the feedback received from the cognitive interviews, no items were removed from the PHS; however, there were small changes made to two of the items to make the item stems clearer. Following the cognitive interviews, the researcher invited a series of experts to further evaluate the PHS for content validity evidence. The reviewers included three experts in PH (one licensed clinical psychologist, one licensed mental health counselor/master addictions counselor, and one licensed professional counselor/certified sex addiction therapist), one research methodologist, and one literacy expert to evaluate the readability and grade level for the PHS. The PH experts were asked to answer items relating to construct underrepresentation, construct irrelevant variance, and fairness of items across different populations. Feedback provided from the experts included revisions to item stems, elimination of items that over-represented certain areas of the PH construct, and the addition of items that were not represented in the initial item pool. Additionally, the PHS was found to have a Flesch-Kincaid grade level of 9.2 and a Flesch reading ease value of 49.

Procedure

The researcher conducted study procedures in accordance with the institutional review board (IRB) at the University of Florida. The researcher obtained consent from each participant prior to administering the assessments, with no identifying information being collected, to keep responses anonymous. After consenting to participate in the study, participants were directed to fill out the PHS and a demographics questionnaire. Data for this study was collected using Amazon Mechanical Turk (MTurk) software. MTurk is an Internet based, crowdsourcing software that requires human intelligence to complete a variety of human intelligence tasks (HITs; Kim & Hodgins, 2017). Multiple studies have assessed the quality of data received from
using MTurk software, citing that the data was good quality (Buhrmester, Kwang, & Gosling, 2011; Kim & Hodgins, 2017). The development sample was stratified based on gender and was stratified to be consistent with the gender demographic within the US population. The current breakdown of gender in the US is 49% male and 51% female (U.S. Census Bureau, 2017). It is noteworthy to mention that the census survey only focuses on the traditional male/female binary and does not take into consideration gender identity’s that fall out of this binary, which could affect the final outcome of the development samples composition. To account for the absence of these populations on the census, the current researcher used the estimate of 0.3% to 0.5% adults in the U.S. identifying as transgender (Conron, Scott, Stowell, & Landers, 2012; Reisner et al., 2014), as the target for the development sample. This researcher chose to stratify the sample based on gender because of the lack of representation of gender minorities (i.e., female, transgender) in the majority of PH research and pre-existing measures (Brewer & Tidy, 2017; Briggs, Gough, & das Nair, 2017; Efrati & Gola, 2018).

Participants

The development sample consisted of 357 adults within the US, meeting the minimum requirement of 10 participants per item for instrument development (Tinsley & Tinsley, 1987). Within this sample, 176 identified as male (49.3%), 177 identified as female (49.6%), two identified as transgender (0.6%), and two identified as a gender not listed (0.5%). Two hundred and seventy-five participants identified as White (77.0%), 32 identified as Black (9.0%), 18 identified as Latino (5.0%), 20 identified as Asian or Pacific Islander (5.6%), four identified as Native American (1.1%), and eight identified as other (2.2%). Participant’s ages ranged from 18 to 77 years ($M= 38.50; SD=12.368$), with five participants leaving this item blank. Among the participants, 121 identified as Christian (33.9%), 47 identified as Catholic (13.2%), 11 identified as Jewish (3.1%), 13 identified as Protestant (3.6%), 147 identified as no religion (41.2%), and
18 identified as another religion not listed (5.0%). In regards to sexual orientation, 290 participants self-identified as heterosexual (81.2%), six self-identified as lesbian (1.7%), 11 self-identified as gay (3.1%), 41 self-identified as bisexual (11.5%), and nine identified as another sexual orientation not listed (2.5%). One hundred and four identified their relationship status as single (29.1%), 69 identified as having a significant other (19.3%), 156 identified as being married (43.7%), 26 identified as being divorced (7.3%), and two identified as being widowed (0.6%).

Regarding alcohol use in the past six months, 78 participants reported never using alcohol (21.8%), 102 reported using alcohol once or twice (28.6%), 68 reported using alcohol monthly (19.0%), 88 reported using alcohol weekly (24.6%), and 21 reported using alcohol daily (5.9%).

Regarding illegal drug use in the past six months, 263 participants reported never using drugs (73.7%), 42 reported using drugs once or twice (11.8%), 16 reported using drugs monthly (4.5%), 18 reported using drugs weekly (5.0%), and 18 reported using drugs daily (5.0%).

Regarding use of prescription drugs for non-medical purposes in the past six months, 307 participants reported never using prescription drugs (86.0%), 23 reported using prescription drugs once or twice (6.4%), 16 reported using prescription drugs monthly (4.5%), three reported using prescription drugs weekly (0.8%), and eight reported using prescription drugs daily (2.2%).

Two hundred and sixty-three participants reported an absence of a mental health diagnosis (73.7%), whereas 94 participants (26.3%) reported having a mental health diagnosis, which is slightly higher than the 18.3% of US adults who experience mental illness any given year (Any Mental Illness [AMI], 2016).

Regarding geographic location, 107 participants identified that they lived in an urban area (30.0%), 87 participants reported living in a rural area (24.4%), and 163 reported living in a
suburban area (45.7%). Forty-three participants reported their employment status as not employed (12.0%), 53 identified as being self-employed (14.8%), 37 identified as being a part-time employee (10.4%), 199 identified as being a full-time employee (55.7%), and 25 identified as being retired (7.0%). Additionally, 19 participants identified their annual household income as less than $10,000 (5.3%), 25 identified their income as $10,000-$19,999 (7.0%), 61 identified their income as $20,000-$29,999 (17.1%), 46 identified their income as $30,000-$39,999 (12.9%), 42 identified their income as $40,000-$49,999 (11.8%), 40 identified their income as $50,000-$59,999 (11.2%), 22 identified their income as $60,000-$69,999 (6.2%), 33 identified their income as $70,000-$79,999 (9.2%), 14 identified their income as $80,000-$89,999 (3.9%), 11 identified their income as $90,000-$99,999 (3.1%), and 44 identified their income as $100,000+ (12.3%). Finally, 76 participants identified as having a high school diploma or GED (21.3%), 23 participants identified as having a vocational degree (6.4%), 54 identified as having an Associate’s degree (15.1%), 138 identified as having a Bachelor’s degree (38.7%), 55 identified as having a Master’s degree (15.4%), eight identified as having a Doctoral degree (2.2%), and three identified as having no degree (0.8%).

Instruments

**PHS.** The PHS is a 34-item, unidimensional rating scale (see Table 2-1) that was designed to assess for PH. The PHS has respondents select the frequency with which they engage in the behavior described in each item, using a 6-point Likert-type scale, with total scores being calculated by summing across all items.

**Demographics Questionnaire.** To address the gap in the literature regarding PH across different demographics, variables collected included age, gender identity, race, religious affiliation, sexual orientation, relationship status, socioeconomic status (SES), educational level, US geographical area, substance use behaviors, and mental health diagnosis.
Data Analysis

Dimensionality. The researcher used Mplus 8.0 (Muthén & Muthén, 2017) software to analyze the proposed unidimensional factor model of the PHS using a weighted least squares with adjusted means and variances (WLSMV) CFA on the 34-items from the PHS. To evaluate the goodness of fit for the unidimensional model, the chi-square statistic ($\chi^2$), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and root mean square error of approximation (RMSEA) were reviewed. The $\chi^2$ statistic tests the hypothesized unidimensional factor model of the PHS against the null model (i.e. the items on the PHS are completely unrelated; Cokley, 2015). Estimates of CFI and TLI with values ranging from 0.90 to 0.95 are considered acceptable model fit and values >0.95 are indicative of good model fit (Hu & Bentler, 1999). For RMSEA, values $\leq 0.05$ indicates good model fit (Kenny, 2012). The remaining analyses discussed in this section were conducted using R version 3.4.1 (R Development Core Team, 2017), R package eRm (Mair, Hatzinger, Maier, & Rusch, 2018), and the Statistical Package for the Social Sciences (SPSS) version 24.0.

Descriptive Statistics. The researcher calculated item means, variances, discriminations, and difficulties to determine the response characteristics of each item based on the overall sample. Additional descriptive analyses included score distributions.

Rasch Model. The partial credit model (PCM; Masters, 1982) was selected to analyze the PHS using the extended Rasch modeling (eRm; Mair et al., 2018) package in R. The PCM is a unidimensional model used to analyze data where responses are in two or more ordered categories (Masters & Wright, 1997). The researcher conducted the following analyses under the PCM: item and person fit, person reliability, person separability, and test information. Item fit analyses look at the pattern of responses for an item and determine if they match the theorized response pattern and person fit analyses look at an individual’s response patterns and compares it
to the model. To interpret these analyses, outfit and infit statistics are reviewed, with a general guideline being that these statistics should fall between the range of $0.5 \leq x \leq 1.5$. Person reliability refers to the ability of a sample to have consistency in person ordering when given a parallel set of items (Wright & Masters, 1982), with acceptable values being $>0.7$ (Duncan, Bode, Min Lai, Pereera, 2003). Person separability refers to the number of groups that persons taking the assessment can be placed into, with a general guideline of $>2$ an acceptable value for this analysis. Linnacre’s (2002) guidelines were used as benchmarks for interpreting and making decisions regarding the results of these analyses, which were used to provide evidence on how each of the items was operating on the PHS. These guidelines were developed to optimize the effectiveness of response categories for each item on a rating scale and provides suggestions such as the minimum number of responses for each category, behaviors of average latent trait scores across response categories, and step difficulties should advance within each item.

**Reliability Analysis.** Reliability analyses were conducted using the Cronbach’s alpha (Cronbach, 1951) and omega (McDonald, 1999) coefficients of internal consistency.

**Results**

Prior to data analysis, the data was reviewed for the presence of missing cases, of which none were found among the 357 participants in the development sample. Additionally, the researcher removed items 32, 33, and 34 because upon further reflections these items were measuring substance use behaviors and not PH behaviors. Next, the assumption of multivariate normality was tested using item skew ($<3.00$) and kurtosis ($<10.00$) statistics, with two items not meeting the acceptable skew value (item 9 and item 31) and four items not meeting the kurtosis guideline (item 9, item 25, item 28, and item 31). Based on these results the assumption of multivariate normality has been violated and statistical procedures were used to account for the non-normal distribution of data.
Dimensionality

An initial CFA was used to determine the goodness of fit for the hypothesized unidimensional PHS. Results from this CFA did not support the unidimensional factor structure: \( \chi^2 (434, N = 357) = 4460.330, p < 0.001; \) RMSEA = 0.16; TLI = 0.74; CFI = 0.75. These results lead the researcher to run MPLUS modification indices in an attempt to improve the fit of the unidimensional model, with only theoretically justified modifications made to the model. These attempts were unsuccessful, and the first hypothesis was rejected, which stated that there was a unidimensional structure to the PHS. To proceed with establishing the dimensionality of the PHS, the researcher created a multidimensional scale using the correlation matrix provided by the unidimensional CFA, with items four and six being removed because they did not correlate with any of the subscales. This process resulted in a 3-factor model. Results from the CFA for the 3-factor model resulted in better fit than the unidimensional model for all fit indices: \( \chi^2 (374, N = 357) = 1727.331, p < 0.001; \) RMSEA = 0.10; TLI = 0.90; CFI = 0.91. Due to the original model not fitting the hypothesized unidimensional structure and the quality of fit found for the multidimensional model, the multidimensional model should be tested on a new sample. Factor loadings are listed in Table 2-2 and the final 3-factor structure of the PHS is presented in Figure 2-1. The three factors for the PHS were labeled (1) sexual behaviors, (2) coping, and (3) consequences to reflect the different elements that define PH.

Descriptive Statistics

The mean values for each item on the PHS ranged from 1.20 to 3.03 and item variances ranged from 0.44 to 2.14. The lower item means are a result of the participants choosing lower response options (i.e. never, rarely, sometimes) when responding to the items, which was expected by the researcher due to the nonclinical nature of the development sample. Since the prevalence of PH in the general population is estimated to range from 3% to 6% (Freimuth et al.,
2008; Kaplan & Krueger, 2001), it would be expected that the presence of individuals experiencing PH would be limited in the development sample, thus keeping the item means on the lower end of the response continuum. Additionally, there appears to be a wider range of variability in responses for the items than was expected, however, this could be explained by the presence of some participants who are higher on the PH continuum than a majority of the participants in the development sample.

Interpretation of item difficulty in rating scale design refers to the level of ease in which participants can endorse each item. Also, in classical test theory (CTT) the item mean serves as the value for the item difficulty parameter. Regarding the PHS, the easiest item, or the item to which respondents were most likely to choose, on average, a higher response category, was item two. The item that was the most difficult, or the item where respondents were more likely, on average, to choose a lower response category was item nine. Within this development sample, the item difficulties should be on the lower end because it should be harder for a nonclinical sample to endorse the items on the PHS. The calculated item difficulty parameters support this assumption as a majority of the items on the PHS have a lower item difficulty value, which was expected by the researcher. Item discrimination parameters refer to the correlation between an items response and the total score on the assessment after removing said item, with values greater than 0.4 considered high for item discrimination (Ebel, 1954). For the PHS, the item discrimination values are acceptable for the intended uses of the instrument, with values ranging from 0.353 to 0.778. A summary of the descriptive statistics for the 29 items on PHS is presented in Table 2-3. Finally, total scores on the PHS ranged from 27 to 133 ($M = 48.90$, $SD = 18.656$), with scores lower than 29 representative of those participants who chose “decline not to answer” on one or more items. These results are consistent with what the researcher expected, which was
that participant scores would be on the lower end of the potential range of scores due to the nonclinical nature of the sample used in this study.

Rasch Analyses

The PCM was selected to conduct the Rasch analyses. Due to the assumption of unidimensionality in Rasch modeling, the researcher ran each of the subscales independently of each other to make sure this assumption has been met. What follows are the results of the Rasch analyses for each of the PHS subscales, with the items in each factor presented in table 2.1.

Sexual Behaviors. Item infit statistics ranged from 0.487 to 1.096, with item seven not falling within the recommended range of values for this analysis, and outfit statistics ranged from 0.281 to 1.092, with multiple items not meeting the recommended range. This does not create a major issue for these items, as the infit statistic should be weighted more than outfit due to infit not being influenced by outliers. The person outfit values appear to meet to Linacre’s guidelines (outfit mean squares below 2.0) because the majority of person outfit values are below 2. Since this guideline has been met, we can be confident that the amount of error present does not compromise the accuracy of the measurement and the ability to separate persons into at least two separate groups, which is acceptable for the present rating scale given its purpose. Regarding person reliability for this subscale, the calculated value was 0.78 and person separability was found to be 3.47, both of which meet the recommended guidelines for these analyses. Finally, the maximum information for this subscale is achieved at one standard deviation above the sample mean. This was expected because even though a nonclinical sample was used, there were multiple participants who scored higher on the latent trait than a majority of the sample.

Coping. Item infit statistics ranged from 0.575 to 1.922 and outfit statistics ranged from 0.555 to 2.356, with item 13 not meeting the recommended range for both statistics. The majority of person outfit values appear to be below 2, which meets the recommended guidelines
for this analysis. Regarding person reliability for this subscale, the calculated value was 0.92 and person separability was found to be 12.40. Finally, the maximum information for this subscale is achieved at the sample mean.

**Consequences.** Item infit statistics ranged from 0.529 to 1.555, with one item falling slightly out of the recommended range of values for this analysis and outfit statistics ranged from 0.465 to 1.558, with two items not meeting the recommended range. The person outfit values appear to meet to Linacre’s guidelines (outfit mean squares below 2.0) because the majority of person outfit values are below 2. Regarding person reliability for this subscale, the calculated value was 0.85 and person separability was found to be 5.54, both of which meet the recommended guidelines for these analyses. Finally, the maximum information for this subscale is achieved at roughly 0.5 standard deviations above the sample mean.

**Reliability Analysis**

Evidence supporting hypothesis two, which stated that the Cronbach’s alpha values for the development sample would be above 0.80, was found during the internal consistency analysis for the PHS and each of its subscales. The PHS demonstrated good internal consistency, with the Cronbach’s alpha value for the entire scale being 0.946, the sexual behaviors subscale was calculated to be 0.842, the coping subscale was 0.916, and the consequences subscale was 0.933. Regarding the omega coefficient of reliability, there was sufficient evidence to support hypothesis three, which stated that the omega coefficient of reliability values for the development sample would be above 0.80. The sexual behaviors subscale had a calculated coefficient value of 0.893, the coping subscale had a value of 0.937, and the consequences subscale had a value of 0.947.
Discussion

The use of the ECD framework and Rasch analyses to gather psychometric evidence at the item level sets the PHS apart from other measures of PH. These tools ensured that the PHS was built on a strong theoretical and methodological foundation. Evidence for the construct validity of the PHS in a sample of adults was demonstrated through CFA. Although an initial unidimensional model was hypothesized, this model proved to not be a good fit for this sample. After additional analyses, the final structure of the 29-item PHS had three factors. The final version of the PHS had 29-items once items 4, 6, and 32-34 were removed. The current researcher suspected that items 32-34 measured substance use behaviors and not sexual behaviors, and items four and six were removed because they were not correlated with the subscales of the final factor structure. Additionally, the three factors ([1] sexual behaviors, [2] coping, and [3] consequences) are representative of the major tenants of the PH diagnostic criteria. Another change to the PHS pertains to the scoring process with the new multidimensional structure. The total score is calculated by summing across the three subscale scores, which are calculated by summing across all items within each subscale. The remainder of this discussion focuses on the applicability of the PHS to the counseling profession and the limitations and areas of future research regarding the PHS.

Implications for Counselors and Counselor Educators

It is imperative that counselor educators and counselors in practice are aware of the development sample and psychometric properties of the clinical assessments they use in conducting research and assessing client’s presenting concerns (Oberheim et al., 2017). Regarding the use of the PHS in clinical practice, counselors can use the current form of the PHS as a screening instrument to help identify clients who are at risk for PH. The PHS should not be used for clinical purposes other than screening because of the lack of empirically supported
cutoff scores that would allow counselor’s to diagnose PH. In interpreting the scores on the PHS, the higher the total score, the more at risk the client is for developing PH. In regards to the inferences drawn from scores on the PHS, higher scores on the sexual behaviors subscale demonstrate that the client experiences intense and recurring sexual fantasies and/or behaviors. Higher scores on the coping subscale means that the client engages in sexual behaviors as a means to cope with emotional states, daily stressors, and other affective experiences of the client. Finally, higher scores on the consequences subscale means that the client has experienced negative consequences because of their PH or have lost control over their sexual behaviors. Additionally, counselors can use the scores to help develop a treatment plan for their client. For example, if a client scored high on the coping subscale, the counselor can create a goal that aims at teaching the client healthy coping skills so that when the client is triggered by a negative emotional state, they will be able to use what they learned through the therapeutic process instead of turning to some form of sexual activity. The clinical utility of the PHS will continue to be developed through future research regarding this scale.

In addition to clinical applications, there are multiple research and teaching implications for counselor educators regarding the use of the PHS. The PHS was built on a strong theoretical and methodological foundation to ensure the information obtained from its use would further the literature regarding PH. Additionally, the PHS was developed with an awareness of biases that were present in existing measures of PH. This allowed the items on the PHS to be carefully crafted to increase the generalizability of the PHS to minority populations and to ensure that each item was interpreted the same across minority groups. These two important distinctions regarding the PHS will allow researchers to fill significant gaps in the PH literature and be confident in the inferences drawn from the results of future studies. Regarding the teaching side
of counselor education, the development procedures used in designing the PHS demonstrate the importance of teaching future counselor educators methods of using a strong, methodological framework in developing clinical assessments, in addition to a strong theoretical framework, which is essential to the validity of the instrument (Clark & Watson, 1995). This concept could be built into the curriculum of a counseling assessment or doctoral level counseling research course, so that practicing counselors and future counselor educators can be aware of the importance of how the methodology used to develop an instrument could influence the quality of the scale. For example, Oberheim et al. (2017) discussed the importance of teaching counselors about issues related to diversity and bias in counseling assessments. The methods of developing the PHS followed these guidelines for diversity inclusion and can be used as a teaching tool for assessment best practices. Finally, the importance of educating counselors and counselor educators on how to detect bias within assessments is critical to both the clinical assessment and research processes. This is especially important when referring to fairness in psychological testing, which is an important guiding principle discussed in the AERA standards for psychological testing (AERA, 2014).

**Limitations**

Limitations were present within this investigation, which is common in empirical studies. Regarding sampling, the sample used and methods for gathering participants warrants discussion. A nonclinical sample was used as the development sample for the PHS, thus counselors and counselor educators should use caution when attempting to generalize the results obtained from the PHS to a clinical population. Generalizability is also affected by the demographic composition of the development sample. Although the sample was diverse and consistent with the US population regarding binary gender, oversampling of racial, sexual, and gender minorities will make the results of using the PHS more generalizable to these
populations. Additionally, the sample was collected through Amazon MTurk, an online crowdsourcing program. Multiple studies have supported the claim that researchers can obtain quality data from using this forum; however, the sample is limited to those individuals with Internet and computer access, which could lead to inaccuracies in representation of the target population. Another limitation regarding sample is the size of the development sample used for the present study. Although the sample size exceeded the guideline of 10 observations per item (Tinsley & Tinsley, 1987) to complete an initial CFA, an additional sample is needed to complete a secondary CFA to reconfirm the 3-factor model of the PHS. Finally, there was a limitation regarding the instrumentation used in the present study. This study served as the initial investigation of the psychometric properties of the PHS and additional research is needed to support the clinical and research utility of this instrument.

**Recommendations for Future Research**

There are several recommendations for future research that have been established through this investigation. First, there is a need for psychometrics to be collected on using the PHS with racial, sexual, and gender minorities so that the counselor educators and counselors can be confident in the inferences they draw from this assessment with these populations. Although the sample was diverse, generalizability to these populations should be interpreted cautiously due to their low representativeness in the development sample. Additionally, future studies should look at using the PHS in a clinical sample of clients seeking addiction treatment, which would increase the utility of the PHS in clinical practice and research studies. Future research regarding the psychometric properties of the PHS should include analyses related to external criterion validity, to further validate the PHS as a measure of the PH construct. Another area of future research is the development of reliable cutoff scores, which could be used to increase the clinical and research utility of the PHS by allowing it to be used for diagnostic purposes during initial
screening. This investigation has created a foundation for multiple areas of future research regarding the PHS. In summary, the initial psychometric evidence gathered through this study illustrates the promise the PHS has regarding its uses in clinical and research settings. This instrument serves as stepping stone to the advancement of the assessment literature related to PH by providing counselor educators and practicing clinicians with a reliable method for assessing PH in the general population.
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<th>Item Number</th>
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<td>1</td>
<td>I feel distressed by how often I fantasize about sex.</td>
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<td>2</td>
<td>I view sexually explicit material.</td>
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<td>3</td>
<td>I use mobile phone apps to arrange sexual encounters.</td>
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<td>4</td>
<td>I use mobile phone apps to view sexually explicit material.</td>
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<td>5</td>
<td>I use online resources to arrange sexual encounters.</td>
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<td>6</td>
<td>I use online resources to view sexually explicit material.</td>
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<td>7</td>
<td>I seek out anonymous sex partners.</td>
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<td>8</td>
<td>I attend establishments (for example: strip club, bathhouse, massage parlor) to engage in sexual behaviors.</td>
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<td>I attend sex related establishments (for example: strip clubs, bathhouse, massage parlor) to distract myself from daily stress.</td>
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<td>I have attempted to reduce the frequency of my sexual behaviors.</td>
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<td>I have experienced negative consequences as a result of my sexual behaviors.</td>
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<td>I have been unsuccessful in my attempts to reduce the frequency of my sexual behaviors.</td>
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<td>I am unable to control my sexual behaviors.</td>
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<td>My sexual behaviors control my life.</td>
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<td>I have caused harm to those involved in my sexual behaviors.</td>
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<td>I am under the influence of alcohol when I engage in sexual behaviors.</td>
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<td>I am under the influence of drugs when I engage in sexual behaviors.</td>
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Figure 3-1. Three factor structure of PHS
CHAPTER 4
CONCLUSION

The purpose of the study was to develop the Problematic Hypersexuality Scale (PHS), an instrument designed to assess for the concern of problematic hypersexuality (PH), and gather initial psychometric evidence for the intended uses and claims drawn from this scale. Previous assessments measuring PH have exhibited issues with scale and item development, weak psychometric properties, and bias-inducing items. Therefore, the present study sought to address these limitations of existing assessments of PH, through the use of evidence-entered design (ECD), guidelines established by measurement experts (e.g. Crocker & Algina, 1986; DeVellis, 2016), and standards for assessment with minority populations to reduce the presence of bias-inducing items. The study examined the psychometric properties of the PHS through the exploration of three research hypotheses. The findings offer a promising instrument for assessment within the addictions counseling field. Through this advancement in the literature regarding the assessment of PH, counselor educators and counselors in practice have a reliable method for assessing PH in the general population.
APPENDIX A
INSTRUMENTATION

Problematic Hypersexuality Scale

Below you will find a series of statements that describe various sexual thoughts, feelings, and behaviors. When responding, select the choice that best describes how frequently you have engaged in the behavior described. Please choose only one response per statement and be sure to answer each of the statements provided. For the purposes of this scale, the term sexual behavior is used to include both solo (for example: masturbation, viewing pornography) and relational (for example: sex with another person) sexual practices.

Response Format:
0 = Decline to Answer
1 = Never
2 = Rarely
3 = Sometimes
4 = Often
5 = Very Often

1. I feel distressed by how often I fantasize about sex.

2. I view sexually explicit material.

3. I use mobile phone apps to arrange sexual encounters.

4. I use mobile phone apps to view sexually explicit material.

5. I use online resources to arrange sexual encounters.

6. I use online resources to view sexually explicit material.

7. I seek out anonymous sex partners.

8. I attend establishments (for example: strip club, bathhouse, massage parlor) to engage in sexual behaviors.

9. I seek out escorts or sex workers or sexual massage workers to engage in sexual behaviors.

10. I turn sexual behaviors to deal with my emotions.

11. When I am feeling down, I use sexual behaviors in an attempt to make myself feel better.

12. I use sexual behaviors to meet my emotional needs.

13. I use my sexual behaviors to de-stress.
14. When I am overwhelmed, I use sexual behaviors to calm myself down.

15. I use sexual behaviors to deal with life-changing events.

16. I attend sex related establishments (for example: strip clubs, bathhouse, massage parlor) to distract myself from daily stress.

17. I have attempted to reduce the frequency of my sexual behaviors.

18. I have experienced negative consequences as a result of my sexual behaviors.

19. I have been unsuccessful in my attempts to reduce the frequency of my sexual behaviors.

20. I am unable to control my sexual behaviors.


22. I have caused harm to those involved in my sexual behaviors.

23. My sexual behaviors have put me in harms way.

24. I have done illegal things to fulfill my sexual fantasies.

25. I have experienced legal problems as a result of my sexual behaviors.

26. My thoughts about sex distract me from completing daily tasks.

27. My sexual behaviors have caused problems in important areas of my life.

28. My sexual behaviors have caused problems with my job.

29. My sexual behaviors have caused problems in the relationships that I have.

30. I spend money on my sexual behaviors.

31. I have experienced financial problems as a result of my sexual behaviors.

32. I am under the influence of alcohol when I engage in sexual behaviors.

33. I am under the influence of drugs when I engage in sexual behaviors.

34. I am under the influence of non-prescribed medications when I engage in sexual behaviors.
Demographics Questionnaire

1. Which of the following best describes your gender?
   - Male
   - Female
   - Transgender
   - Other: _______________ (please specify)

2. Which of the following best describes your race?
   - White
   - Black
   - Latino
   - Asian or Pacific Islander
   - Native American
   - Other: ____________________ (please specify)

3. What is your current age? ___________

4. Which of the following best describes your religious affiliation?
   - Christian
   - Catholic
   - Jewish
   - Protestant
   - None
   - Other: _______________ (please specify)

5. Which of the following best describes your sexual orientation?
   - Heterosexual
   - Lesbian
   - Gay
   - Bisexual
   - Unsure
   - Other: _______________ (please specify)

6. Which of the following best describes your relationship status?
   - Single
   - Significant Other
   - Married
   - Divorced
   - Widowed
7. Which of the following best describes your use of alcohol in the past six (6) months?

☐ Never
☐ Once or Twice
☐ Monthly
☐ Weekly
☐ Daily or Almost Daily

8. Which of the following best describes your use of illegal drugs in the past six (6) months?

☐ Never
☐ Once or Twice
☐ Monthly
☐ Weekly
☐ Daily or Almost Daily

9. Which of the following best describes your use of prescription drugs (for non-medical reasons) in the past six (6) months?

☐ Never
☐ Once or Twice
☐ Monthly
☐ Weekly
☐ Daily or Almost Daily

10. Do you have a mental health diagnosis?

☐ Yes
☐ No

11. Which of the following best describes the area in which you live?

☐ Urban
☐ Rural
☐ Suburban

12. Which of the following best describes your employment status?

☐ Not Employed
☐ Self-Employed
☐ Part-Time Employee (less than 40 hours per week)
☐ Full-Time Employee (40+ hours per week)
☐ Retired
13. Which of the following best describes your annual household income?

- Less than $10,000
- $10,000 to $19,999
- $20,000 to $29,999
- $30,000 to $39,999
- $40,000 to $49,999
- $50,000 to $59,999
- $60,000 to $69,999
- $70,000 to $79,999
- $80,000 to $89,999
- $90,000 to $99,999
- $100,000+

14. Which of the following best describes your highest level of education?

- High School Diploma or GED
- Vocational School
- Associate’s Degree
- Bachelor’s Degree
- Master’s Degree
- Doctoral Degree
- No Degree
Brief Response Process Questionnaire

1. Were the directions clear and easy to understand?

2. Were there any items that were difficult to understand? If so, which items?

3. Would you feel comfortable answering the items honestly? If not, what items would you not feel comfortable answering honestly?

4. Were there any items that you would have difficulty responding to? If so, which items?

5. Do you feel any of the items were unfair to you? If so, which items?
6. Other comments regarding your experience with reviewing the Problematic Hypersexuality Scale:
Expert Review Panel Questionnaire

Definition of Terms:

Problematic Hypersexuality (PH) – “repetitive and intense preoccupation with sexual fantasies, urges, and behaviors, leading to adverse consequences and clinically significant distress or impairment in social, occupational, or other important areas of functioning” (Reid, Garos, & Carpenter, 2011, p. 30)

Problematic Hypersexuality Scale (PHS) - The PHS is intended for clinicians to detect concerns related to PH in their clients and for researchers to further the literature regarding PH, specifically in the areas of establishing prevalence rates and ability to use with diverse populations, which is a limitation of the existing instruments.

Questions:

1. Are there any items that should have been included on the Problematic Hypersexuality Scale (PHS)? (Construct Underrepresentation)

2. Are aspects of problematic hypersexuality over-represented on the Problematic Hypersexuality Scale? Are there aspects that are under-represented?

3. If you could write an item for the Problematic Hypersexuality Scale, what would it be?
4. Do you expect any items on the PHS to be interpreted differently across different groups of respondents or to be unfair or biasing toward any groups of respondents? (Fairness/Invariance)

5. Are there any additional comments that you have regarding the Problematic Hypersexuality Scale?
DATE: 2/16/2018
TO: Steven Oberheim

PO Box 117046
Gainesville, Florida 32611-7046

FROM Ira Fischler, Ph.D., Professor Emeritus
Chair IRB-02

IRB#: IRB201800103
TITLE: Content Development and Initial Psychometric Analysis of the Problematic Hypersexuality Scale (PHS)

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You have received IRB approval to conduct the above-listed research project. Approval of this project was granted on 2/16/2018 by IRB-02. This study is approved as expedited because it poses minimal risk and is approved under the following expedited category/categories:
7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behaviors) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation or quality assurance methodologies. Note: Some research in this category may be exempt from the regulations for the protection of human subjects as noted in 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.

Approval Includes, but is not limited to:

* Dated and watermarked IRB-approved Informed Consent Form(s)

Consent Waiver Type(s):

**Waiver of Documentation of Informed Consent**

The researcher will still inform the potential subject about the research and seek to obtain consent, sometimes by including an IRB approved written statement that includes the mandatory elements of consent. However, consent of the subject is not documented by having the subject sign an Informed Consent form.

Principal Investigator Responsibilities:

The PI is responsible for the conduct of the study. Please review these responsibilities described at:
http://irb.ufl.edu/irb01/researcher-information/researcherresponsibilities.html

Important responsibilities described at the above link include:

- Using currently approved consent form to enroll subjects (if applicable)
- Renewing your study before expiration
- Obtaining approval for revisions before implementation
- Reporting Adverse Events
- Retention of Research Records
- Obtaining approval to conduct research at the VA
- Notifying other parties about this project’s approval status

If you have not completed the study prior the expiration date, please telephone our office (392-0433) and we will discuss the renewal process with you. **Additionally, should you complete the study on or before the expiration date, please complete and submit the closure report.**

Study Team:
Mary DePue Other

The Foundation for The Gator Nation
An Equal Opportunity Institution

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BIOGRAPHICAL SKETCH

Steven Tyler Oberheim was born in Port Charlotte, Florida. His parents are Steve and Diann Oberheim. Steven has a younger sister, Carly Oberheim, and niece, RaeLynn Oberheim. Steven graduated from Port Charlotte High School in 2008 and attended Florida Gulf Coast University in Fort Myers, FL, where he completed his Bachelor of Arts degree in psychology and graduated cum laude in 2012.

Steven continued his education at Florida Gulf Coast University, where he completed his Master of Arts degree in Clinical Mental Health Counseling in 2015. Wanting to further his education, he decided to pursue a PhD in Counseling and Counselor Education at the University of Florida starting in the fall 2015 semester. His graduate studies at the University of Florida were supported by an Alumni Fellowship, which was awarded by the College of Education. During his time at University of Florida, Steven was able to develop a research agenda and first authored two published manuscripts. Furthermore, he was able to complete a doctoral internship at PACE Center for Girls and continue to work on his licensure requirements at PACE during his time in the doctoral program.