

Psychosexual Well-being in Adults

With and Without Autism Spectrum Disorder

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### **Abstract**

This study explored intrapersonal factors vital to healthy sexuality development through the proposed Psychosexual Well-Being model. Psychosexual Well-Being is a working model aimed at exploring how an individual's intrapersonal relationship influences their sexual well-being. It is comprised of sexual self-concept, sexual knowledge, and sexual feelings and attitudes. Using the presented model, researchers compared groups of individuals with Autism Spectrum Disorder (ASD) and neurotypical (NT) individuals, to explore how sexuality and sexual identity in autistic individuals may differ from the neurotypical population. This study consisted of 108 participants: 54 ASD and 54 NT, who completed anonymous online surveys. When comparing scores by group, NT individuals scored significantly higher on overall Psychosexual Well-Being, as well as on sexual self-concept than ASD individuals. There was also a slightly significant positive association between sexual knowledge and sexual self-concept in the NT group, whereas no significant relationship between these two variables was found in the ASD population. These findings point to the need for greater exploration of sexuality development in the ASD population.

*Keywords:* sexuality, sexual well-being, psychosexual well-being, neurotypical, autism spectrum disorder

**Table of Contents**

Abstract.....	ii
Introduction.....	1
<i>Sexuality in the Neurotypical Population</i> .....	2
<i>Proposed Psychosexual Well-Being Model</i> .....	7
<i>Sexuality and Autism Spectrum Disorder</i> .....	10
Current Study .....	15
<i>Research Questions</i> .....	15
<i>Hypotheses</i> .....	16
Methods .....	16
Results.....	21
Discussion.....	23
References.....	30
Tables.....	34
Appendices.....	39

### **Psychosexual Well-Being in Adults With and Without Autism Spectrum Disorder**

Sexuality and sexual expression are vital components of overall happiness and well-being (World Health Organization, 2019). However, individuals with Autism Spectrum Disorder (ASD) are often neglected when it comes to their sexual needs. ASD is a developmental condition that impacts and creates challenges in social interactions, verbal and nonverbal communication, and can include repetitive or fixated behaviors and interests (American Psychiatric Association, 2018). The difficulties experienced with communication and social contexts can negatively impact autistic individuals' relationships well into adulthood, especially their romantic and sexual relationships (Byers et al., 2013; Pearlman-Avni et al., 2017).

It is a common misconception that autistic adolescents and adults lack any type of sexual desire or do not experience typical sexuality development. In reality, many autistic individuals are interested in having intimate and sexual relationships, but their experience and knowledge in this area is typically very limited (Stokes & Kaur, 2005; Turner et al., 2017). This population faces societal barriers in expressing their sexuality and sexual desires due to their diagnosis (Byer et al., 2013; Koller, 2000; Pearlman-Avni et al., 2017). Historically, parents, caregivers, researchers and society as a whole have viewed autistic individuals as "asexual," in need of protection, or perpetually childlike, due to their socio-emotional and communication delays (Brown, 2018; Henault, 2006; Stokes & Kaur, 2005).

The lack of tailored sexual knowledge, coinciding with the social difficulties experienced by autistic individuals results in fewer meaningful, lasting relationships, and low self-esteem when compared to the neurotypical (NT) population (Koller, 2000). Just like their NT peers, autistic individuals' sexuality is critical to their development of positive self-esteem (Henault, 2006). Yet, the widely believed stereotypes associated with ASD have resulted in the

suppression of this population's sexuality, sexual expression, and access to sexual education. All of these factors contribute to perpetuating the stereotype that an ASD diagnosis means a lack of sexual interest. Given an autistic individual's lack of access to sexual knowledge specific to their needs and diagnosis, it is possible that they form unhealthy opinions or beliefs about sexuality that negatively affect their self-esteem and interactions with others (Henault, 2009; Koller, 2000). The lack of access to sexual health information is detrimental because low self-esteem and unsatisfactory interpersonal relationships can lead to a more negative sexual self-concept, poor sexual well-being, and an overall lowered quality of life for both ASD and NT individuals (Parchomiuk, 2019; Pearlman-Avnion, 2017).

Sexuality is an important aspect of healthy development and adult adjustment for all human beings throughout their lives and coincides with the ability to develop positive sexual well-being (WHO, 2019). Sexual well-being has consistently been linked to healthy outcomes in individual and interpersonal relationships, and it is one of the strongest predictors of overall psychological well-being and quality of life (Byers & Rehman, 2014). Promoting sexual well-being for all populations, including autistic individuals, is vital to ensuring healthy development. Though autistic individuals express the same interests and sexual needs as the general population, they display these desires differently and require augmented knowledge to meet these interests and needs (Henault, 2006).

### **Sexuality in the Neurotypical Population**

The World Health Organization (2019) defines sexual health as a "state of physical, emotional, mental, and social well-being related to sexuality." This definition speaks to the multidimensionality of sexual health and the importance of considering all of these factors when assessing for healthy sexuality development and sexual well-being. The field of sex and sexuality

research has developed in recent years to adopt a more positive framework towards sexual expression and sexual development throughout the lifespan (Anderson et al., 2013). Research has moved away from solely assessing how to prevent risk behaviors in the NT population and moved towards a more holistic understanding that acknowledges sexuality as a life-long experience (Anderson et al., 2013; DeLamater & Friedrich, 2002; Fortenberry, 2014; Mastro & Zimmer-Gembeck, 2015).

Current research has taken on a more progressive view towards sexuality than in the past, however there is still a lack of studies that use a positive framework to explore the field of sexuality development (Fortenberry, 2014; Mastro & Zimmer-Gembeck, 2014). Existing research tends to focus on maladaptive sexual behaviors and outcomes, overlooking the fact that sexuality is a fundamental part of being human and a vital part of individual identity and development (Tolman & McClelland, 2011). With such a high concentration of studies evaluating sexual risk behaviors in adolescence, research has neglected to provide a positive, proactive framework that illustrates healthy sexuality development throughout the lifespan (Hensel et al., 2011; Rostosky et al, 2008). Understanding how to foster healthy sexuality development beginning in adolescence, would positively impact sexual health outcomes into adulthood.

Adolescence is a critical period for sexual learning and sexual development (Fortenberry, 2014). The emergence of sexual desires and behavior during this stage of life are normative and necessary developmental milestones that lead to positive sexual health (Tolman & McClelland, 2014). These milestones are associated with a range of individual attitudes, beliefs, and social experiences, all influenced by multiple contexts: family, peers, and the community (Fortenberry, 2014). Healthy development of sexuality and sexual expression are shaped by complex social

interactions in these various contexts. To successfully navigate the socio-emotional aspects of sexuality development, it is crucial to have a sense of self and strong intrapersonal understanding of oneself as a sexual being (DeLamater & Friedrich, 2002). An inability to achieve this social-emotional stage of sexuality development can negatively impact sexual well-being into adulthood. We need a better understanding of how to successfully navigate sexuality development throughout the lifespan, which is why a working model evaluating the foundation of sexual well-being is necessary.

### **Sexual Well-Being and the Neurotypical Population**

Sexuality begins with the self and extends to our relationships with others (Brown, 2018). The way that an individual feels about themselves as a sexual being, how they feel about their body, sexual identity and what they know, will influence the way that they navigate sexual and romantic relationships (Brown, 2018). Therefore, to understand how an individual engages in sexual interpersonal relationships, it is important to understand their intrapersonal relationship and the state of their sexual well-being.

Researchers are now beginning to realize that sexual behavior and expression are not the only components that comprise sexual health or sexual well-being in NT individuals. Rather, it is crucial to study sexuality as a complex system of interpersonal and intrapersonal factors (Harden, 2014). Past research places a heavy emphasis on the behavioral manifestations of sexual well-being (e.g., masturbation, frequency of sexual acts, partnered sexual intercourse), while severely neglecting the intrapersonal relationship (the relationship that an individual has with themselves) that the individual must first develop. Sexuality development is a lifelong and multifaceted process, yet existing research measures sexual well-being predominantly by physical behavior (Turner et al., 2017). Sexual well-being should be fostered whether or not an individual is having

sex. Research corroborates the need for intrapersonal development, with sexual self-concept and social experience being the most relevant indicators in understanding sexual well-being in late adolescence and early adulthood (Mastro and Zimmer-Gembeck, 2014). Further studies have shown a positive correlation between lower levels of sexual satisfaction and negative self-concept, as well as a link between sexual satisfaction and sexual well-being (Antičević et al., 2017; Byers & Rehman, 2014). These findings clearly illustrate that sexual self-esteem self-concept are significant components of fostering positive sexual well-being.

### **Sexual Self-Concept in the Neurotypical Population**

Sexual self-concept is a construct that encompasses individuals' self-esteem, perceptions and feelings about themselves as a sexual beings (Rostosky et al., 2008); it is about the internalized relationship an individual has in regard to their sexual identity. Sexual self-concept is a very important construct, because although self-concept is an intrapersonal relationship with the self, it is expressed outwardly in interpersonal relationships. In order to more accurately predict future outcomes and behaviors, it is crucial to understand how an individual thinks about themselves as a sexual being first. Understanding how they form that identity from their internalized beliefs and attitudes will ultimately define how an individual interprets sexual knowledge and expresses their sexuality (Tolman & McClelland, 2011).

Past research has explored the relationship between sexual self-concept and sexual self-esteem as an indicator for behavioral outcomes, but there has been little focus on an introspective understanding of the formation of self-concept (Tolman & McClelland, 2011). Rostosky et al. (2008) examined sexual self-concept and sexual behavior in adolescence, finding higher levels of self-esteem correlated with higher levels of autonomy, sexual assertiveness, comfort and openness, as well as a greater capacity for sexual satisfaction. Again, sexual self-concept was



instrumental in understanding future sexual behaviors and experiences, but little was uncovered about the development of the intrapersonal relationship between the individual and their sexual self-concept. Given that sexuality begins with the self, it is fundamental to understand what contributing factors influence the development of sexual self-concept.

### **Sexual Knowledge and the Neurotypical Population**

Sexual knowledge is one influence known to directly correlate with sexual self-concept. The acquisition of sexual knowledge, beginning in adolescence, comes from a myriad of sources. The role of peers takes on a much larger role than ever before when it comes to conveying sexual norms, attitudes, and behaviors (Tolman & McClelland, 2011). Establishing independence is considered a normative process in adolescent development, in which parents and the familial context begin to hold less weight (than peers), especially in the transmission of sexual knowledge. Regardless of the source, gaining correct and informative sexual information is an influential factor to sexual well-being, especially during adolescence. Past research found a positive correlation between knowledge of one's own sexuality and the development of positive sexuality and sexual expression (Anderson, 2013).

### **Sexual Feelings and Attitudes and the Neurotypical Population**

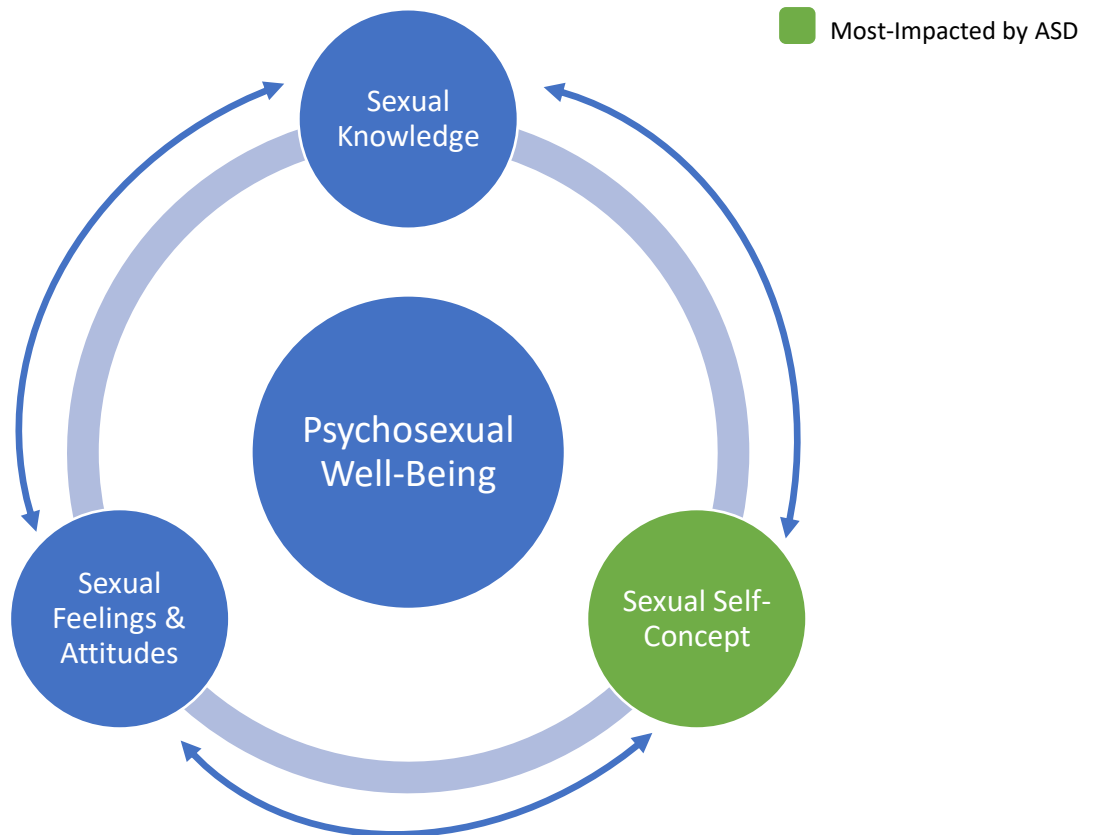
Overall, sexuality is an integral part of sexual identity and development. Understanding experiences of adolescents and adults in context when it comes to sexuality is crucial in moving forward with a positive approach toward sexuality development throughout the lifespan (Tolman & McClelland, 2011). Positive feelings and attitudes towards sexuality, including positive sexual self-concept and high sexual self-esteem, can impact and improve other mental, emotional, and physical health (Anderson, 2013). This finding confirms that a healthy sexual self-concept and positive sexual well-being, developed from having positive feelings towards sexuality, are vital

components of overall well-being. Sexual well-being is one of the strongest indicators of positive individual and dyadic relationship outcomes, as well as overall psychological well-being and quality of life (Byers & Rehman, 2014). These findings highlight the importance of understanding how to foster healthy sexuality development and sexual well-being to ensure that all individuals have access to a high quality of life.

### **Elements of Psychosexual Well-Being**

Sexual well-being is comprised of sexual knowledge, self-view, thoughts, feelings and attitudes, as well as sexual behavior and gratification (Byer et al., 2012; Mastro & Zimmer-Gembeck, 2015; Pearlman-Avni et al., 2017). Past research on sexual well-being has focused on physical and emotional aspects of sexuality. However, the measures used to assess sexual well-being have focused heavily on behavior and dyadic sexual interactions, rather than personal perceptions and self-views that are a crucial part of having a healthy and positive sexual identity (Byer et al., 2013). There is a need for a working model that incorporates the internal processes to inform our understanding of how sexual well-being develops, but what would this model look like? I propose that sexual self-concept, sexual knowledge, and sexual attitudes and feelings are the main components that determine Psychosexual Well-Being. I will use this model to understand how the intrapersonal relationship of autistic individuals compares to that of NT individuals. This will help in understanding where to implement interventions for promoting sexual well-being in the ASD population. A theoretically informed model is proposed in Figure 1.

Figure 1. Model of Psychosexual Well-Being



**Sexual self-concept.** Sexual self-concept is how an individual perceives and feels about themselves as a sexual being (Rostosky et al., 2008). It consists of sexual self-esteem and sexual self-perception. These internalized feelings are then expressed externally and interpersonally. Sexual self-concept is imperative for predicting Psychosexual Well-Being, because it sheds light on how a person thinks about themselves as a sexual being. Beginning at a young age, autistic individuals may be hindered by anxiety and difficulty in their social experiences, negatively impacting their self-esteem (Henault, 2006). People with ASD may experience negative social interactions frequently and what could feel like failures in their ability to connect with others. These experiences may contribute to feelings of isolation and depression, because the need for

intimacy is not being met. In turn these experiences may be internalized and could then negatively impact sexual self-esteem and sexual self-concept.

**Sexual knowledge.** Sexual knowledge encompasses the sexuality-related information individuals receive both formally and informally. Sexual education for autistic individuals is often severely lacking or completely non-existent (Henault, 2006). In school or social situations, sex and sexuality are often referred to in implicit ways, using slang terms and indirect references to sexual behaviors. The use of implicit over explicit terminology is problematic for autistic individuals because of the social deficits characteristic of the disorder. Autistic individuals generally understand explicit definitions and meanings more successfully than implicit ideas. Hannah and Stagg (2016) found that individuals with ASD have specific needs and requirements when it comes to sex education that are unique and separate from the NT population. Given that individuals with ASD often receive sexual education with NT peers, their findings suggest that sexual knowledge is not being conveyed in a manner that is helpful or specific to the autistic population (Hannah & Stagg, 2016; Mogavero, 2019). The lack of augmented sexual knowledge for the ASD population is detrimental because appropriate sexual education is critical to the development of an individual's positive self-esteem and self-view, which can help in the development of a healthy self-concept and overcome feelings of depression and isolation for the autistic individual (Koller, 2000).

**Sexual feelings and attitudes.** The way that a person feels about sexuality and sexual expression is an influencing factor in their Psychosexual Well-Being. The way that one feels about a topic will impact the way that they obtain and internalize knowledge and in turn, that knowledge has the capacity to dictate a person's attitudes and feelings about themselves and others. Feelings and attitudes are crucial aspects of determining Psychosexual Well-Being

because internal tendencies, feelings, and views have a much greater impact on the development of an individual's image of their body, sense of self, gender identity, and needs and desires than social factors (Parchomiuk, 2019). Studies have shown that individuals with ASD have less sexual knowledge than typically developing peers and acquire less information from social sources and more information from the internet and television (Mogavero, 2019). The way that autistic individuals are receiving information is impactful to how they are then processing and internalizing that knowledge. The lack of information sources and less meaningful social interactions that autistic adolescents and adults tend to experience have the capacity to promote negative attitudes in the realm of interpersonal relationships and romantic sexual desires, due to feelings of isolation and hopelessness when navigating romantic or sexual interactions (Parchomiuk, 2019).

**Conceptual model.** The Psychosexual Well-Being model illustrates the hypothesized relationship of three variables: sexual self-concept, sexual knowledge, and feelings and attitudes. Based on prior research on sexual well-being in both NT and autistic populations, this model shows an interconnected nature among the three variables (Byers et al., 2013; Hannah & Stagg, 2016; Henault, 2006; Koller, 2000; Turner et al., 2017). Each relationship is bi-directional and contributes to an individual's overall Psychosexual Well-Being. Part I of this study will examine this model in NT and ASD populations individually, and Part II will then compare the Psychosexual Well-Being scores between groups.

### **Psychosexual Well-Being and Autism Spectrum Disorder**

The few studies on sexual well-being and ASD have found that autistic adults report a positive sense of sexual well-being, but it is lower when compared to NT adults (Byer et al., 2013). Other research has found that autistic individuals had less access to accurate sexual

knowledge and experienced higher levels of anxiety in romantic and sexual situations when compared to NT individuals (Pearlman-Avnion et al., 2017). These social difficulties and lack of sexual knowledge make obtaining and maintaining romantic and sexual relationships very difficult for autistic individuals. It is these difficulties that make it necessary to focus on understanding the intrapersonal experience of sexuality development in the ASD population.

Given that the characterizing features of ASD give way to social, emotional, and communication difficulties, it is imperative to understand how the autistic individual views themselves in light of their sexuality. Sexuality starts with the relationship that an individual develops with themselves. It is this foundation and intrapersonal connection that defines how a person feels about gender, their body, sexual activity and more (Brown, 2018). These personal feelings have the power and capacity to dictate how an individual approaches sexuality and relates to others, as well as how they act and make decisions for themselves in regard to sexual expression. Though individuals with autism express the same interests and sexual needs as the general population, they display these desires differently (Henault, 2006). There is a need to better understand sexuality across development and what the foundational elements of developing positive and healthy sexual well-being entail. Using the working model above, Psychosexual Well-Being will focus specifically on an introspective understanding of the individual rather than placing a heavy emphasis on the sexual behavior that has been experienced or desired. By concentrating more on the individual's introspective orientation towards sexuality and understanding how the Psychosexual Well-Being model functions, researchers hope to understand the foundation of sexual expression and sexual behavior to identify possible markers for intervention in the ASD population.

### **Sexuality and Sexual Well-Being in Autism Spectrum Disorder**

ASD and sexual health is an understudied area due to the longstanding belief that autistic individuals do not experience sexuality in the same way as their typically developing peers (Byer et al., 2013; Pearlman-Avnion, 2017). There is a belief that autistic individuals do not sexually mature and lack a desire to engage in romantic and sexual relationships (Henault, 2006). It is these stereotyped beliefs that have created societal barriers for autistic adults and adolescents in expressing their sexuality and sexual desires. These ideas have also greatly impacted the type of research that has been conducted on sexuality and ASD.

The work that has examined sex and ASD has emphasized negative sexual behaviors and not well-being. Two characterizing features of the disorder are socio-emotional deficits and fixated behaviors, which can sometimes manifest in unwanted sexual behaviors in inappropriate social settings (Parchomiuk, 2019; Turner et al., 2017). Past research focused heavily on how to minimize and eradicate problem sexual expression and behaviors in this population, paying little attention to the sexual needs or well-being of adolescent and adult autistic individuals (Parchomiuk, 2019). Additionally, autism and sexuality research usually rely solely on parent and caregiver reports when asking about the sexual experience and development of autistic individuals (Turner et al., 2017). Given that the nature of sexuality and sexual development is extremely personal, this approach proved problematic because the true feelings, attitudes, and desires of the individuals were not being captured by the observations of parents and caregivers (Turner et al., 2017).

As the approach to sexual health and sexual development has evolved to a more positive stance in recent years, so has the view of sexuality in populations with varying physical and mental abilities (WHO, 2019). Recent research has moved towards trying to understand the autistic person's sexual experience, satisfaction, and overall sexual well-being. Currently, a very

limited number of studies exist that have explored the sexual well-being of adolescents and adults with ASD, even though sexual well-being is characterized by the WHO (2019) to be a vital component of life satisfaction, happiness, and overall well-being. Byers et al. (2013) was the first study to provide a comprehensive view of sexual well-being in autistic individuals. Their findings confirmed that autistic symptoms did impact sexual well-being, specifically in the interpersonal context. Furthermore, the deficits identified in interpersonal contexts highlighted the need for further research to understand autistic individuals sexual self-view and understanding of sexual information. Pearlman-Avnion, Cohen and Eldan (2017) conducted a study evaluating the sexual well-being and quality of life of autistic adults in intimate relationships compared to autistic adults not in an intimate relationship. Researchers found no significant difference between groups, however the study neglected to understand how sexual well-being may differ in autistic adults as compared to the wider population.

Even fewer studies conducted have examined sexual well-being in the ASD population compared to the NT population (Parchomiuk, 2019; Turner et al., 2017). There has been a large focus in the research on experienced or desired sexual behavior rather than trying to first understand the emotional foundation of sexuality development in autistic individuals, and how their diagnoses may impact that trajectory (Parchomiuk, 2019; Turner et al., 2017). Sexuality begins with the self, which is why it is crucial to first understand the intrapersonal relationship before we can move into evaluating romantic and sexual behaviors in both ASD and NT populations.

### **Gaps to Address & Why They are Important**

Autistic individual's sexuality is a vital part of their development and overall happiness and well-being (Byer et al., 2013; Henault, 2006; Turner et al., 2017). Since sexuality



development has only recently been acknowledged in the ASD literature, there are gaps in the field that need to be addressed. First and foremost, there is a need for a sex-positive working model to begin to understand healthy sexuality development in this population. This foundational model must evaluate the intrapersonal relationship of an individual and how that relates to their sexuality development and sexual well-being. Most recent studies assessing ASD and sexual well-being assess for sexual well-being but with a large focus placed on physical behaviors and relationship experiences (Byer et al., 2013; Mehzabin & Stokes, 2011; Pearlman-Avni, 2017; Turner et al., 2017). The required behavioral component of previous studies limits the generalizability of the results to individuals who have experienced romantic relationships or sexual encounters and ignores the sexuality of autistic adults who have not experienced physical sexual contact. There is a need for U.S.-based research on sexual well-being in autistic individuals. Previous studies on the subject have been conducted primarily in other Western countries (Byer et al., 2013; Hannah & Stagg, 2016). In a review of the literature conducted by Turner et al. (2017) looking at sexuality and ASD, only one of the eleven studies took place in the United States. The remaining ten studies took place across the Netherlands, Australia, Sweden, and the United Kingdom. The United States is home to a diverse and multicultural population. Conducting sexuality research in the U.S. would lead to a richer understanding of Psychosexual Well-Being for both ASD and NT individuals.

Since sexuality has not historically been considered a topic necessary to be studied in this population and very little research does exist on the healthy development of sexuality in autistic individuals, a great deal of research must be extrapolated from sexual well-being studies in the NT population. The small pool of existing research leaves wide gaps in the knowledge, approach, and even study designs specific to the ASD population. Researchers have

acknowledged the need to evaluate the psychosexual understanding of individuals with ASD from the personal perspective of the individual, but there are very few studies that have yet to explore this realm of the autistic individual's experience (Parchomiuk, 2019). Past research has mainly gathered data on autistic individuals sexuality through parent report, not taking into consideration the experience and view of the actual individual (Byers et al., 2013). Using caregiver reports is problematic, because it allows for a very limited and only observable view of the autistic individual's sexuality. It is crucial to take into consideration an individual's personal thoughts and feelings when it comes to their own sexuality and identity.

### **Current Study**

This study used the Psychosexual Well-Being model in the NT and ASD populations. The model was tested in NT adults and ASD adults, and scores were then compared between groups. By concentrating more on the individual's introspective orientation towards sexuality, rather than past sexual encounters and behavior, researchers aimed to understand the foundation of sexual expression and sexual behavior. Furthermore, by comparing groups of ASD and NT, this study sought to explore how the sexuality and sexual identity of autistic individuals may differ from NT individuals.

### **Research Questions**

The purpose of this study was to assess if the proposed model, Psychosexual Well-Being, was a valid form of evaluation in NT and ASD populations. The goal in testing and comparing this model for both ASD and NT adults was to understand what interventions and educational tools might be necessary to ensure that autistic individuals have access to living healthy and fulfilling sexual lives. Given the socio-emotional and communication impairments of ASD, coinciding with a lack of sexual knowledge accessible to this population, researchers wanted to

know if there is a difference in how autistic individuals perceive their own sexuality or sexual identity compared to NT individuals.

### **Hypotheses**

Past research has shown that autistic individuals score lower on sexual knowledge questionnaires, have lower self-esteem due to social difficulties, and have trouble successfully engaging in intimate relationships (Henault, 2006; Pearlman-Avnion et al., 2017; Turner et al., 2017). From these findings three hypotheses were formed:

*Hypothesis 1:* Autistic individuals will have a lower overall Psychosexual Well-Being score compared to NT individuals

*Hypothesis 2:* Autistic individuals will have a more negative sexual self-concept compared to NT individuals

*Hypothesis 3:* Lower scores on sexual knowledge will be positively correlated with lower scores on sexual self-concept in both the ASD and NT groups.

## **Methods**

### **Study Design**

This study was approved by Tufts University's Institutional Review Board and was a part of a larger study being conducted by the Crehan Lab at Tufts University. Data collection took place online from August 2019 to October 2019. The Psychosexual Well-Being study used anonymous, self-report measures to gather data from adults with and without ASD across the United States. U.S.-based participants completed an anonymous, online survey and received a twenty-dollar gift-card for their participation.

### **Procedures**

Participants were recruited using social media posts, emails, and flyers disseminated to doctors, clinicians, and larger institutions across the U.S. Participants had to be over 18 years of age, without diminished capacity, who were willing and able to consent to any study participation for themselves. Participants were also required to complete an eligibility screener and consent form before beginning the survey. Participants were recruited in two groups: ASD (self-reported diagnosis of ASD) or NT (no diagnosis of ASD). Questionnaires were completed anonymously via *RedCap*, an online survey tool, and included questions about sexual identity, orientation, and sexual knowledge. The survey lasted approximately 30 to 45 minutes. Participants received a \$20.00 Amazon e-gift card that was emailed to them upon completion of the measures.

### **Participants**

One hundred and twenty people participated in the survey; however, twelve surveys were removed from analysis due to fewer than half of the measures being complete. The final sample was comprised of 108 participants (54 ASD; 54 NT): 52 identified as women, 38 as men, and 18 chose not to identify their gender. The average age of participants was 26.7 years ( $SD = 6.26$ ), with a range of 18 to 58 years of age. Of the final sample: 63% identified as white, 8% as African American, 3% as Asian, 8% as Hispanic, and 18% identified as mixed race or multicultural. Eighty percent of the sample reported being in some type of partnered relationship, whereas 20% reported casually dating.

### **Measures**

Given the limited research on healthy sexuality development in adults with Autism Spectrum Disorder, and no existing research on sexual well-being void of sexual behaviors and relationship experience, there are currently no measures to assess for Psychosexual Well-Being.

Based on existing literature, I used and adapted validated sexual health measures to assess the three domains that comprise Psychosexual Well-Being: sexual self-concept, sexual feelings and attitudes, and sexual knowledge. An overall Psychosexual Well-Being score was calculated from the sum of each of the following variable z-scores: sexual self-concept, sexual feelings and attitudes, and sexual knowledge. Each variable score was calculated from a set of adapted, validated measures. It is important to note that the validated measures used were empirically derived, however they have not yet been tested in the Psychosexual Well-Being model. In addition, the survey consisted of eleven demographic questions that help describe the composition of the final sample (see Appendix E).

**Self-Report Diagnosis.** One dichotomous question at the beginning of the survey was asked to determine whether the participant had ever been diagnosed with Autism Spectrum Disorder (0 = No, 1 = Yes). To account for confounding variables in the NT population, the Autism Quotient 10 (AQ-10; Cronbach's alpha = .85) was used to ensure that the NT sample was without elevated autistic traits (Allison et al., 2012; Baron-Cohen et al., 2001). The AQ-10 consists of ten self-report questions, scored on a 4-point scale, that measures autistic traits in an individual (see Appendix A). A score of 6 or above indicates a high probability of ASD (Baron-Cohen et al., 2001).

**Sexual Self-Concept.** Forty-three questions were used to assess sexual self-concept (see Appendix B). These questions were compiled from the Teen Transition Inventory (TTI; Dekker et al., 2017), the Klein Sexual Orientation Grid (KSOG; Klein et al., 1985), and Social Connectedness survey (Lee & Robbins, 1995; Cronbach's alpha = .91). These specific measures were chosen because they are validated self-report tools that evaluate an individual's personal thoughts and feelings about their own sexuality development. I adapted the existing measures of

the TTI, a self-report survey created in the Netherlands, to compare the sexuality development of ASD and NT adolescents, to be used in an adult population (Dekker et al., 2017; Cronbach's  $\alpha > .5$ ). The 32 questions that I chose from the TTI assessed for psychosexual socialization and psychosexual selfhood, specifically asking about sexual preference, body image, self-esteem, and sexual self-perception (Dekker et al., 2017). Sample questions are as follow: "I think that I am good looking/attractive" and "I am happy with myself as a person" (Dekker et al., 2017). Questions were rated on a scale beginning with 0 ranging to either 2 or 9 (e.g., 0-2, 0-9), with higher scores always indicating more positive sexual self-concept. Questions from the KSOG were rated on a scale 0 to 1, and the Social Connectedness survey was rated on a scale of 0 to 5 (Klein et al., 1985; Lee & Robbins, 1995). Sample questions are as follows: "I feel disconnected from the world around me" (Lee & Robbins, 1995), and "To whom are you sexually attracted: at present? And ideally in the future?" (Klein et al., 1985).

**Sexual Feelings and Attitudes.** Twenty-six questions were used to assess sexual feelings and attitudes, using the KSOG (Klein et al., 1985) and TTI (Dekker et al., 2017). Questions were rated on a scale beginning with 0 (e.g., 0-1, 0-2, and 0-5), with higher scores always indicating more positive sexual feelings and attitudes. Questions aimed to understand how individuals viewed different aspects of sexuality and sexual topics (see Appendix C).

**Sexual Knowledge.** Thirty questions were used to assess sexual knowledge, using the TTI (Dekker et al., 2017). Questions were rated on a scale beginning with 0 (e.g., 0-1, 0-2, 0-4, and 0-10), with higher scores always indicating more positive sexual knowledge. Questions assessed where individuals garnered their sexual knowledge, what they knew, and what they wanted to know more about (see Appendix D).

### **Missing Data**

In this design, participants were able to skip any questions that made them uncomfortable or that they did not want to answer. Participants that chose to skip a question were not scored for that particular question. For participants who chose to skip questions, we ensured that of each subscale, no more than 50% of questions were missing. If more than 50% of the measures were incomplete, participants were removed from the final sample. Only participants who made it to the end of the survey were included in my analyses ( $n = 108$ ). If participants did not complete the entirety of the survey by making it to the final set of questions and did not have more than 50% of questions answered, their data was excluded from the final sample. If participants in the NT group scored higher than a 6 on the AQ-10, they were also removed from the final NT sample.

### **Data Preparation**

Before computing any variable scores, data from each question were transformed to z-scores. This was done in order to account for the various scales that existed within each question (e.g. 0-1, 0-2, 0-3, etc.). By transforming the data for each question and then summing the z-scores to provide a variable score for each domain (sexual self-concept, sexual knowledge, sexual feelings and attitudes), this ensured that no one variable would be weighted more in the overall Psychosexual Well-Being score. This also ensured that no question was weighted more when finding each variable score. After acquiring each standardized variable score, those three scores were summed to provide a Psychosexual Well-Being score.

### **Data Analysis**

I conducted a *t*-test to evaluate Psychosexual Well-Being scores between ASD and NT groups. A *t*-test was also used to determine if there was a difference in sexual self-concept scores between ASD and NT groups. I then conducted correlational tests to assess the bivariate relationship of sexual knowledge and sexual self-concept within the ASD and NT groups.

## Results

### Descriptive Statistics

Table 1 provides descriptive statistics for ASD and NT groups, sexual self-concept, sexual feelings and attitudes, and sexual knowledge. The data include one categorical variable (ASD and NT) and three continuous variables (sexual self-concept, sexual feelings and attitudes, and sexual knowledge). Sexual self-concept is approximately normally distributed, sexual feelings and attitudes is moderately positively skewed, and sexual knowledge is positively skewed. Psychosexual Well-Being was slightly positively skewed; however, the distribution was normal enough to run a *t*-test. When considering split groups for Psychosexual Well-Being, the data for both groups appear to be slightly positively skewed. The ASD group had more positive skewness than the NT group. However, both groups have approximately equal distributions. When considering split groups for sexual self-concept, both groups appear to be approximately normally distributed. Lastly, comparing all variables between groups, there is approximately equal variance. All assumptions were met to conduct *t*-tests on the chosen variables.

Next, I evaluated if the assumptions were met to run a Pearson correlation on sexual knowledge and sexual self-concept in ASD and NT groups. Table 2 provides descriptive statistics for sexual knowledge and sexual self-concept in the NT population and the ASD population. Observing the skewness and kurtosis of both of these variables in the NT sample, they are approximately normally distributed. Looking at sexual self-concept in the ASD group, it appears to be approximately normally distributed. However, sexual knowledge scores appear to be positively skewed and not approximately normally distributed in this group. This is something to consider when examining the trustworthiness of the correlational test in the ASD group, yet the sample size provided is large enough to continue. No outliers were found in either sexual knowledge or sexual self-concept scores in the NT group. However, one moderate and one



extreme outlier were identified in the ASD group in sexual knowledge, and two moderate outliers were identified in sexual self-concept scores. This falls within the expected number of outliers given the sample size, therefore the assumption of outliers is not violated. A scatterplot showed positive linearity between sexual knowledge and sexual self-concept in both groups. Based on the pre-analysis, I concluded that it is appropriate to proceed with correlational tests among these variables.

### **Hypothesis 1 and 2**

I conducted two independent sample *t*-tests. The first *t*-test assessed for differences between ASD and NT groups on Psychosexual Well-Being (see Table 3). These results indicated that ASD individuals ( $M = -9.79$ ,  $SD = 42.90$ ) scored significantly lower on Psychosexual Well-Being,  $t(106) = 2.44$ , ( $p = .016$ ), compared to NT individuals ( $M = 9.79$ ,  $SD = 40.45$ ). The second *t*-test I conducted assessed for differences between ASD and NT groups on sexual self-concept (see Table 4). These results indicated that ASD individuals ( $M = -5.59$ ,  $SD = 11.45$ ) scored significantly lower than NT individuals ( $M = 5.59$ ,  $SD = 11.75$ ) on sexual self-concept,  $t(106) = 5.008$ , ( $p < .001$ ).

### **Hypothesis 3**

Pearson's correlation between sexual knowledge and sexual self-concept are shown in Table 5. In the NT sample, there was a statistically significant positive association ( $r = .288$ ) between sexual knowledge and sexual self-concept ( $p = 0.00$ ), with a medium effect size ( $.2 < r < .5$  as defined by Cohen, 1988). There was not a statistically significant correlation between sexual knowledge and sexual self-concept in the ASD group ( $p = .172$ ).

### Discussion

This study aimed to explore how an individual's intrapersonal relationship relates to their sexual well-being and sexuality development. Due to the nature of ASD, autistic individuals struggle with forming interpersonal connections, which may impact their ability to have fulfilling romantic and sexual experiences (Hannah & Stagg, 2016). Because romantic and sexual expression are vital components of life satisfaction and overall well-being (WHO, 2019), it is crucial to understand how we can foster positive sexual well-being and healthy sexuality development for all individuals, regardless of diagnoses.

The field of sexuality research in the ASD population is small but growing. Research has begun to acknowledge the importance of healthy sexuality development for positive outcomes in all aspects of life (Pearlman-Avnion, 2017). Due to the social difficulties autistic individuals may experience, many members of the ASD community deal with feelings of loneliness, stigmatization, and low self-esteem from an inability to successfully engage in social and romantic relationships (Parchomiuk, 2019). These increased difficulties in social functioning, perpetuate feelings of inadequacy, and can even make it difficult for autistic individuals to have a positive view of themselves as sexual beings (Parchomiuk, 2019).

The current study yielded significant results when comparing Psychosexual Well-Being and sexual self-concept scores between ASD and NT samples. As predicted, autistic individuals scored lower in overall Psychosexual Well-being, as well as sexual self-concept. These findings tell us that there is a difference in how autistic individuals experience sexuality development and may require a little more support in this area. Interventions need to target developing positive sexual identity and sexual self-concept in this population to promote healthy outcomes. Research shows that when comprehensive sexuality and relationship education is adapted to meet the

needs of ASD individuals, these programs have the capacity to improve social functioning, increase knowledge, and foster safer sexual behavior (Sala et al., 2019). By providing support in the form of explicit knowledge, autistic individuals are able to be empowered by what they know. One intervention aimed at improving relationship skills in ASD individuals, resulted in self-reports of improved dating and social skills, all from creating and implementing a program specific to the informational needs of the ASD individual (Sala et al., 2019). Healthy sexual outcomes are possible and obtainable for the ASD population with the help of additional supports.

First and foremost, sexuality is rooted in the relationship an individual fosters with themselves. The quality and nature of that intrapersonal relationship will give way to how an individual feels about their gender, their body, their sexual identity and more (Brown, 2018). Autistic individuals experience social, emotional, and communication difficulties that impact the quality of their interpersonal relationships, but also leave them feeling isolated and less capable of navigating social connections (Koller, 2000). These feelings and lack of meaningful relationships can result in low self-esteem (Henault, 2006). Self-esteem directly influences one's sexual self-concept. Just like the NT population, an autistic individual's ability to develop a healthy sexual identity is directly correlated to their development of positive self-esteem and a healthy self-concept (Henault, 2006). Without taking the time to understand and cultivate the foundation of a strong intrapersonal relationship, there will always be a disconnect in understanding sexuality development and expression, especially in the ASD population.

Further findings indicated that autistic individuals did not demonstrate a strong connection between sexual self-concept and sexual knowledge scores, whereas these two concepts were significantly related in the NT population. This could indicate that there is a

disconnect in the way that sexual knowledge is disseminated in the ASD population. Research has found that autistic individuals demonstrate lower levels of knowledge about their own sexuality when compared to NT individuals, specifically pertaining to safer sex practices, contraception use, sexually transmitted diseases, dating, and overall intimacy (Travers et al., 2014). Sexual education is typically targeted to NT populations and rarely discusses sexual self-concept or identity, nor does it address the social aspects that are intrinsic to romantic and sexual relationships (Travers et al., 2014). Accurate sexual knowledge is vital to an individual's ability to make informed decisions about their own sexuality and sexual expression, which is why understanding how ASD individuals are obtaining and understanding sexual education is crucial in understanding their sexual self-concept.

The lack of correlation between sexual knowledge and sexual self-concept in the ASD group could be a result of both the social difficulties that autistic individuals experience, as well as the lack of sexual education provided to this population. Autistic individuals have less access to accurate sexual health information (Pearlman-Avnion et al., 2017). Less access and lower quality sexual knowledge may yield unsuccessful outcomes in the ASD population (Henault, 2006). Sexual education is currently geared towards NT populations, which could be why a significant positive correlation is visible in this group. NT individuals are able to be empowered by the sexual health information they receive, directly impacting their sexual agency and ultimately their sexual self-concept. Whereas, autistic individuals are not even receiving the proper sexual education to meet their needs that would result in improving or impacting their sexual self-concept.

Finding no significant relationship between sexual knowledge and sexual self-concept in the ASD group was surprising. Existing research points to social competency, quality of sexual

information, and socialization as influencing factors of autistic individuals' self-esteem, self-image, and overall self-concept (Henault, 2009; Parchomiuk, 2019; Pearlman-Avnion, 2017). I thought that the more knowledge and information an individual had, the more likely they would be to have a positive view of themselves as a sexual being, regardless of diagnosis. My hypothesis was correct for NT individuals, however, no relationship between these variables was found for ASD individuals. The lack of findings in the ASD group make me believe that more research needs to be conducted studying the relationship between sexual knowledge and sexual self-concept in this population. Further research would help determine whether autistic individuals are not receiving sexual information suited to their needs, or whether there are more important factors that influence an ASD individual's sexual self-concept.

The Psychosexual Well-Being model is the first of its kind to assess for healthy sexuality development without a focus on sexual behavior. Existing research, for both NT and ASD individuals, tends to focus on the behavioral components of sexual well-being, neglecting the importance of the intrapersonal relationship (Anderson, 2013; Turner et al., 2017). This model aims to help researchers understand the foundation of sexual expression and sexual behavior by concentrating on an individual's relationship with themselves. Understanding the intrapersonal development of sexuality will help researchers identify specific areas of need to ultimately foster healthy sexuality development and safe sexual outcomes. This unique approach will specifically benefit the ASD population in helping researchers identify what areas autistic individuals may need additional support to initiate and maintain safe and fulfilling sexual experiences.

The perception of ASD and sexuality is slowly changing to become more positive (Turner et al., 2017), and it is crucial that future research continues to examine healthy sexuality development in order to perpetuate a sex positive view for the ASD population. Current

interventions, like ASD specific sexual education could benefit from using the Psychosexual Well-Being model to understand where to focus efforts in disseminating accurate and beneficial sexual health information. Furthermore, this model could aid in laying the foundation for developing future interventions to benefit autistic individuals in leading healthy and satisfying sexual relationships and lives by starting with the relationship that they have with themselves.

### **Limitations**

There are numerous limitations to this study. First, no causal effects can be deduced from the nature of the tests being conducted. We can only assess whether a relationship exists between the tested variables. Second, given the design of this anonymous survey study, participants were able to skip any questions that they did not want to answer. Participants not answering questions resulted in missing data. Along with choosing not to answer questions, participants may also have under or over reported their ideas, beliefs, or desires. The natural design of anonymous online surveys could yield lower quality data.

Furthermore, participants were asked to recall certain events or past beliefs that rely on their own memory and understanding of the past, which could lead to inaccurate reporting. Also, coinciding with the nature of self-report, social desirability could play a large part in how individuals answer survey questions. Social desirability must especially be considered for a sensitive topic like sexuality, where individuals may try and align their answers and beliefs with societal standards rather than reporting accurately for their own feelings and beliefs.

More limitations to consider are that only individuals who have access to the internet were able to participate, and only those who used social media or attended local community centers, autism centers, or sought medical care were recruited to participate. These technological,

geographic, and medical barriers could unintentionally limit the demographics of the sample size and affect generalizability.

### **Future Directions**

The Psychosexual Well-Being model addresses the need for a positive framework that helps researchers understand sexuality development. This sex positive model will allow for future studies to build upon the identified intrapersonal variables and move the field of sexuality development forward, specifically for populations that have historically been excluded from positive sexuality research. Further examination of the Psychosexual Well-Being model should evaluate if any one variable (sexual self-concept, sexual knowledge, and sexual feelings and attitudes) has a stronger influence on an individual's sexual well-being and sexuality development.

Sexual self-concept has never been evaluated in sexuality and ASD research before. This study proved that there is a difference between sexual self-concept for ASD and NT individuals. Therefore, future research should more closely identify the components of sexual self-concept. This will allow a deeper understanding of what aspects of sexual self-concept drive an individual's overall Psychosexual Well-Being (e.g., gender identity could play a larger role than body image in determining sexual self-concept). Identifying specific areas will allow for targeted interventions and ultimately promote positive sexual health outcomes.

Given the limited amount of research on positive sexuality development and autistic individuals, future studies should continue to use a positive framework to understand the difference in sexuality development and experience of autistic individuals. Historically, research conducted on sexuality in the ASD population had to do with eradicating negative forms of sexual expression or problem behaviors, inadvertently limiting the perception of autistic

individuals and their sexual needs (Parchomiuk, 2019). By acknowledging that autistic individuals have sexual desires, wants and needs, research can begin to move forward and address how to ensure healthy sexual outcomes for the ASD population.

Future research should also continue to evaluate how sexuality development may differ between autistic individuals and neurotypical individuals. These developments will allow researchers to create targeted interventions that will help support autistic individuals romantic and sexual satisfaction. By continuing to try to understand how the experiences of ASD and NT populations may differ, the field will move closer to making healthy sexuality obtainable for all individuals, regardless of diagnosis or ability.



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**Tables**

Table 1

*Descriptive Statistics for Psychosexual Well-Being (n = 108)*

		<i>n</i>	<i>%</i>	
Self-Report Diagnosis	ASD	54	50.0	
	NT	54	50.0	
		<i>M (SD)</i>	<i>Skewness</i>	<i>Kurtosis</i>
Psychosexual	Sexual Self-Concept	0.00* (12.84)	.217	-.639
Well-Being	Sexual Feelings and Attitudes	0.00* (9.00)	.624	.697
	Sexual Knowledge	0.00* (35.60)	1.809	7.523

\* Means are 0.00 due to Z-Score transformation

Table 2

*Descriptive Statistics for Sexual Knowledge and Sexual Self-Concept: NT and ASD (n = 108)*

	<i>n</i>	%		
NT	54	50.0		
	<i>M (SD)</i>	Skewness	Kurtosis	
Sexual Knowledge	4.28 (31.54)	.360	-.790	
Sexual Self-Concept	5.59 (11.75)	.048	-1.033	
ASD	54	50.0		
Sexual Knowledge	-4.28 (39.07)	2.745	12.517	
Sexual Self-Concept	-5.59 (11.45)	.500	.244	

Table 3

*T-test Results Comparing ASD and NT on Psychosexual Well-Being (n=108)*

Psychosexual Well-Being				
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
NT	9.79	40.45	2.440	.016*
ASD	-9.79	42.90		

\*  $p \leq .05$

Table 4

*T-test Between ASD and NT on Sexual Self-Concept (n=108)*

Sexual Self-Concept				
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
NT	5.59	11.75	5.008	.000*
ASD	-5.59	11.45		

\*  $p \leq .05$



Table 5

*Pearson Correlation (r) between Sexual Knowledge and Sexual Self-Concept*

	Sexual Self-Concept	<i>r</i>	<i>p</i>
Sexual Knowledge	NT	.288*	.035
	ASD	.189	.172

*\*p* ≤ 0.05

**Appendix A**  
Autism Spectrum Disorder Diagnostic Measures

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	Yes	No
Have you ever been diagnosed with Autism Spectrum Disorder (ASD), Asperger's, or Autistic Disorder?	<input type="radio"/>	<input type="radio"/>

---

Autism Quotient (AQ) - 10 questions on a 4-point scale (Baron-Cohen et al., 2001)

---

	Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
I often notice small sounds when other do not	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually concentrate more on the whole picture, rather than the small details	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it easy to do more than one thing at once	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If there is an interruption, I can switch back to what I was doing very quickly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it easy to 'read between the lines' when someone is talking to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to tell someone listening to me is getting bored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm reading a story, I find it difficult to work out the characters' intentions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it easy to work out what someone is thinking or feeling just by looking at their face	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I find it difficult to work out people's intentions

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**Total diagnostic questions asked:** 11 questions

**Appendix B**  
Measures of Sexual Self-Concept

Below is a list of statements regarding your own feelings of social connectedness. Please answer on the following 1-6 scale, with “strongly agree” as 1, and “strongly disagree” as 6.

	Strongly Agree	2	3	4	5	Strongly Disagree
1. I feel disconnected from the world around me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Even around people I know, I don't feel that I really belong	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel so distant from people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I have no sense of togetherness with other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I don't feel related to anyone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I catch myself losing all sense of connectedness with society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Even among my friends, there is no sense of brotherhood/sisterhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I don't feel that I participate with anyone or any group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all true	Somewhat or sometimes true	Often true or True
9. I think I am good looking (beautiful/attractive)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I think I am smart	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I think I am funny	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- |  |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|
| 12. I think I am nice                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. I think I am cool                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14. I think I am trustworthy                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. I think I am sweet                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. I think I am boring                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. I think I am shy                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. I am happy with myself as a person             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 19. I get along well with other people             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20. I am quickly liked by others                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 21. Around other people I lose my confidence       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 22. I wish my body looked different                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 23. I am awkward in social situations              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 24. I am not satisfied with myself                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 25. I am accepted by other people                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 26. I am satisfied with the way I look             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 27. I get along well with other people             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 28. I have a lot of friends                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 29. I think I am a good friend (normal friendship) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

- 30. I think I am a good partner (romantic relationship)
- 31. I am often disappointed in myself
- 32. I can take care of myself

- |  | Not at all true       | Somewhat or sometimes true | Often true or True    |
|--|-----------------------|----------------------------|-----------------------|
| 33. In general, I am good at letting people know what I am comfortable with and what I am not comfortable with | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |

- |   | Not at all true       | Somewhat or sometimes true | Often true or True    |
|---|-----------------------|----------------------------|-----------------------|
| 34. When I am in love with someone, I feel confident  | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |
| 35. When I am in love with someone, I do not know what to do  | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |
| 36. When I am in love with someone, I do not know what to say   | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |
| 37. When I am in love with someone, I do not know how to make contact with that person                            | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |
| 38. When I am in love with someone, I contact that person using the internet (MSN/Facebook/email/social networks) | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |
| 39. When I am in love with someone, I start a conversation with that person                                       | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |

- |  | Not at all true       | Somewhat or sometimes true | Often true or True    |
|--|-----------------------|----------------------------|-----------------------|
| 40. I feel confident when I am physically intimate (e.g. French kissing, cuddling, or having sex with someone) | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> |

*For each of the following 7 options, please rate yourself for each of the three aspects of your life: your past (defined as age 16 through one year ago), your present (defined as the past year), and your ideal (defined as what you would choose to be now if it were a matter of choice).*

**Sexual Attraction – To whom are you sexually attracted?**

41.	None or no one	Other sex only	Other sex mostly	Other sex somewhat more	Both sexes equally	Same sex somewhat more	Same sex mostly	Same sex only
a) Present (during the past year). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Ideal (what you would choose now if it were a matter of choice). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Self-Identification - Your sexual self-definition is a strong variable since self-image strongly affects our thoughts and actions. In some cases, a person's present and past self-identification differ markedly from their ideal. Where are you on the scale?**

42.	None or no one	Heterosexual only	Heterosexual mostly	Heterosexual somewhat more	Heterosexual, Gay/Lesbian equally	Heterosexual, Gay/Lesbian somewhat more	Gay/Lesbian mostly	Gay/Lesbian only
a) Present (during the past year). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Ideal (what you would choose now if it were a matter of choice). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Think of the gender you were assigned at birth (e.g., girl or boy). If you are unsure, for most people, this initial assigned gender matched their biological sex. The following questions will ask you to compare your current gender experience to the gender you were assigned at birth. For these questions, when we say "opposite gender," this refers to woman/girl compared to man/boy; this does not reflect the diversity of gender identities that exist and we have left space for you to describe your identity if the listed responses do not match your experience.*

43. A) Gender identity (e.g. what gender you feel you are)
- Same as gender assigned at birth
  - Same gender assigned at birth somewhat more

- Same gender assigned at birth mostly
- Equally gender assigned at birth and opposite gender
- Non gendered currently
- Agender currently
- Opposite gender somewhat more
- Opposite gender mostly
- Opposite gender only
- Other

---

*Think of the gender you were assigned at birth (e.g., girl or boy). If you are unsure, for most people, this initial assigned gender matched their biological sex. The following questions will ask you to compare your current gender experience to the gender you were assigned at birth. For these questions, when we say "opposite gender," this refers to woman/girl compared to man/boy; this does not reflect the diversity of gender identities that exist and we have left space for you to describe your identity if the listed responses do not match your experience.*

---

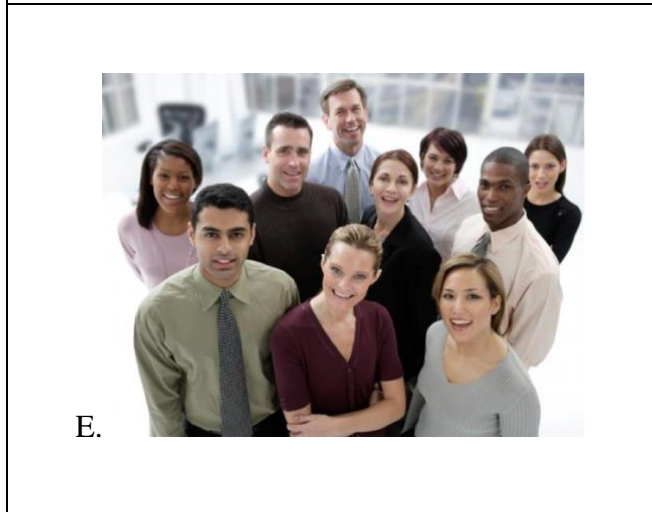
43. B) Gender expression (e.g. what gender you express yourself as, including clothing)

- Same as gender assigned at birth
  - Same gender assigned at birth somewhat more
  - Same gender assigned at birth mostly
  - Equally gender assigned at birth and opposite gender
  - Non gendered currently
  - Agender currently
  - Opposite gender somewhat more
  - Opposite gender mostly
  - Opposite gender only
  - Others
- 

**Total Sexual Self-Concept questions asked:** 43 questions



**Appendix C**  
Measures of Sexual Feelings and Attitudes



**Using the pictures shown above, choose which picture best corresponds with each question below:**

	A	B	C	D	E	F
1. Which groups show people it is okay for you to go out with on a romantic date?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Which groups show people with whom it is okay for you to have sex?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Which groups show people it is okay for you to watch porn?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Below is a list of items that describe individuals. All these items concern issues on how you are now or have been in the last 6 months. Please answer "very or often true" if this expression is appropriate to your situation. Please answer "somewhat or sometimes true" if this expression is somewhat or sometimes true to your situation. If the expression is not at all appropriate to your situation, please answer "not at all true."*

	Not at all true	Somewhat or sometimes true	Very or often true
4. I have difficulty with being touched by family members or acquaintances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I touch others in places where they do not want to be touched	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Below is a list of items that describe individuals. All these items concern issues on how you are now or have been in the last 6 months. Please answer "very or often true" if this expression is appropriate to your situation. Please answer "somewhat or sometimes true" if this expression is somewhat or sometimes true to your situation. If the expression is not at all appropriate to your situation, please answer "not at all true."*

	Not at all true	Somewhat or sometimes true	Very or often true
6. I have been in love with someone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I have been in love with someone who I know through the internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- |   |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|
| 8. I have been in love with a celebrity (an existing person)  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. I have been in love with a fictional character from TV or a computer game (a fictional person)   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10. I have been in love with a teacher or mentor or group-leader  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11. I have been in love with someone else   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 12. I have been in love with someone although that person was not in love with me   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. The first time I have contact with the person I am in love with I ask for contact information (e.g. phone number, email address, MSN, Facebook, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14. The first time I have contact with the person I am in love with, I ask if he or she wants to meet up with me  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. The first time I have contact with the person I am in love with, I tell that person I am in love with him or her                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. The first time I have contact with the person I am in love with, I ask him or her to be my boyfriend/girlfriend                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. I keep contacting someone, even though that person has indicated he/she does not want any contact with me   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. I think it is important a (future) partner has the same interests as I do   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 19. I think it is important a future partner is trustworthy   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
-

	Not at all true	Somewhat or sometimes true	Very or often true
20. When I am physically intimate with another person (for example making out, cuddling or sex) I am good at pointing out what I do and do not find pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I fantasize sometimes about being physically intimate with someone (for example French kissing, cuddling or sex)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I have had a very unpleasant intimate experience (for example French kissing, cuddling or sex)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I find it pleasant to be physically intimate with another person (for example French kissing, cuddling or sex)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*For each of the following 7 options, please rate yourself for each of the three aspects of your life: your past (defined as age 16 through one year ago), your present (defined as the past year), and your ideal (defined as what you would choose to be now if it were a matter of choice).*

**Sexual Fantasies – Whether they occur while daydreaming, during masturbation, as a part of our real lives, or purely in our imagination, fantasies provide insight. About whom do you have sexual fantasies?**

24.	None or no one	Other sex only	Other sex mostly	Other sex somewhat more	Both sexes equally	Same sex somewhat more	Same sex mostly	Same sex only
a) Present (during the past year). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Ideal (what you would choose now if it were a matter of choice). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*For each of the following 7 options, please rate yourself for each of the three aspects of your life: your past (defined as age 16 through one year ago), your present (defined as the past year), and your ideal (defined as what you would choose to be now if it were a matter of choice).*

---

**Emotional Preference - Our emotions directly influence, if not define, the actual physical act of love. Ask yourself if you love and like only the opposite sex or if you are also emotionally close to the same sex. Where are you on the scale?**

---

25.	None or no one	Other sex only	Other sex mostly	Other sex somewhat more	Both sexes equally	Same sex somewhat more	Same sex mostly	Same sex only
a) Present (during the past year). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Ideal (what you would choose now if it were a matter of choice). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

*For each of the following 7 options, please rate yourself for each of the three aspects of your life: your past (defined as age 16 through one year ago), your present (defined as the past year), and your ideal (defined as what you would choose to be now if it were a matter of choice).*

---

**Social Preference - Though closely allied to emotional preference, social preference is often different. You may love only women but spend most of your social life with men. Some people, of all orientations, only socialize with their own sex, while others socialize with the opposite sex exclusively. Where are you on the scale?**

---

26.	None or no one	Other sex only	Other sex mostly	Other sex somewhat more	Both sexes equally	Same sex somewhat more	Same sex mostly	Same sex only
a) Present (during the past year). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Ideal (what you would choose now if it were a matter of choice). Choose one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

**Total Sexual Feelings and Attitudes questions asked: 26 questions**

**Appendix D**  
Measures of Sexual Knowledge

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1. Where do you get information when you have questions about gender identity? (choose all that apply)
  - Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
  
2. Where do you get information when you have questions about sexual orientation? (choose all that apply)
  - Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
  
3. Where do you get information when you have questions about partnered sex acts (including oral sex, vaginal intercourse, or anal sex)? (choose all that apply)
  - Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others

4. Where do you get information when you have questions about non-partnered sexual acts (including masturbation and accessing sexual materials such as pornography?) (choose all that apply)
- Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
5. Where do you get information when you have questions about kissing? (choose all that apply)
- Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
6. Where do you get information when you have questions about flirting? (choose all that apply)
- Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
- Internet (website of verifiable quality)
  - Internet (first hits on google)

7. Where do you get information when you have questions about dating?  
(choose all that apply)
- Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
8. Where do you get information when you have questions about consent?  
(choose all that apply)
- Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others
9. Where do you get information when you have questions about assertiveness/saying “no” in romantic or sexual situations?  
(choose all that apply)
- Internet (website of verifiable quality)
  - Internet (first hits on google)
  - Romantic partner
  - Friends – same age (within 2 years)
  - Friends – younger (greater than 2 years age difference)
  - Friends – older (greater than 2-year age difference)
  - Parents
  - Siblings
  - Mentors
  - Care providers (e.g. therapists, doctors)
  - Others



**Compared to others my age, I would estimate that I know...**

---

	Much less	Less	The same	More	Much more
10. Gender identity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Sexual orientation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Partnered sex acts (including oral sex, vaginal intercourse, or anal sex)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Non-partnered sexual acts (including masturbation and accessing sexual materials such as pornography)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Kissing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Flirting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Dating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Consent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Assertiveness/saying “no” in romantic or sexual situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Is this an area you wish you had more information about?**

---

	Yes	No
19. Gender identity	<input type="radio"/>	<input type="radio"/>
20. Sexual orientation	<input type="radio"/>	<input type="radio"/>
21. Partnered sex acts (including oral sex, vaginal intercourse, or anal sex)	<input type="radio"/>	<input type="radio"/>
22. Non-partnered sexual acts (including masturbation and accessing sexual materials such as pornography)	<input type="radio"/>	<input type="radio"/>
23. Kissing	<input type="radio"/>	<input type="radio"/>
24. Flirting	<input type="radio"/>	<input type="radio"/>
25. Dating	<input type="radio"/>	<input type="radio"/>
26. Consent	<input type="radio"/>	<input type="radio"/>
27. Assertiveness/saying “no” in romantic or sexual situations	<input type="radio"/>	<input type="radio"/>

---

	Yes	No, I have NEVER been taught about intimacy/sexuality
28. Have you ever had education or training about puberty/friendship/intimacy/sexuality?	<input type="radio"/>	<input type="radio"/>

---

	Not true at all	Somewhat or sometimes true	Very or often true
29. I visit websites that give information about sex	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not true at all	Somewhat or sometimes true	Very or often true
30. I do not know how to masturbate (having sex with yourself, touching your private parts/caressing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

**Total sexual knowledge questions asked:** 30 questions

**Appendix E**  
Demographic Measures

What is your current age? \_\_\_\_\_

What year were you born? \_\_\_\_\_

If any, what religion do you practice or identify with? \_\_\_\_\_

What state do you currently reside in? \_\_\_\_\_

If you received sex education in school, what state were you living in at the time? \_\_\_\_\_

What race do you identify as? \_\_\_\_\_

What sex do you identify as? \_\_\_\_\_

What gender do you identify as? \_\_\_\_\_

At what age did you begin puberty? \_\_\_\_\_

	Single	Casual dating	Committed monogamous relationship (not married)	Committed open relationship (not married)	Domestic partnership	Civil union	Married
Current relationship status, select one:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Desired relationship status? \_\_\_\_\_

**Total demographic questions asked:** 11 questions