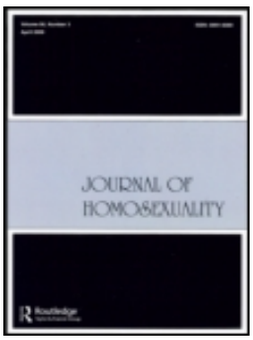

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A Systematic Review of Sexual Dysfunction Measures for Gay Men: How Do Current Measures Measure Up?

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The measurement of subjective components of sexual functioning is of increasing importance in clinical research and practice. Differences have been reported in prevalence rates and experiences of sexual difficulties between heterosexual and gay men. The aim of this article is to identify reliable and valid measures of sexual dysfunction suitable for use with gay men. Seven measures were reviewed; details about item development, dimensionality, reliability, and validity are provided. Heteronormative and heterosexist wording were evident throughout. Several areas of concern emerged in relation to psychometric properties (e.g., questionable validity). No psychometrically robust sexual function measure was identified for use with gay populations.

KEYWORDS sexual dysfunction, gay men, self-report measures, psychometrics

Sexual dysfunction has been defined as the disturbance or inadequacy of normal sexual responding (Rowland, 2007). *The Diagnostic and Statistical Manual for Mental Disorders* (DSM-5; American Psychiatric Association [APA], 2013) classifies sexual dysfunctions in accordance with the dimensions involved in a functional sexual response (desire, arousal, and orgasm) and

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the occurrence of pain associated with sexual intercourse. The measurement of subjective components of sexual functioning is of increasing importance in clinical research and practice. Self-administered questionnaires are the primary format of evaluation for sexual dysfunction and symptoms and serve as the chief means of data collection for determining the prevalence of sexual dysfunction and its correlates. According to O'Leary et al. (1995), due to its sensitive nature, sexual dysfunction is best measured by patient self-report. For example, erectile function can be measured physiologically; however, in real-life situations only the individual (or his or her partner) is privy to information about sexual dysfunction. Self-report measures of sexual dysfunction should provide a valid means of assessment in community samples; however, this may not always be the case. The objective of this article, therefore, is to review current self-report measures of sexual dysfunction with a particular focus on their suitability for use with gay men.

PREVALENCE

According to Spector and Carey (1990), sexual dysfunctions are thought to be among the more prevalent psychological disorders in the general population. A review of the relevant literature reveals large discrepancies in prevalence rates of sexual dysfunctions among the general population. In studies examining heterosexual men, experiences of having at least one sexual dysfunction in the previous year vary greatly. Laumann, Paik, and Rosen (1999) analyzed data collected in 1992 from the National Health and Social Life Survey, a study of sexual behavior in a demographically representative sample of American heterosexual men ($n = 1410$) and women ($n = 1749$) ranging in age from 18 to 59 years. Sexual functioning was measured using seven single items with dichotomous responses (i.e., yes/no). The items related to lack of sexual desire, trouble achieving or maintaining an erection, inability to ejaculate or achieve climax, anxiety about sexual performance, premature ejaculation, pain during intercourse, and not finding sex pleasurable. Thirty-one percent of the male participants had experienced at least one sexual dysfunction in the previous year. In a study of 1,516 heterosexual men in Hong Kong, Lau, Kim, and Tsui (2005) reported that 51% of men had experienced at least one sexual dysfunction in the past year. Sexual functioning was measured with the same items as Laumann et al. (1999), but the timeframe assessed was experiencing symptoms for three consecutive months in the last year.

Rates of sexual dysfunction appear to be even higher among men who have sex with men (MSM). Mao et al. (2009) recruited 542 self-identified gay men from six high HIV-caseload general practices in Australia. Men were invited to complete a questionnaire while waiting for their clinical appointment. Sexual functioning was assessed using the same items as Laumann et al. (1999); however, the timeframe differed (i.e., symptoms had to be

experienced for at least one month in the past year). Approximately 74% of participants reported sexual dysfunction symptoms. Lau, Kim, and Tsui (2008) assessed sexual functioning in MSM in China. The term MSM was defined as men who had sex with men in the last 12 months and attended gay venues such as saunas, bars, and particular beaches. Participants were recruited at these venues and online via gay-oriented Web sites. Face-to-face venue-based interviews were conducted ($n = 324$), plus an Internet-based questionnaire ($n = 87$). Both methods used the same structured survey and the same sexual functioning items reported previously (Laumann et al., 1999). The timeframe assessed in this study was experiencing symptoms for three consecutive months in the past year; 42.5% reported at least one symptom of sexual dysfunction. Hirshfield et al. (2010) conducted an online survey with 7,001 American MSM recruited from gay-oriented Web sites. In this study, MSM referred to men who reported lifetime male sex partners and oral or anal sex with a male partner in their most recent encounter within the last year. Those who were currently sexually active with females were removed. The same seven items as Laumann et al. (1999) were used to assess sexual functioning. The timeframe employed was any experience of a symptom for "a period of time" in the last 12 months; 79% reported one or more sexual dysfunction symptoms in the past year.

Caution is necessary when interpreting these and other prevalence rates. It is difficult to determine why substantial discrepancies are evident; however, possible explanations include differences in methodology and measurement; cultural factors; and the demographic characteristics of the sample such as age, health status, and—of particular importance to the current discussion—sexual orientation. As the focus of this article is on sexual functioning in gay men, greater attention will be paid to the role of sexual orientation and measurement of sexual dysfunction.

SEXUAL ORIENTATION

The current diagnostic classification system of sexual dysfunctions (DSM-5; APA, 2013) is anchored in Masters and Johnson's (1966) human sexual response model, which is a four-stage model of physiological responses during sexual stimulation. The four phases are excitement, plateau, orgasm, and resolution. This model was derived from the study of heterosexual men and women. Although this model has been further modified (Kaplan, 1974; Masters & Johnson, 1979), a heterosexist perspective is still maintained with most research focusing on sexual dysfunctions experienced by heterosexual men incapable of engaging in vaginal penetration. It is inappropriate to study gay men's sexual dysfunctions from a heterosexual vantage for a number of reasons. First, the context in which gay and heterosexual men define their sexuality differs (Campbell & Whiteley, 2006). Heterosexual men are taught from childhood to operate in accordance with a heterosexual

script that teaches men how to act, feel, and behave in sexual encounters (Sandfort & de Keizer, 2001). Gay men, in contrast, define their sexuality through the coming-out process, which consists of rejecting the heterosexual script (Campbell & Whiteley, 2006). Second, sex roles and positions have power-related symbolic meanings (Philaretou & Allen, 2001; Underwood, 2003). The sexual acts performed between two men or between a man and a woman are similar, but the power dynamics may differ. Heterosexual men are expected to be the domineering, active partner, whereas heterosexual women are expected to be the submissive, receptive partner (Sandfort & de Keizer, 2001). In sexual relations between two men, all positions can be reversed, and, thus, some deem reciprocity to be more important in gay relationships (Sandfort & de Keizer, 2001). Third, non-coital sexuality, such as oral sex, is more common in same-sex interactions, and, in contrast to heterosexual relationships, there is generally no a priori assumption that penetration will take place (e.g., Blumstein & Schwartz, 1983; Laumann, Gagnon, Michael, & Michaels, 1994; Weatherburn, Hunt, Hickson, & Davies, 1992 as cited in Cove & Boyle, 2002). Fourth, and finally, it may be easier for a gay man to hide certain sexual dysfunctions. For example, in the case of erectile dysfunction, a gay man may conceal this "problem" by assuming the receptive role in penetrative sex or giving rather than receiving oral sex (McCarthy, 1992).

In the only published study examining "self-defined" sexual problems in gay men, Cove and Boyle (2002) analyzed data obtained from a survey of *Gay Times* readers in the United Kingdom ($N = 300$). The sexual problems reported were divided into DSM-IV-TR dysfunctions and those that were incompatible with this system. Non-DSM-IV-TR problems, such as occupying a negative psychological state during/after a sexual encounter and discrepancies in the kind of relationship desired, were more prevalent (84% versus 16%). The authors suggest the DSM-IV-TR does not cover the range of sexual dysfunctions gay men can encounter.

Few researchers have looked directly at the different sexual experiences of gay and heterosexual men. However, Bancroft, Carnes, Janssen, Goodrich, and Long (2005) identified some dissimilarities in the experience of sexual dysfunction between heterosexual ($n = 1{,}558$) and gay ($n = 1{,}378$) men in the United States. Participants were recruited from other studies by the same authors (Bancroft et al., 2003; Bancroft et al., 2004) and from Web sites (67.2% of participants were recruited through the Internet). Erectile difficulties were measured using two items that assessed lifetime occurrences of sexual difficulties and current erectile difficulties (occurring within the previous three months). Rapid ejaculation was measured using one item: "In your sexual activities with a sexual partner, have you ever had a problem in ejaculating (i.e., "coming") too quickly?" Responses were coded on a 4-point Likert scale (1 = *never*; 4 = *most of the time*). Performance anxiety was measured using a single item ("If I feel I'm expected to respond sexually, I

have difficulties getting aroused"). Performance anxiety and age were strong predictors of erectile problems in both gay and heterosexual men. However, gay men reported higher performance anxiety compared to heterosexual men, irrespective of reporting erectile difficulties.

Other notable differences between gay and heterosexual men are found in studies examining pain during intercourse. Pain during sex is the least often cited sexual dysfunction in men, but reports range from a lifetime prevalence of 0.2% in a random population sample of Icelandic men (Lindal & Stefansson, 1993) to a lifetime prevalence of 8% in a combined community and clinical American sample (Metz & Seifert, 1990). Pain during sex, particularly during anal sex, has been more frequently reported in gay men. Rosser, Metz, Bockting, and Buroker (1997) recruited 197 men at a free psychoeducational health seminar in the United States. Participants were informed about the seminar through referrals from therapists, medical practitioners, HIV clinics, a sexuality clinic, and service agencies that aided persons at risk for HIV (21% of participants). Advertisements were also placed in local gay and community magazines, and pamphlets and posters were distributed at gay political and social events, churches, and other public sites (79% of participants). The researchers used a 12-item Sexual Problems Checklist (SPC; Metz & Seifert, 1990) for males that measures sexual problems using a dichotomous (yes/no) response format. Alterations were made to the SPC to examine experiences of pain; dyspareunia items were replaced with two items measuring pain during receptive and insertive anal sex. Sixteen percent of participants described painful receptive anal intercourse as a current problem, and 61% had experienced this pain at least once in their life.

Rosser, Short, Thurmes, and Coleman (1998) proposed the term "anodyspareunia[1]" to indicate recurrent or persistent pain experienced by the receptive partner during anal intercourse. Participants ($N = 277$) were American men, recruited through a sexual health seminar, who had ever engaged in or attempted to engage in anal intercourse. Pain during anal sex was measured using 7-point Likert scales (1 = *never experienced/no pain*; 7 = *always experienced/severe pain, too painful to continue*). Twenty-five percent of participants reported "no to extremely mild" pain, indicating that anal sex does not necessarily involve pain. Sixty-three percent reported "occasional to fairly frequent" pain of "mild to moderate severity." The remaining 12% described "recurrent or persistent pain, too painful to continue." This latter group was arbitrarily defined as having "anodyspareunia."

Damon and Rosser (2005) investigated the prevalence, predictors, diagnosis, and consequences of pain during anal sex in greater detail and piloted clinical diagnostic criteria for "anodyspareunia." Participants were 404 MSM in the United States who had engaged in, or attempted to engage in, receptive anal intercourse. A questionnaire format was used with similar 7-point Likert scales as previous studies in the area (1 = *never experienced/no pain*; 7 = *always experienced/severe pain, too painful to continue*). Measures

included the frequency and severity of pain and the emotional consequences of experiencing pain (in terms of "distress" and "interpersonal difficulty"). Ten percent of participants were classified as meeting clinical criteria for "anodyspareunia" (i.e., they reported experiencing pain more often than not when engaging in receptive anal intercourse; they experienced significant distress as a function of this pain; and the pain was not attributable solely to insufficient lubrication, involuntary tensing of the anus, substance use, or a general medical condition).

CURRENT STUDY

Considering the differences in prevalence rates (Hirshfield et al., 2010; Lau et al., 2005; Lau et al., 2008; Laumann et al., 1999; Mao et al., 2009) and experiences of sexual difficulties between heterosexual and gay men (Bancroft et al., 2005; Cove & Boyle, 2002; Rosser et al., 1997; Rosser et al., 1998; Damon & Rosser, 2005), it may be possible that current sexual dysfunction measures do not adequately address the concerns of gay men. The aim of this article, therefore, is to provide an in-depth and systematic review of the development, theory, and psychometric properties behind relevant scales that measure sexual dysfunction and discuss their suitability for use with this population.

METHOD

Identification of Instruments

A number of electronic databases (e.g., EBSCOhost, Google Scholar, PsycINFO) were searched for journal articles, published between 1980 and 2011, containing the title, abstract, or keyword terms "sexual function" or "sexual dysfunction." These papers were searched for "self-report," "psychometric," "instrument," "questionnaire," "scale," "reliable," "reliability," "valid," and "validity."

The Handbook of Sexuality Related Measures–3rd edition (Fisher, Davis, Yarber, & Davis, 2011) also was reviewed for additional measures not identified in the electronic database search. The reference lists of papers obtained through all searches were inspected to identify other measures of possible relevance.

Exclusion Criteria

Instruments were excluded from consideration if (1) they had not been published in peer-reviewed outlets; (2) insufficient details were available about their psychometric properties; (3) they focused on sexual attitudes, sexual

knowledge, identity, and/or quality of life in patients with sexual difficulties (diary measures, administered interviews, and third-party report forms also were excluded); (4) they had been published prior to 1980, which coincided with the publication of the DSM-III[2]; and (5) they had been reviewed by Conte (1983). Eight instruments also were excluded as they did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002).

RESULTS

Forty-seven measures were located with seven identified as suitable for review (see Table 1 for a list of the seven measures and Appendix A for a list of the instruments that were excluded). Table 2 summarizes the key psychometric properties of the instruments deemed appropriate for assessment. Each instrument, presented in alphabetical order, is reviewed below; where possible, details about item development, dimensionality, reliability, and validity are provided.

The Arizona Sexual Experience Scale (ASEX; McGahuey et al., 2000). This five-item measure was developed to detect and follow up sexual dysfunctions in men and women with diagnosed depression (sample item: "Can you easily get and keep an erection?"). Five major domains of sexual dysfunction are assessed with one item for each: sex desire, arousal, erection, ability to reach orgasm, and satisfaction from orgasm. Reponses are coded on a 6-point Likert scale with varying responses (e.g., 1 = *extremely easily*; 6 = *never*). Higher scores reflect poorer sexual functioning (possible range is 5 to 30). A total ASEX score greater than 19, any one item with a score greater than 5, or any three items with a score greater than 4 are the criteria used to determine whether an individual has a sexual dysfunction. The ASEX may be self- or clinician-administered; completed by heterosexual and non-heterosexual individuals; and is suitable for use with persons who do not have a sexual partner. Items were generated through a literature review of sexual dysfunction theory; no other information was provided about the item generation process.

The psychometric properties of the ASEX were examined in two studies. McGahuey et al. (2000) employed a sample of 38 control subjects (16 males) and 58 psychiatric patients (23 males), who were participating in other research by the authors. Control participants (response rate = 35.5%) were hospital employees, staff, residents, and faculty of the University of Arizona. Soykan (2004) used a sample of 43 Turkish outpatients (25 males) with end-stage renal disease who were undergoing hemodialysis (age range = 22–62 years, *M* age = 41.90 years).

Dimensionality: No details were provided about the factor structure of the ASEX.

TABLE 1 Summary of Measures Reviewed

Measure	Description	Items	Minutes to Complete	Response Format	Time Period	Item Generation	Dimensionality
1. ASEX (McGahuey et al., 2000)	Five domains: 1. Sexual desire (1 item) 2. Sexual arousal (1 item) 3. Erectile function (1 item) 4. Orgasm function (1 item) 5. Sexual satisfaction (1 item)	5	10	Six-point Likert response format with various response options Example: 1 = extremely easily; 6 = never	Preceding week	Based on a literature review.	No factor analysis performed.
2. BSFI (O'Leary et al., 1995)	Five domains: 1. Sexual drive (2 items) 2. Erection (3 items) 3. Ejaculation (2 items) 4. Perceptions of problems in each domain (3 items) 5. Overall sexual satisfaction (1 item)	11	5	Five-point Likert scales with various response options Example: 0 = no function; 4 = good function	Preceding 30 days	Based on previous measures, expert and patient reviews, and pilot testing.	Originally developed as a multidimensional measure, but appears to be most suitable as unidimensional measure (Mykletun et al., 2006).
3. BSFQ (Reynolds et al., 1988)	Five domains[†]: 1. Sexual interest (2 items) 2. Sexual activity/performance (10 items) 3. Sexual satisfaction (3 items) 4. Physiological function (3 items) 5. Sexual preference (2 items)	21	15	Likert scales of varying formats and responses Example: 0 = I have no sexual activity resulting in erection; 6 = never able to regain an erection	Preceding month	Not provided.	Using a PCA, a four-component solution emerged. Cross-loadings are a concern.

4. DISF-SR (Derogatis, 1997)	Five domains: 1. Sexual cognition/fantasy (5 items) 2. Sexual arousal (5 items) 3. Sexual behavior/experience (5 items) 4. Orgasm (6 items) 5. Sexual drive/relationship (4 items)	25/26	15-20	Likert scales with varying formats and response options Example: 0 = not at all; 4 = extremely	Preceding 30 days	Based on previous measure (DSFI). No rational provided for selection of items.	A PCA resulted in six components; not as clear as one would expect.
5. FSHQ (Geisser et al., 1991)	Four domains††: 1. Interest and desire for sexual activity 2. Sexual development 3. Current sexual behaviors 4. Satisfaction	20	15-20	Six-point Likert scales with varying response options Example: 1 = always; 6 = never	Not provided	Based on a literature review.	No factor analysis performed.
6. IIEF (Rosen et al., 1997)	Five domains: 1. Erectile function (6 items) 2. Orgasmic function (2 items) 3. Sexual desire (2 items) 4. Intercourse satisfaction (3 items) 5. Overall satisfaction (2 items)	15	10-15	Five and six-point Likert scales of varying response options Example: 1 = very low; 5 = very high	Preceding four weeks	Previous research, interviews with male patients and their partners, panel of experts, pilot-testing.	PCA conducted but results ignored. Cross-loadings are a concern.

(*Continued*)

TABLE 1 (Continued)

Measure	Description	Items	Minutes to Complete	Response Format	Time Period	Item Generation	Dimensionality
7. MSHQ (Rosen et al., 2004)	Three domains: 1. Erectile function (3 items) 2. Ejaculation (7 items) 3. Sexual satisfaction (6 items) - Nine additional items assess sexual activity, time since last sexual encounter, level of and changes in sexual desire, bother associated with the sexual dysfunction	25	15-20	Five and six-point Likert scales of varying responses Example: 0 = none of the time; 5 = all of the time	Preceding four weeks	Based on literature review, expert panel, and patient interviews.	PCA identified three components.

Notes. †An additional item does not load on to any domains; ††Number of items in each domain is not provided.

TABLE 2 Reliability and Validity Statistics for Each Measure

Measure	Internal Consistency (Cronbach's α)	Test-Retest Reliability	Construct Validity			Concurrent Validity
			Convergent	Discriminant	Known-Groups	
1. ASEX (McGahuey et al., 2000)	$\alpha = .91$	One/two week interval For patients: $r = .80$ For controls: $r = .89$	Not demonstrated.	The items on the ASEX did not correlate with depression scores.	Significant differences on total ASEX scores between patients and controls.	Some correlations between items on the ASEX and BSFQ domains and items. Correlated significantly with a psychiatrist's assessment of sexual dysfunction.
2. BSFI (O'Leary et al., 1995)	Subscales: 1. $\alpha = .92$ 2. $\alpha = .95$ 3. $\alpha = .62$ 4. $\alpha = .81$ 5. $\alpha =$ NA Total scale: $\alpha = .94$	One week interval Subscales: 1. $r = .90$ 2. $r = .85$ 3. $r = .79$ 4. $r = .87$ 5. $r =$ NA	Not demonstrated.	Not demonstrated.	Differentiated between sexually dysfunctional men and healthy controls. No difference for ejaculation of drive domains due to methodological problems.	Not demonstrated.
3. BSFQ (Reynolds et al., 1988)	Not assessed.	One month interval $rs \geq .70$	Not demonstrated.	Not demonstrated.	Differences between a group of depressives and a group of controls.	Correlated weakly with DSFI and a sexual function log.

(*Continued*)

TABLE 2 (Continued)

Measure	Internal Consistency (Cronbach's α)	Test-Retest Reliability	Construct Validity			Concurrent Validity
			Convergent	Discriminant	Known-Groups	
4. DISF-SR (Derogatis, 1997)	Subscales: 1. $\alpha = .79$ 2. $\alpha = .76$ 3. $\alpha = .77$ 4. $\alpha = .80$ 5. $\alpha = .74$ Total scale: α not calculated	One week interval Subscales: 1. $r = .90$ 2. $r = .82$ 3. $r = .81$ 4. $r = .83$ 5. $r = .80$ Total scale: $r = .86$	Not demonstrated.	Not demonstrated.	Differentiated between sexually dysfunctional and healthy controls.	Not demonstrated.
5. FSHQ (Geisser et al., 1991)	Total scale $\alpha = .90$ Split-half = .86	Not assessed.	Not demonstrated.	Not demonstrated.	Established between community and sexual dysfunctional samples.	Not demonstrated.
6. IIEF (Rosen et al., 1997)	Subscales: 1. $\alpha = .92$-$.96$ 2. $\alpha = .92$-$.99$ 3. $\alpha = .77$-$.91$ 4. $\alpha = .73$-$.88$ 5. $\alpha = .74$-$.87$ Total scale: αs = .73-.95	Four week interval Subscales: 1. $r = .84$ 2. $r = .64$ 3. $r = .71$ 4. $r = .81$ 5. $r = .77$ Total scale: $r = .82$	Established through comparisons with comparable measures.	Compared scores with scale scores for marital adjustment and social desirability.	Discriminated between erectile dysfunction group and controls across most domains, except sexual desire.	Demonstrated by comparison of patient IIEF scores with independent, blinded clinician ratings of sexual function.

7. MSHQ (Rosen et al., 2004)	Subscales: 1. α = .90-.93 2. α = .81-.84 3. α = .90	One week interval Subscales: 1. r = .87-.94 2. r = .85-.86 3. r = .88	Significant correlations between depression measure and ejaculation domain (study 1), and satisfaction domain (study 2).	No significant correlation with measures of social desirability, and life satisfaction.	Differentiated between men with sexual dysfunction and healthy controls.	Did not correlate with the IIEF in one study. In second study, weak, but significant correlations observed.

Reliability: McGaheuy et al. (2000) reported that the ASEX demonstrated good scale score reliability ($\alpha = .91$) and strong test-retest reliability after a 1- to 2-week time interval: $r = .80$ ($p < .01$) for patients; $r = .89$ ($p < .01$) for controls.

Validity: As a test of known-groups validity, the patient sample evidenced significantly higher scores than did controls (McGahuey et al., 2000). The concurrent validity of the ASEX was demonstrated through correlations between items on the ASEX and items and domains of a revised version of the Brief Sexual Functioning Questionnaire (BSFQ; Reynolds et al., 1988). Variable results were obtained; for example, the correlation between the BSFQ domain "satisfaction from sex life" and the satisfaction item on the ASEX was not statistically significant: $r = -.44$ ($p > .05$) for patients; $r = -.24$ ($p > .05$) for controls. Also, the BSFQ and ASEX items on the ability to maintain an erection did not correlate: $r = .12$ ($p > .05$) for patients; $r = .26$, ($p > .05$) for controls. However, a statistically significant—though moderate—correlation was found between scores on the ASEX and a psychiatrist's assessment for the presence of sexual dysfunction ($r = .53$, $p < .001$; Soykan, 2004). Finally, discriminant validity was demonstrated through the absence of statistically significant correlations between ASEX scores and measures of depression (McGahuey et al., 2000).

The ASEX may be a useful tool within certain areas of psychiatry where sexual problems are not the primary focus of the clinical investigation (Giraldi et al., 2011). For example, it has been administered to patients undergoing hemodialysis for end-stage renal disease (Soykan, 2004) as well as patients with schizophrenia (Byerly, Nakonezny, Fisher, Magouirk, & Rush, 2006). However, in terms of its utility with members of the general population, several caveats must be considered. First, to date, no factor analysis has been conducted; thus, the dimensionality of the ASEX is unclear. Second, the test of known-groups validity was compromised by the age difference between the patient and control groups (50 years versus 38 years, respectively). If age had been treated as a covariate, it is unclear whether expected differences on the ASEX would have emerged. Third, some of the items appear to be double-barreled or ambiguous. For example, the question, "How easily can you reach an orgasm?" does not allow the respondent to differentiate between early (i.e., premature) and delayed ejaculation. Similarly, the erectile function item does not discriminate between the ability to achieve versus maintain an erection. Fourth, pain associated with intercourse is not assessed. Fifth, the time period assessed by the ASEX is the preceding week, which does not map onto DSM diagnostic criteria (i.e., a sexual problem must persist for six consecutive months to be considered a sexual dysfunction according to the DSM-5). Given these limitations and the modest evidence available in support of the measure's validity, the ASEX is not recommended for use among gay men.

The Brief Male Sexual Function Inventory (BSFI; O'Leary et al., 1995). This instrument consists of 11 items designed to measure current sexual functioning (sample item: "How much difficulty did you have getting an erection during the past 30 days?"). It covers three functional domains: sexual drive (two items), erectile function (three items), and ejaculatory function (two items), in addition to a problem assessment of these domains (three items), and overall satisfaction (one item). The BSFI uses a 5-point response format (e.g., 0 = *no function, big problem*; 4 = *good function, no problem*). A total score is computed for each domain as well as an overall total (i.e., sum of the three domain scores). The question assessing overall satisfaction is scored separately (0 = *very dissatisfied*; 4 = *very satisfied*). Item generation was based on previous measures, expert and patient reviews, and pilot testing.

The psychometric properties of the BSFI were assessed with 74 American patients who experienced sexual dysfunction (median age = 55 years) and a control sample of 60 general medicine patients (median age = 45 years). No description of the clinical evaluation or diagnosis is provided for patients in the sexual dysfunction sample. The control sample did not report any experience of sexual dysfunction or any health conditions that were likely to affect their sexual functioning.

Dimensionality: The BSFI was designed to be a multidimensional measure, but a factor analysis was not performed in the original study (O'Leary et al., 1995). Mykletun, Dahl, O'Leary, and Fossa (2006) investigated the dimensionality of the BSFI in a community sample of 1,185 Norwegian men (age range 20 to 79 years). Through the use of public address lists, questionnaire packs were mailed to potential respondents (return rate = 34%). A Principal Component Analysis (PCA) with orthogonal rotation was conducted. The exact method of orthogonal rotation was not specified. A one-component solution was identified, using the eigenvalue greater than one "rule" (eigenvalue = 6.54, accounting for 66% of the variance).

Reliability: The BSFI subscales demonstrated variable scale score reliability (α = .62–.95; O'Leary et al., 1995); however, Cronbach's alpha for the overall scale was high (α = .94; Mykletun et al., 2006). Acceptable test-retest reliability also was demonstrated over a period of one week (intraclass correlation coefficients ranged from .79 to .90 for the domains; O'Leary et al., 1995).

Validity: To date, there is insufficient evidence attesting to the construct validity of this measure. The only form of validation available is known-groups validity in which sexual dysfunction and control participants were compared. O'Leary et al. (1995) identified statistically significant differences for scores in the domains of erectile function, problem assessment, and satisfaction. However, scores in the domains of drive (libido) and ejaculation did not differ significantly.

In addition to the absence of evidence supporting the measure's validity, other limitations warrant mention. First, PCA is not an optimal technique to examine dimensionality (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Additionally, the use of orthogonal rotation is problematic as it does not allow components to correlate. Second, the scale provides restricted evaluation of erectile and orgasmic functions. Third, premature (early) ejaculation is not measured. (Such an omission is surprising, as this sexual dysfunction is relatively common.) Fourth, the wording of certain items may be viewed as phallocentric and/or heterosexist. For example, the question "Over the past 30 days, when you had erections, how often were they firm enough to have sexual intercourse?" suggests that most men engage in penetrative sex and ignores the finding that other forms of sexual activity are more common in same-sex relationships (McCarthy, 1992). Based on these considerations, the BSFI is not recommended for use with gay men.

The Brief Sexual Function Questionnaire for Men (BSFQ; Reynolds et al., 1988). This 21-item scale assesses sexual functioning during the preceding month (sample item: "During the past month, if you lose your erection during any type of sexual activity (including masturbation), are you able to regain it?"). It provides information on five domains: sexual interest (two items), sexual activity/performance (10 items), sexual satisfaction (three items), physiological function (three items) as well as sexual preference (two items; i.e., heterosexual versus gay). The BSFQ does not assume the respondent has a sex partner. Responses are coded on Likert scales with varying endpoints (e.g., 0 = *I have no sexual activity resulting in erection*; 6 = *never able to regain an erection*). Information on how to score the items is not outlined clearly in the original paper, and it appears to be quite complicated. In the activity domain, for example, the subscale score is the sum of eight items (3, 5, 6, 9, 10, 12, 15, and 16) minus the sum of two items (13 and 14). No details are given about the process used to generate scale items.

The psychometric properties of the BSFQ were examined in a small sample of men seeking treatment for major depressive disorder ($n = 42$, age range 21–58 years), healthy control men ($n = 37$, age range 21–59 years), and a clinic sample of men experiencing erectile dysfunction ($n = 13$, age range 22–65 years). Control participants were recruited through a mass mailing to university staff and alumni. Controls showed no evidence of present or past psychiatric disorder. Participants in the erectile dysfunction group were referred from primary care physicians and urologists to the authors' Sleep Evaluation Centre. None of these patients met criteria for a diagnosis of major or minor affective disorder (or other psychiatric diagnoses) at the time of examination (Reynolds et al., 1988).

Dimensionality: A PCA with varimax rotation was conducted on all items (except for the two items assessing sexual preferences), and a four-component solution was confirmed (accounting for 72% of the variance). Component retention was based on the eigenvalue greater than one "rule"

as well as the proportion of total variance explained by each component. However, inspection of the component output suggests that cross-loadings may be of concern (i.e., item 11 ["indicate how often you have ejaculated in the past month"] loaded on both activity/performance and physiological function at .53 and .50, respectively.) Based on the wording, one would expect item 10 to relate to the sexual satisfaction domain (i.e., "During the past month, have you felt pleasure from any forms of sexual experience?"). The PCA, however, showed this item to load on both the sexual activity/performance domain and interest domain (.61 and .41, respectively). It is also problematic that one item (item 4) failed to load on any components and, yet, was retained.

Reliability: Scale score reliability coefficients were not computed, as the authors felt that the number of items in each domain was too small. No statistical citation was provided in support of this decision. Acceptable test-retest reliability of the scale items and domains (after one month) was reported by Howell et al. (1987) ($rs \geq .70$, $p \leq .01$; the specific r values for each domain and scale items were not reported). Participants consisted of a control sample of university staff and students ($n = 20$) and men seeking help for depression ($n = 26$); both samples were matched for age. Reynolds et al. (1988) further examined test-retest reliability over a period of 20 days ($r = .95$). However, when examined on its own, the erectile dysfunction group evidenced significantly lower test-retest reliability ($r = .57$), especially in the activity/ performance domain ($r = .45$). The latter finding suggests that the BSFQ is least reliable in the measurement of physiological function and erectile difficulties (Daker-White, 2002).

Validity: There is insufficient evidence attesting to the construct validity of the BSFQ. Reynolds et al. (1988) found the discriminative validity differed according to which samples were compared. The controls and depressed groups evidenced statistically significant differences. However, the erectile dysfunction group did not differ from the controls on three domains. Concurrent validity was examined by correlating scores on the BSFQ with scores on the Derogatis Sexual Function Inventory (DSFI; Derogatis, 1998; Derogatis & Melisaratos, 1979) and a sexual function log (Howell et al., 1987). The log was a 14-day record of sexual interest and activity, which was completed by participants each night. Sexual interest was assessed on a visual analogue scale ranging from "none" to "most sexual thoughts you have ever had." Sexual activity was measured by asking the respondent to indicate how many times he had experienced an orgasm that day. Scores on the BSFQ sexual interest domain correlated significantly with the sexual interest component of the log ($r = .67$, $p < .001$), but the correlation was much weaker for the sexual activity domain ($r = .28$, $p < .02$). The BSFQ responses in sexual activity/performance and satisfaction correlated with the sexual drive and satisfaction subscales of the DSFI ($r = .56$ and .54, $p < .001$, respectively). However, when considering that these measures are

intended to assess the same construct, one would expect the correlations to be stronger.

Although the BSFQ includes items about one's sexual preference, a bias still exists toward heterosexual activities. For example, participants are asked how frequently they have ejaculated before they would like to while "attempting to insert [their] penis" and "thrusting after insertion." Another sample question is "During the past month, how long has intercourse itself usually lasted between insertion of [the] penis and ejaculation during sexual intercourse?" Again, an overreliance on items assessing penetrative sex may provide insufficient coverage of the diversity of sexual practices that constitute same-sex sexual interactions. Given this limitation, in conjunction with the scant evidence of reliability and validity, the BSFQ is not recommended for use with gay men.

The Derogatis Interview for Sexual Functioning-Self Report (DISF-SR; Derogatis, 1997). This 25-item[3] self-report scale assesses sexual function in men and women. (It also is available in the form of a semistructured interview: the Derogatis Interview for Sexual Functioning [DISF]). It assesses five domains of sexual functioning: sexual cognition/fantasy (five items), sexual arousal (five items), sexual behavior/experience (five items), orgasm (six items), and sexual drive/relationship (four items). Reponses are made on 9-point frequency scales for the first three domains (0 = *not at all*; 8 = *four or more times per day*); 5-point satisfaction scales for the fourth domain (0 = *not at all*; 4 = *extremely*); and a combination of 9-point and 5-point scales for the fifth domain. Content for the DISF-SR was taken from the original 254-item Derogatis Sexual Functioning Inventory (DSFI; Derogatis, 1998). However, no rationale is provided for selection of the items constituting the DISF-SR.

Dimensionality: A PCA was conducted with responses from 252 American men diagnosed as having erectile dysfunction according to the criteria of the DSM-IV (APA, 1994) and taking part in a multicenter drug trial. Using equimax rotation and the eigenvalue greater than one "rule," a six-component solution emerged as being most suitable, accounting for 71% of the variance. The six components were orgasm, sexual cognition/fantasy, sexual behavior/experience, autoeroticism, sexual arousal, and sexual drive/relationship. Unfortunately, the component solution is not as "clean" as one might anticipate. For example, loading on the first component was one item from the sexual drive/relationship domain and six items from the orgasm domain. The item from the sexual drive/relationship domain also double-loaded: component one (.41) and component six (.43). Two items from the sexual behavior/experience domain and one item from the sexual arousal domain loaded on the fourth component,[4] titled autoeroticism (loadings of .62, .87, and .84, respectively).

Reliability: In a community sample of men and women, scale score reliability coefficients were good (αs ranging from .74 to .80; $N = 168$), and over a 1-week period, test-retest reliability ranged from .81 to .90 ($n = 122$).

Validity: There is limited evidence to support the validity of the DISF-SR, as most published research has used the interview format (i.e., the DISF: Zinreich et al., 1990). In terms of known-groups (i.e., discriminative validity), the only available evidence appears in a study of 168 volunteers ($n =$ 82 men, $n = 86$ women, M age = 33.9 years). Participants were administered the DISF-SR and a measure of well-being in group settings (Derogatis, 1997). On the basis of DISF-SR scores, participants were grouped as being either "less than sexually adequate" ($n = 45$) or "sexually adequate" ($n = 123$). A series of t-tests were conducted to compare the well-being scores of the two subgroups. Statistically significant differences were noted between the groups (i.e., "sexually adequate" participants evidenced greater well-being).

The absence of psychometric evidence supporting the DISF-SR's scale score validity is complemented by concerns about heterosexist bias. For example, an item such as "During the past 30 days, or since the last time you filled out this inventory, how often have you had thoughts, dreams, or fantasies about erotic parts of a woman's body" possesses little relevance to gay men and their sexual functioning. Given these limitations, the DISF-SR is not recommended for use with gay men.

The Florida Sexual History Questionnaire (FSHQ; Geisser et al., 1991). The purpose of this 20-item instrument is to differentiate physiological and psychogenic erectile dysfunction (sample item: "Difficulty in maintaining an erection for sexual intercourse prior to ejaculation occurs . . . always to never"). An additional question asks participants to list prior interventions for their sexual dysfunction. Responses are coded on 6-point Likert scales with varying response options (e.g., 1 = *always*; 6 = *never*). The scoring of the FSHQ is not presented clearly in the original paper. As well, little information is provided about how items were generated (i.e., the authors report that some of the items were developed in response to previous literature on the impact of endocrine and vascular diseases on sexual functioning).

The validity and reliability of the FSHQ were examined in diabetic males with erectile dysfunction ($n = 33$; age range 24–73, M age = 50.5) and a healthy, age-matched control sample ($n = 58$; age range 31–83, M age = 47) in the United States. Erectile dysfunction (termed *impotence* in the original study) was defined as difficulty of six months or great duration in obtaining or maintaining an erection suitable for vaginal penetration.

Dimensionality: The FSHQ assesses four domains of sexual functioning: interest and desire for sexual activity, sexual development, current sexual behaviors, and sexual satisfaction. However, a factor analysis was not performed to confirm whether these four domains exist.

Reliability: Both Cronbach's alpha ($\alpha = .90$) and the measure's split-half reliability (.86) were good.

Validity: To date, there is insufficient evidence attesting to the validity of this scale. The FSHQ has been validated only through a comparison of men with diabetes (and erectile difficulties) to a healthy control sample (no diabetes or erectile difficulties). No comparison measures were used. The FSHQ discriminated between the two groups on 11 out of 20 items. Using Wilcoxon rank sum tests, responses on the FSHQ did not differentiate between men with organic ($n = 21$) or psychogenic ($n = 12$) erectile dysfunction, which is exactly what the scale was designed to measure.

Two additional limitations warrant mention. First, participants with limited reading comprehension needed clarification of the meaning of some items, suggesting the measure's readability may be of concern. Second, numerous items demonstrate a heterosexist bias as they focus on "vaginal penetration." Taking these factors into account, the FSHQ cannot be recommended for use with gay men.

The International Index of Erectile Function (IIEF; Rosen et al., 1997). This 15-item instrument measures male sexual functioning (sample item: "When you had erections with sexual stimulation, how often were your erections hard enough for penetration?"). Five domains are assessed: erectile function (six items), orgasmic function (two items), sexual desire (two items), intercourse satisfaction (three items), and overall satisfaction (two items). Reponses are coded on 5- and 6-point Likert scales (e.g., 1 = *very low*; 5 = *very high* or 0 = *no sexual activity*; 5 = *almost always or always*), with higher scores denoting better sexual functioning (possible range is 5 to 75). Domain scores are calculated by summing the scores for individual items in each domain. The IIEF was designed for use in clinical trials of Sildenafil to detect treatment-related changes and is considered to be the "gold standard" measure for the assessment of erectile functioning (Daker-White, 2002). Item generation involved a literature review, interviews with male patients and their partners, an international panel of experts, and pilot testing.

The psychometric properties of the final 15-item questionnaire were examined in a large-scale clinical trial with three samples. Sample A was patients with a diagnosis of erectile dysfunction for a minimum duration of six months who were participating in a clinical trial ($n = 111$, age range = 29–89 years, M age = 56). The clinical evaluation and diagnostic criteria were not detailed, although the etiology was mixed (40%), psychogenic (37%), and organic (21%). Sample B was a comparison control group of age-matched volunteers ($n = 109$, age range = 29–76 years, M age = 55) without any history of male erectile dysfunction. Sample C included both patients with erectile dysfunction ($n = 37$, age range = 29–71 years, M age = 53) and normal volunteers ($n = 21$, age range = 37–76 years, M age = 58).

Dimensionality: A PCA with varimax rotation identified five components with eigenvalues greater than one (erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction). Overlap among some of the domains was identified, particularly between erectile function

and intercourse satisfaction. For example, item 7 ("Over the last month, when you attempted sexual intercourse how often was it satisfactory for *you*?") had a component loading of .61 on the erectile function domain but was retained in the intercourse satisfaction domain (on which it had a component loading of .48).

Reliability: Strong scale score reliability was demonstrated for the five domains across the three samples (αs = .73–.99) and was especially high for the total scale scores (α = .91 for sample A; α = .96 for sample B; α = .91 for sample C). Alpha coefficients for the erectile function and orgasmic function domains were extremely high, which implies item redundancy (αs = .92–.96; αs = .92–.99, respectively). Cronbach's alpha was lower for the other domains: sexual desire (α = .77 for sample A; α = .82 for sample B; α = .91 for sample C); intercourse satisfaction (α = .73 for sample A; α = .87 for sample B; α = .88 for sample C); and overall satisfaction (α = .74 for sample A; α = .87 for sample B; α = .86 for sample C). Cronbach's alpha also was used for the two-item subscales (orgasmic function, sexual desire, and overall satisfaction). However, in this context, it would make more sense to correlate scores between the items (i.e., Cronbach's alpha is the average of all possible split-half reliabilities of a scale [Streiner, 2003] and, thus, does not make conceptual sense unless three or more items are being assessed).

For the five domain scores, test-retest reliability correlation coefficients were acceptable (rs = .64–.84) and particularly good for the erectile function and sexual satisfaction domains (rs = .84 and .81, respectively).

Validity: Known-groups validity was assessed by comparing the erectile dysfunction and control groups' responses. Statistically significant differences were found across most domains, except for sexual desire. Significant correlations (rs = .45–.75) were found between the domain scores for Sample C and a blinded clinical interview, providing evidence of concurrent validity. Discriminant validity was indicated by the absence of statistically significant correlations between scores on the IIEF and indices of marital adjustment and social desirability (i.e., the authors predicted that marital adjustment, social desirability and scores on the IIEF would not correlate).

The IIEF appears to be a psychometrically sound measure of sexual functioning; however, some limitations should be noted. The main focus of the IIEF is on erectile functioning (assessed using six out of 15 items). Sexual desire and orgasmic function are assessed using only two items each. Furthermore, the orgasmic function items do not allow for differentiation between early (i.e., premature) and delayed ejaculation. As noted with previous measures, the experience of pain during sex is overlooked. In addition, the wording of select items may suffer from heterosexist bias. For example, the question "Over the past 4 weeks, or since your last office visit, when you attempted sexual intercourse, how often were you able to penetrate (enter) your partner?" This item ignores gay men who assume the receptive role

when engaging in anal intercourse. As well, it fails to recognize gay men who do not participate in penetrative sex.

Although the IIEF has been used in studies involving gay populations (e.g., Breyer et al., 2010; Reece et al., 2009), no reliability or validity statistics were reported. Coyne et al. (2010) recognized this shortcoming and examined a modified version of the IIEF with 486 HIV-positive MSM. Participants were men attending for routine HIV care at seven European HIV treatment centers. No demographic information was provided about the sample. Questionnaires were completed at home and mailed back to the investigators. The wording of some of the items was altered to be better suited for MSM. Sexual intercourse was changed to "active (insertive) anal intercourse" and "passive (receptive) anal intercourse" and was broadened to include oral sex, masturbation, and morning erections. This resulted in the addition of seven items (22 items in total). A PCA with varimax rotation was performed, and a four-component solution was identified (eigenvalues greater than 1.5). Contrary to studies using the original IIEF, intercourse satisfaction and overall satisfaction emerged as a single component. Good scale score reliability was observed for three domains: erectile function ($\alpha = .82$), orgasmic function ($\alpha = .83$), and sexual desire ($\alpha = 0.89$). However, the reliability coefficients for the intercourse satisfaction and overall satisfaction domains were poor ($\alpha = .55$ and $\alpha = .42$, respectively). No evidence for validity was provided. Despite representing a positive advance for the measurement of sexual dysfunctions in gay men, the modified version of the IIEF was still defined by a narrow focus (i.e., erectile functioning), and there was limited evidence attesting to its psychometric soundness. Thus, it is not recommended that this measure be used to assess sexual functioning among gay men.

The Male Sexual Health Questionnaire (MSHQ; Rosen et al., 2004). This scale contains 25 items and assesses sexual function and satisfaction (sample item: "Are you able to ejaculate when having sexual activity with your wife or main partner?"). It was developed to assess functioning in aging men with urogenital concerns associated with certain medical conditions (i.e., heart disease, prostate cancer, and benign prostatic hyperplasia/lower urinary tract symptoms). The MSHQ addresses three domains of sexual function: erection (three items), ejaculation (seven items), and sexual satisfaction (six items). Nine items assess sexual activity, time since last sexual encounter, level of and changes in sexual desire, and bother associated with the sexual dysfunction. Responses are coded on 5- and 6-point Likert scales of varying responses (e.g., 0 = *none of the time*; 5 = *all of the time*) with higher scores indicating better sexual functioning. The time period assessed is the previous four weeks. In comparison to the IIEF, the MSHQ provides a more in-depth assessment of ejaculatory function and sexual satisfaction. The ejaculation domain of the MSHQ assesses delayed ejaculation, loss of ejaculation, the force of ejaculation, the amount of semen ejaculated, pleasure associated

with ejaculation, pain/discomfort during ejaculation, and the bother associated with ejaculation. An initial pool of (75) items was selected from the results of a literature review, expert panel solicitation, and patient interviews.

The psychometric properties of the MSHQ were examined in two samples: sample A and sample B. Study one, which used the former group, involved administrating the initial version of the MSHQ. Participants were men with urogenital symptoms ($n = 153$) who had moderate to severe lower urinary tract symptoms (LUTS) and self-reported difficulty with erection or ejaculation, and a control group of men ($n = 96$) who reported no sexual problems and mild or no LUTS. Participants were recruited through an independent survey research organization and were not participating in clinical trials or other research studies. Subjects were required to have a stable partner relationship for at least the past 12 months and to be generally healthy. Study two consisted of a subset of patients ($n = 56$) and controls ($n = 56$) from study one who were readministered a second 25-item version of the questionnaire after a one-week interval.

Dimensionality: A PCA was performed on the items in study one. Only items with loadings greater than .30 were retained, which were then factor analyzed using oblimin rotation. Two sexual function domains with eigenvalues greater than one were observed: erection and ejaculation. Three items showed high component loadings on the erection domain (loadings ranged from .84–.92), and seven items had moderate to high loadings on the ejaculation domain (loadings ranged from .52–.79). There was a moderate inter-correlation between the two domains ($r = .56$), but none of the individual items had significant cross-loadings (i.e., greater than .20). A third component was identified in study two: satisfaction. Moderate interdomain correlations were observed; $r = .49$ for erection/ejaculation; $r = .22$ for erection/satisfaction; $r = .40$ for ejaculation/satisfaction (p values were not reported).

Reliability: Scale score reliability was good for the erection ($\alpha = .90$) and ejaculation ($\alpha = .81$) domains in study one and for all three domains in study two (αs = .84–.93). In both studies, test-retest reliability (Pearson's zero-order correlation) was also high, ranging from .85 to .94 for each of the domains.

Validity: The MSHQ evidenced good discriminant validity; in study one and two, the MSHQ significantly differentiated between men with LUTS and sexual dysfunction and healthy men.

Scores on the domains of the MSHQ were correlated with the domains of the IIEF as a test of concurrent validity. In study one, the correlations were not statistically significant. In study two, statistically significant correlations were obtained, but the correlations were weak considering these instruments are intended to measure the same constructs: $r = .58$ ($p < .005$) for erection domains; $r = .48$ ($p < .005$) for ejaculation and orgasm domains; $r = .59$ ($p < .005$) for satisfaction domains.

Domain scores were correlated with scores on a depression measure as support for convergent validity. Statistically significant correlations were observed only between the ejaculation domain in study one ($r = -.23$, $p < .005$) and the satisfaction domain in study two ($r = .36$, $p < .05$), which is unexpected considering the established association between sexual functioning and well-being (e.g., Laumann et al., 1999).

The MSHQ performed reasonably well on tests of discriminant validity (i.e., no significant correlations were noted between scores on the MSHQ and measures of social desirability and life satisfaction). It is unclear, however, why the authors expected there to be no association between overall life satisfaction and sexual dysfunction.

Although the MSHQ provides a more in-depth analysis of delayed ejaculation compared to the IIEF, it does not assess premature ejaculation or the experience of pain associated with sexual activity. Furthermore, some items of the MSHQ appear problematic in terms of their ability to differentiate between situational and generalized sexual dysfunctions. Consider, for example, the item: "In the past 4 weeks, when masturbating by yourself or having sexual activity with your wife or main partner, how often have you felt like you were ejaculating but no fluid came out?" This double-barreled item does not accommodate the situation of individuals experiencing situational orgasmic difficulties (i.e., sexually functional when alone or masturbating but experiencing problems when he is with a partner).

In terms of suitability for use with gay men, the psychometric properties of the MSHQ have not been examined in this population. A short form of the MSHQ (the MSHQ-EjD Short Form; Rosen et al., 2007) was used with gay men but is not reviewed here due to its sole focus on ejaculatory function. Although items in the MSHQ refer to a "wife," the option of "primary partner" also is given, which is useful in avoiding heterosexist bias. On the other hand, the MSHQ may not be applicable for younger samples or men without a sexual partner. Items that illustrate this point include: "Compared to FIVE years ago, would you say the physical pleasure you feel when you ejaculate has increased/decreased?" and "Are you able to ejaculate when having sexual activity with your wife or main partner?" Sexual dysfunctions are not restricted to older men, and those without a partner also can be affected (e.g., Laumann et al., 1999). Consequently, the use of the MSHQ for gay men is not advised.

DISCUSSION

This article has reviewed seven measures of sexual dysfunction (i.e., ASEX, BSFI, BSFQ, DISF-SR, FSHQ, IIEF, MSHQ). None of the measures reviewed cover all the domains of men's sexual functioning or dysfunction as currently defined by the DSM-5 (APA, 2013), and pain during sex was overlooked in

all of the measures reviewed. Several were developed for the assessment of sexual functioning in clinical populations (i.e., ASEX, FSHQ, IIEF, MSHQ), so their use in general population samples is questionable. None of the measures assess pain during anal sex, which is a sexual difficulty experienced by some gay men (e.g., Damon & Rosser, 2005; Hollows, 2007; Rosser et al., 1997; Rosser et al., 1998). None of the studies reported including gay participants in the item development phase, which may have added to the heteronormative and heterosexist wording evident throughout (i.e., BSFI, BSFQ, DISF-SR, FSHQ, IIEF). Only one of the measures has been used in its entirety with gay men—the IIEF—but reliability and validity statistics were not reported. One study (Coyne et al., 2010) did examine a modified version of the IIEF with MSM, but the resulting scale was not psychometrically robust. Thus, no psychometrically robust sexual function measure was identified for use with gay male populations.

The absence of a measure suitable for gay men was not the only issue that emerged throughout the review. At first glance, some of the measures appeared to possess reasonable psychometric properties; however, upon closer inspection, several areas of concern emerged.

First, in two cases (i.e., ASEX, FSHQ) no factor analysis was performed, which is an important step in scale development (Costello & Osborne, 2005). Second, when the factor structure was examined (i.e., BSFI, BSFQ, DISF-SR, IIEF, MSHQ), there was an overreliance on PCA, the default option in SPSS. PCA is not a "true" method of factor analysis and is most suitable as an item reduction technique as it identifies components, not factors (Fabrigar et al., 1999). Yet it was seldom used for this purpose (i.e., for the BSFI, BFSQ, DISF-SR, and IIEF, PCA was reported as being used to confirm predefined "factors"). In some cases, the PCA results were completely ignored (i.e., BSFQ, DISF-SR, IIEF). It would have been more fitting to use an exploratory factor analysis (identification of factors) and a confirmatory factor analysis (confirmation of factors based on previous theory and research) for the development and refinement of these scales; yet not one paper employed these methods.

Third, the techniques used within PCA were not optimal: orthogonal rotation (e.g., varimax, equimax) was used for scales where oblique rotation would have been preferable (i.e., BSFI, BSFQ, DISF-SR, IIEF). Orthogonal rotation does not allow variables to correlate, whereas oblique rotation does (Costello & Osborne, 2005). It seems reasonable to assume that subscales focusing on male sexual dysfunction would be, at least, modestly inter-correlated.

Fourth, in determining the number of items to retain, three papers relied solely on the eigenvalue greater than one "rule" (i.e., DISF-SR, IIEF, MSHQ). However, this technique is arbitrary and, as a result, is believed to be among the least accurate methods available as it can lead to over-extraction of factors (Costello & Osborne, 2005). In two cases, it was used in conjunction with

other criteria such as percentage of variance explained (e.g., the BSFQ). It would have been optimal to employ parallel analysis, which is a preferred means of factor identification (e.g., Zwick & Velicer, 1986), in conjunction with other techniques (i.e., variance explained criterion, scree plot).

Fifth, over half of the measures reviewed (i.e., BSFI, BSFQ, DSFI-SR, FSHQ) possess questionable validity. A related concern pertains to apparent confusion over the type of validity being assessed. For example, Rosen et al. (1997) reported concurrent validity as convergent validity with regard to the IIEF.

Sixth, and finally, although reliability assessments were adequate in most cases, insufficient time intervals (< 2 weeks) were used to measure test-retest reliability (i.e., ASEX, BSFI, DSFI-SR, MSHQ). In four of the six papers reporting scale score reliability coefficients (i.e., ASEX, BSFI, IIEF, MSHQ), high Cronbach's alpha coefficients were reported. According to Streiner (2003), acceptable alpha values should not exceed .90 as higher values suggest item redundancy.

CONCLUSION

This review highlights the absence of a psychometrically sound measure of male sexual dysfunction that can be used with gay men (or men in general). Many researchers have employed single-item questions to assess sexual dysfunction in gay and heterosexual men (e.g., Hirshfield et al., 2010). Perhaps this is a result of the absence of a psychometrically sound "gold standard" measure, which underscores the need for a high-quality scale. The absence of such an instrument not only has significant implications for social science research but for clinical practice, where the development and refinement of effective treatment strategies for those affected by sexual dysfunctions is important. To date, researchers in the field appear not only to be behind in techniques for scale development but also in their exclusion of gay men. A potential solution to the lack of sophisticated scale development techniques is to ensure more comprehensive statistics training is available to graduate students, but the issue of excluding gay men is more complex. One possible explanation for this exclusion relates to Hegarty's (2006) discovery that the increase in acceptance of sexual minorities is not related to an increased acceptance of same-sex sexual activity. Thus, although individuals involved in the development of sexual dysfunction scales may be comfortable with a gay man's sexual minority status, this is not to say these same individuals are equally comfortable discussing aspects of the sexual activity experienced by gay men. To move forward in this area, these major flaws in sexual dysfunction measurement need to be addressed so that assistance for gay men experiencing sexual dysfunctions can be provided in a more beneficial, conscientious, and nondiscriminatory manner.

NOTES

1. It should be noted that this term has been criticized in the literature. For instance, Hollows (2007) argued that pain during anal sex may be a consequence of a lack of information, inadequate anoreceptive preparation, or pre-existing medical conditions (e.g., hemorrhoids). Therefore, it may be unwise to label the experience of pain during anal sex a dysfunction. Clearly, more work is needed in this area, but the research thus far suggests gay men experience sexual difficulties that may be less germane to heterosexual men.

2. Measures published before 1980 were few in number and were psychometrically deficient (Daker-White, 2002).

3. The DISF-SR has been reported as having 25 (Derogatis, 1997) and 26 items (Derogatis, 2011).

4. For some unspecified reason, this component was not included as a scale domain.

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APPENDIX A

List of Measures Excluded from Review

Scale	Reference	Reason for exclusion
Center for Marital and Sexual Health Sexual Functioning Questionnaire (CMSH-SFQ)	Corty, Althof, & Kurit, (1996); Glick, McCarron, Althof, Corty, & Wilke, (1997)	Not exclusively self-report
Changes in Sexual Functioning Questionnaire (CSFQ)	Clayton, McGarvey, & Clavet (1997); Clayton, McGarvey, Clavet, & Piazza (1997)	Male version did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)
Chinese Index of Premature Ejaculation (CIPE-10)	Yuan et al. (2004)	Designed to measure premature ejaculation only
Derogatis Sexual Functioning Inventory (DSFI)	Derogatis (1978; 1998)	Designed specifically for heterosexual couples
Erectile Dysfunction Effect on Quality of Life (ED-EQoL)	MacDonagh, Ewings, & Porter (2002)	Designed to measure quality of life
Erectile Dysfunction Inventory for Treatment and Satisfaction (EDITS)	Althof et al. (1999)	Designed to assess treatment satisfaction following therapy for erectile dysfunction
Erectile Function domain of IIEF (IIEF-6)	Cappelleri, Rosen, Smith, Mishra, & Osterloh (1999)	Designed to measure erectile functioning only
Erection Quality Scale (EQS)	Wincze et al. (2004)	Designed to measure quality of erections only
Golombok Rust Inventory of Sexual Satisfaction (GRISS)	Rust & Golombok (1985; 1986)	Designed for those participating in psychotherapeutic interventions (i.e., sex therapy clients)
Index of Premature Ejaculation (IPE)	Althof et al. (2006)	Designed to measure premature ejaculation only
Index of Sexual Satisfaction (ISS-Revised)	Hudson, Harrison, & Crosscup (1981); Hudson (1998)	Designed to measure of the degree of satisfaction in sexual relationships, not sexual dysfunction per se (e.g., "I feel that my sex life is boring")
Male Function Profile/Impotence Questionnaire (MFP/IQ)	Fineman & Rettinger, (1991)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)
MSHQ-Ejaculatory Dysfunction (MSHQ-EjD)	Rosen et al. (2007)	Designed to measure ejaculation difficulties only.
Nagoya Sexual Function Questionnaire (NSFQ)	Kikuchi et al. (2011)	Designed for schizophrenic patients taking antipsychotics

(*Continued*)

APPENDIX (Continued)

Scale	Reference	Reason for exclusion
New Sexual Satisfaction Scale (NSSS)	Štulhofer, Buško, & Brouillard (2009)	Designed to measure sexual satisfaction
Premature Ejaculation Diagnostic Tool (PEDT)	Symonds et al. (2007)	Designed to measure premature ejaculation only
Premature Ejaculation Profile (PEP)	Patrick et al. (2008)	Designed to measure premature ejaculation only
Psychological Impact of Erectile Dysfunction (PIED)	Latini et al. (2002)	Designed to measure quality of life
Psychological and Interpersonal Relationship Scale (PAIRS)	Swindle, Cameron, Lockhart, & Rosen (2004); Swindle, Cameron, & Rosen (2005)	Assess broad psychosocial outcomes associated with erectile dysfunction and its treatment
Psychotropic-Related Sexual Dysfunction Questionnaire (PRSexDQ-SALSEX)	Montejo, Garcia, Espada, et al. (2000)	Designed to assess changes in sexual dysfunction since beginning antidepressant treatment, the types of problems experienced and the tolerability of those changes
Quality of Erection Questionnaire (QEQ)	Porst et al. (2007)	Designed to measure quality of erections only
Quality of Life Measure specific to Men with Erectile Difficulties (QOL-MED)	Wagner, Patrick, McKenna, & Froese (1996)	Designed to measure quality of life
Quality of Sexual Life Questionnaire (QVS)	Costa et al. (2003)	Designed to measure quality of life
Self-Esteem and Relationship Questionnaire (SEAR)	Cappelleri et al. (2004)	Designed to measure the impact of erectile dysfunction on men's self-esteem and sexual relationship
Sexual Aversion Scale (SAS)	Katz, Gipson, Kearly, & Kriskovich (1989); Katz, Gipson, & Turner (1992)	Designed to assess sexual fear and avoidance typical of Sexual Aversion Disorder
Sexual Beliefs & Information Questionnaire (SBIQ)	Adams et al. (1996)	Designed to measure older people's beliefs and knowledge about sexual intimacy and satisfaction; developed for those attempting to modify their behavior
Sexual Desire Inventory (SDI)	Spector, Carey, & Steinberg (1996)	Designed to assess Hypoactive Sexual Desire Disorder in men and women
Sexual Dysfunction Scale (SDS)	McCabe (1998a)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)

(*Continued*)

APPENDIX (Continued)

Scale	Reference	Reason for exclusion
Sexuality Experience Scales (SES)	Cull (1992); Frenken & Vennix (1981)	Designed to assess sexual morality, sexual motivation, psychosexual stimulation, and attraction to "one's own marriage." The focus on married couples renders this measure outdated and there is a focus on factors of interest for psychotherapy
Sexual Function Scale (SFS)	McCabe (1998b)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)
Sexual Health Inventory for Men (SHIM or IIEF-5)	Rosen, Cappelleri, Smith, Lipsky, & Pena (1999)	Designed to measure erectile functioning only
Sexual History Form (SHF)	Creti et al. (1998)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)
Sexual Interaction Inventory (SII)	LoPiccolo & Steger (1974); Reinhardt (1998)	Designed to assess sexual function and satisfaction in heterosexual couple's relationships only
Sexual Interaction System Scale (SIS)	Woody & D'Souza, (1994, 1998)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)
Sexual Life Quality Questionnaire	Woodward, Hass, & Woodward (2002)	Designed to assess sexual quality of life and treatment satisfaction
Sexual Quality of Life–Male version (SQOL-M)	Abraham, Symonds, & Morris (2008)	For use in men with either premature ejaculation or erectile dysfunction to assess impact of these conditions on men's self-esteem, relationship, and emotional well-being
Sexual Self-Efficacy Scale: Erectile Functioning (SSES-E)	Fichten et al. (1998)	Designed to cognitive dimension of erectile functioning and adjustment in men
Sexual Symptoms Distress Index (SSDI)	Croog et al. (1986)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)
Treatment Satisfaction Scale (TSS)	Kubin, Trudeau, Gondek, Seignobos, Fulg-Meyer (2004)	Designed to measure a sexual quality of life measure and is used in treatment outcome studies of male sexual dysfunction
Watts Sexual Function Questionnaire (WSFQ)	Ganz et al. (1998)	Did not meet the minimum published standards for reliability and validity as identified by Daker-White (2002)