



Focusing the Conceptualization of Erotophilia and Erotophobia on Global Attitudes Toward Sex: Development and Validation of the Sex Positivity–Negativity Scale

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Abstract

Previous measures of erotophobia/erotophilia like the Sexual Opinion Survey (SOS) assessed gut-level positive–negative affective and evaluative reactions to a wide range of sexual stimuli, resulting in purposefully diverse item content. Although an effective strategy, the item content of existing erotophilia/erotophobia scales is now potentially too generalized, encompassing what have since developed as an array of more focused constructs in the current literature like attitudes toward (1) casual sex, (2) pornography, (3) non-heterosexual orientations (e.g., homophobia), and (4) masturbation. The current study therefore sought to evaluate existing scales and to develop a conceptually focused measure of sex-positivity and sex-negativity using a distinct strategy designed to obviate the need for overly generalized (and potentially imbalanced or confounding) item content. Using responses from 2205 online respondents (82% Caucasian, 66% heterosexual, and 50% female) completing an item pool of 158 items, the current study employed a combination of classic test-theory analyses (e.g., exploratory and confirmatory factor analyses) and item response theory analyses to develop a psychometrically optimized scale—the Sex Positivity–Negativity (SPN) scale. The SPN scale demonstrated: (1) a stable 2-subscale structure distinguishing sex-negativity from sex-positivity, (2) consistently high levels of internal consistency across 31 demographic subsamples, (3) more discriminant than convergent validity with existing erotophilia scales given its novel focus, (4) discriminant validity with more specific sexual attitudes, (5) greater levels of power and precision for detecting differences between individuals, (6) stronger links to individual, sexual, and relationship functioning than existing scales, and (7) incremental validity over the SOS for predicting change in relationship dynamics over 6 months. The findings therefore suggested that the SPN scale is a conceptually focused measure of sex-positivity and sex-negativity offering researchers a comparatively short and effective tool. Implications are discussed.

Keywords Erotophilia · Erotophobia · Sex-positivity · Sex-negativity · Measure development · Sexual satisfaction

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Introduction

Sex in a relationship can be an important source of satisfaction (e.g., Fisher et al., 2015) or conflict (e.g., Papp et al., 2013). It therefore follows that understanding individuals' trait dispositions toward sex in general could have important implications for understanding sex in an individuals' romantic relationship. Two fundamental constructs have been proposed to represent such dispositions: (1) erotophilia, defined as a trait disposition to have positive affective and evaluative responses to a diverse range of sexual stimuli (indicative of more broadly open and positive attitudinal sets toward sex), and (2) erotophobia, defined as a trait disposition to have negative affective and evaluative responses to sexual stimuli

(indicative of more broadly negative and restrictive attitudinal sets; see Fisher et al., 1988a). Originally conceptualized as a single continuum, the erotophilia to erotophobia spectrum therefore represents the broader, gut-level, affective-evaluative responses individuals have toward a wide range of sexual stimuli. Previous work has highlighted the salience of these traits for a wide range of outcomes. For example, individuals with high levels of erotophilia are more likely to take care of their sexual health (Fisher et al., 1988b), use contraception (Sanders et al., 2006), have higher levels of sexual satisfaction (Hurlbert et al., 1993), and experience more satisfying orgasms (Arcos-Romero et al., 2018). Furthermore, erotophilia has been shown to moderate the effectiveness of sexual education courses (Fisher et al., 1988b). Erotophobia has been found to differ between individuals in monogamous and non-monogamous relationships (Balzarini et al., 2018).

Despite this growing body of work, the study of erotophilia and erotophobia has been potentially limited by the scales available to assess these constructs. Existing measures of erotophobia/erotophilia vary markedly: (1) in their length (with some scales exceeding 30–50 items), (2) in their item content (e.g., assessing affective responses to sexual stimuli by purposefully presenting an extremely diverse range of items thereby introducing the potential risk of inadvertently obscuring or contaminating that assessment with the assessment of constructs like attitudes toward pornography, casual sex, masturbation, homosexuality, etc.), and (3) in their dimensionality (ranging from 1 to 4 dimensions, e.g., Fisher, 1998; Fisher et al., 1988a; Tromovitch, 2000). The current study therefore sought to take a slightly different conceptual strategy to operationalize these constructs by focusing on sex-positivity and sex-negativity as key facets of erotophilia/erotophobia, thereby developing the Sex-Positive/Negative scale, a short, conceptually focused, and psychometrically optimized measure of positive and negative attitudes, evaluations, and orientations toward sex. To ground the SPN scale within the existing literature, we examined it alongside existing measures of erotophilia/erotophobia to evaluate: (1) their correlation structures as well as their (2) convergent, (3) discriminant, and (4) unique predictive validities. This direct comparison of an array of erotophilia/erotophobia measures allowed the study to lend conceptual clarity to this larger body of work, bringing research on erotophilia/erotophobia in line with the increasingly detailed nomological net of constructs related to sexual attitudes that has grown over the last years.

Erotophilia/Erotophobia

Salience in Daily Lives

Sex and sexuality are important topics in individuals' daily lives as one instance of engaging in sexual activity with a

partner can lead to boosts in functioning that can last over several days (Meltzer et al., 2017). As fundamental positive and negative attitudes toward sex are likely to influence these effects, erotophobia/erotophilia could be highly salient in models of daily individual and relationship functioning. Consistent with this, erotophobia/erotophilia have been linked to both relationship and individual functioning. For example, erotophilia has been linked to greater sensation seeking (Bogaert, 2001), sexual-preoccupation (Snell et al., 1992), unrestricted sociosexuality (Wright & Reise, 1997), a higher number of sex partners (Bogaert & Fisher, 1995), and higher levels of sexual satisfaction (Hurlbert et al., 1993), whereas erotophobia has been linked to greater negative affect accompanying sexual thoughts (Bogaert, 2001). Thus, together erotophobia/erotophilia have been linked to meaningful aspects of relationship and individual functioning.

Previous Conceptual/Operational Definitions

The original and most prevalent operational definition of erotophobia/erotophilia took a purposefully broad scope, conceptualizing those constructs as the disposition to respond with either positive or negative affective and evaluative responses to a wide range of sexual cues (Fisher et al., 1980, 1988a). Thus, by using purposefully diverse and highly specific items spanning a wide range of sexual topics, the total scores on such scales would represent a gut-level positive/negative affective and evaluative reaction to sexual stimuli in general. From this conceptual viewpoint, several measures of erotophobia/erotophilia were generated using large numbers of heterogeneous items, as exemplified by one of the most widely used scales, the Sexual Opinion Survey (SOS; Fisher et al., 1988a). Results with the SOS suggest that this was a highly effective strategy to obtain an assessment of individuals' gut-level responses to sexual stimuli. Not only has the SOS demonstrated meaningful associations with a broad range of constructs (reviewed above), but it also demonstrated near-zero correlations with measures of social desirability bias (Fisher et al., 1988b). Despite the notable strengths of the findings with the SOS, the approach employed also incurred some potential limitations that have become more salient as the field of sex research has deepened and matured in the 30 years since many of the original erotophilia/erotophobia scales were developed. Specifically, researchers have begun to examine more specific attitudes and distinct constructs (often with their own validated self-report scales) within their models, including: attitudes toward masturbation (e.g., Weis et al., 1992), attitudes toward pornography (e.g., Evans-Decicco & Cowan, 2001), attitudes toward casual sex (e.g., Penke & Asendorpf, 2008), and attitudes toward gay and lesbian individuals (e.g., Herek, 1998). Thus, within the current conceptual landscape of the field (i.e., the broader nomological net), existing measures

of erotophilia/erotophobia (designed to be purposefully heterogeneous by including a diffuse mixture of sexual stimuli) now contain items that would seem to conceptually map onto a variety of these more specific constructs. This introduces the risk that scores on the SOS might show inflated correlations with measures of those more specific sexual attitudes and orientations merely due to overlapping item content. It is therefore important to quantify the degree of intended heterogeneity and the degree of conceptual overlap of scales like the SOS. Although, the various specific sexual attitudes assessed by existing measures are likely individual facets or subcomponents that underlie individuals' overarching erotophilic and erotophobic affective and evaluative responses (i.e., valid sexual stimuli), given the demonstrated independence of those subcomponents within the current literature, combining them within a single scale also runs the risk of obscuring interesting differences in the patterns of results across those more specific attitudes.

Existing Scales

Currently, there are four scales that have been developed to measure erotophobia/erotophilia and have been more broadly adopted within the literature: the Sexual Opinion Survey (SOS; 21 items forming a single scale; Fisher, 1998), the Comfort with Sexual Matters for Young Adults (CWSMYA; 6 items forming a single scale; (Rye et al., 2012), the Sexual Anxiety Scale (SAS; 56 items forming 3 subscales; Fallis et al., 2011), and the Multidimensional Measure of Comfort with Sexuality Scale (MMCSI; 32 items forming 4 subscales; Tromovitch, 2000). Given the predominant conceptual/operational approach to creating these scales, their items often purposefully span a wide range of sexual stimuli so that total scores on those scales represent an aggregate gut-level affective and evaluative positive–negative response to sexual stimuli in general. This approach to operationalizing erotophilia/erotophobia therefore means that those scales contain individual items assessing attitudes toward highly specific sexual actions or practices. Thus, rather than including items assessing global sex-positivity (e.g., “I feel that sex and sexuality are enriching”) the existing scales include far more diverse and highly specific items: “Swimming in the nude with a member of the opposite sex would be an exciting experience” (SOS), “It is OK to enjoy being sexually aroused (turned on) by a sexy story, picture, or movie” (CWSMYA), “How much discomfort would you feel... Watching coverage of the Gay Pride Day parade” (SAS), “I would find it awkward knowing that a friend’s favorite sexual activity was anal sex” (MMCSI). These examples demonstrate the purposeful heterogeneity of the existing sexual attitudes scales. The example items also demonstrate that many of the items of these measures are written and scored in such a way that they effectively presume that respondents are heterosexual.

For example, skinny dipping with an opposite sex partner might actually be a neutral or aversive experience for gay and lesbian respondents, not because of their general affective and evaluative responses to sexual stimuli but because of their differing sexual orientation. Although “opposite sex” partner questions were somewhat balanced (albeit, not particularly evenly) by “same sex” questions on existing measures, we remain concerned that sexual and gender minority individuals can experience the use of such language as micro-aggressions that devalue their own inner truths. Moreover, using such language could easily evoke individuals’ comfort with their own sexual and gender identities as they attempt to report on their erotophilia/erotophobia, thereby further obscuring or contaminating that assessment. Thus, we would argue that rather than specifying “opposite sex” or “same sex” partners, it would be preferable for erotophilia/erotophobia items (and indeed for a wide variety of sexuality and romantic relationship measures not directly related to sexual or gender identity) to simply specify “attractive” or “other” individuals.

Current Definition

The current study took a slightly different conceptual approach to previous scales by narrowing in on sex-positivity and sex-negativity as critical facets of erotophilia and erotophobia. Thus, at a conceptual level we see sex-positivity and sex-negativity as focused and highly face-valid components of the broader constructs of erotophilia and erotophobia. Correspondingly, at the operational level, this allowed us to develop a scale separately assessing individuals’ global positive and negative attitudes toward sex independent of the wide range of more specific and focused attitudes assessed by existing scales (i.e., toward pornography, homosexuals, masturbation, etc.). Essentially, we wanted to create scales that assess the degree to which thinking about sex and sexuality have generally negative and/or positive connotations for individuals. We therefore focused our conceptual definition on assessing the degree to which thinking about sex and sexuality evoke generally positive and/or negative affective reactions, evaluations, and attitudes, toward not only sexual behavior but other more global aspects of sex and sexuality—operationally focusing the item content directly on positivity and negativity rather than on a diverse set of sexual stimuli. Given these conceptual and operational definitions for the current project, we refer to these constructs as sex-positivity and sex-negativity to distinguish them from the more broadband and heterogeneous operational definitions that have guided the foundational work on erotophilia and erotophobia. Although it is possible that positivity and negativity toward sexual behavior might differ for some individuals from their positivity and negativity toward more global aspects of sexuality, the current definition purposefully encompassed both

domains when assessing sex-positivity and sex-negativity in order to remain aligned with the broader definitions of erotophilia and erotophobia.

To implement this definition, we drew from the work on semantic differentials (Osgood, 1964) demonstrating the cross-cultural universality of assessing positive and negative constructs using common positive and negative adjective pairs. Building on that work, when writing items to augment the item pool above and beyond the items of existing scales, we wrote sets of globally evaluative items with clear positive and negative content, rather than drawing heavily upon the items of existing scales. Thus, we wrote items asking subjects, “In general, I feel that sex and sexuality are...” providing a set of positive adjectives “good, positive, invigorating, pleasant, fun” and a set of negative adjectives “bad, unpleasant, draining, negative, miserable,” thereby including items in the pool that could more directly assess positive and negative affective evaluations of sex and sexuality in a manner consistent with our conceptual definition.

Distinguishing Sex-Positivity from Sex-Negativity

A growing body of work has demonstrated that positive and negative aspects of specific constructs often assess related yet meaningfully distinct processes. This has been demonstrated in the literature on affect (Watson et al., 1988), psychological functioning (Watson et al., 1995), romantic relationship quality (Rogge et al., 2016), and the quality of sex in relationships (Shaw & Rogge, 2016). Building on this work, we proposed that sex-positivity and sex-negativity would represent meaningfully distinct (yet moderately correlated) dimensions. We therefore drew upon a recent strategy (e.g., Rogge et al., 2016) of breaking apart pairs of adjectives and instead of presenting them in a semantic differential format, presented the positive and negative items as separate items. This allowed for the possibility that sex-positivity and sex-negativity would emerge as distinct dimensions, rather than simply the opposite ends of a single dimension.

Augmenting Measure Development with Item Response Theory

IRT analyses offer a level of detail on the exact quality of the information provided by items that cannot be obtained via traditional correlational methods (i.e., EFA, CFA, internal consistency, see Hambleton et al., 1991). Specifically, IRT generates information profiles for each item. These item information curves reveal how much information an item provides for discriminating between subjects at various levels (from 3 SDs below the mean to 3 SDs above the mean) of the construct being assessed (identified as θ in the IRT equations). The IRT-generated item information

curves can then be added together to create a test information curve that indicates the amount of information provided by a set of items when used as a scale. Thus, these information curves allow researchers to identify the smallest possible set of items that will yield the strongest power for detecting individual differences across the broadest range of the construct, thereby psychometrically optimizing a scale. Although originally developed for items with dichotomous outcomes (i.e., giving a correct or incorrect answer), the Graded Response Model has been well validated as a method of applying IRT analyses to items given on Likert-response scales (Samejima, 1997). Given the markedly large sample sizes required by IRT, only recently have psychology researchers begun using IRT analyses to optimize self-report scales (e.g., Fraley et al., 2000; Funk & Rogge, 2007).

The Current Study

Although previous measurement work on scales like the SOS, CWSMYA, SAS, and MMCSI provided a critical foundation for exploring the importance of erotophobia and erotophilia in individuals' lives, those scales we marked by: (1) diverse conceptual definitions, (2) purposefully heterogeneous content (to sample affective and evaluative gut-reactions to a wide range of sexual stimuli) that has become too generalized, obscuring the assessment of erotophilia/erotophobia with what have more recently become distinct constructs in the literature, (3) items that take on markedly different meanings in sexual minorities (e.g., items referring to ‘opposite sex’ partners and that assess tolerance of homosexuality), and (4) fairly extensive lengths (e.g., requiring the use of as many as 21 to 50 items). The current study therefore sought to develop and validate: (1) conceptually focused, (2) short (i.e., 8- and 4-item scales), and (3) psychometrically optimized measures of general sex-positivity and sex-negativity (key facets of erotophilia and erotophobia). Toward that end, we presented a pool of 151 items (including the items of the SOS, CWSMYA, SAS, & MMCSI) within an online survey to 2,205 respondents. We used a combination of classic correlation-based measure-development analyses (e.g., EFA, CFA, internal consistency) and item response theory analyses to: (1) evaluate the content and correlational structures of the existing measures, (2) create the Sex Positivity–Negativity (SPN) scale, (3) evaluate the convergent and discriminant validity of both the SPN scales and the existing scales, (4) evaluate the quality of information provided by the SPN and the SOS, (5) determine how well the SPN might function across a broad range of future samples, and (6) demonstrate the incremental predictive validity of the SPN above and beyond the SOS.

Method

Participants

Participants were recruited from a variety of sources to complete an online survey. The information page beginning the web survey was accessed 4,364 independent times during the recruitment period, and 3,487 of those visits involved clicking through to begin the survey (80% participation rate). Of those individuals, 183 were identified as duplicates (via their email addresses and/or their Mturk IDs), yielding 3,304 unique rows of data. Of those respondents, 947 completed less than 70% of the survey. The remaining 2,357 subjects were screened for quality of attention and effort and 59 (2.5%) were removed for completing the survey at an unreasonably rapid pace (greater than 26 questions per minute, roughly 2.5 times the median rate). Another 93 (3.9%) were removed for failing to comply with 3 or more of the 5 directed questions asking them to refrain from providing an answer to demonstrate that they were paying attention (see Maniaci & Rogge, 2014). This cleaning process yielded a final sample of 2205 respondents (67% completion rate). Roughly 50% of the participants identified as female, 48% as male, and 2% as non-binary, gender-fluid, or other. Most participants were Caucasian (82%), with a mean age of 34 years ($SD = 12.0$) and an average income of \$60,149 ($SD = \$33,338$; see Table 1 for complete demographics).

Procedure

Recruitment

All study procedures and materials were approved by a university institutional review board (IRB) and subjects were recruited from April to August of 2018. Respondents had to be at least 18 years of age to participate. The survey was hosted online via Survey Gizmo under the title, “The How You Think about Sex Study” and took approximately 43 min to complete. The first webpage of the survey offered informed consent in the form of an information page. Participants were provided with individual normative feedback at the end of the survey as the primary recruitment incentive. Participants were recruited from various online sources to defray the sociodemographic impact that any one recruitment source might have had: 47% from Research Match (drawing adults of all ages [from 18 to 74] more intrinsically interested in supporting research with slightly higher levels of education), 32% from Mechanical Turk (drawing adults generally in their 20s, 30s, and 40s willing to participate in research for extremely small amounts of

monetary compensation with slightly lower socioeconomic status levels), 8% from Reddit (drawing adults generally in their 20s, 30s, and 40s more intrinsically interested in supporting research with slightly higher levels of education), 6% from an undergraduate subject pool (drawing a sample of emerging adults in their early 20s actively exploring their own sexualities and sexual relationships), 5% from posting on websites listing psychology studies (e.g., University of Hanover, socialpsych.org), and 2% from Survey-Circle. Participants recruited via Mechanical Turk received small monetary incentives (\$0.40) in the form of Amazon.com store credit and students from the undergraduate subject pool received extra credit for their psychology courses as additional incentives.

6-Month Follow-Up

In the baseline survey, subjects were given the option of providing an email address to receive up to 3 separate email invitations to complete a 5–10-min follow-up survey and 2012 (91%) did so. Of those, 1190 (59%) provided follow-up data ($M = 6.5$ mo). ANOVA and χ^2 analyses examining possible attrition differences between respondents providing follow-up and those that did not failed to identify significant differences on income ($F(1, 2169) = 1.96$, ns), rates of being single ($\chi^2(1) = 0.13$, ns), levels of sex-positivity ($F(1, 2199) = 1.71$, ns; assessed with the SPN), or sex-negativity ($F(1, 2195) = 0.75$, ns; assessed with the SPN). However, the attrition analyses suggested that the respondents failing to provide follow-up data tended to be younger ($F(1, 2178) = 67.06$, $p < .005$, $\eta^2 = .030$), more likely to identify as male ($\chi^2(1) = 89.62$, $p < .0005$, $\phi = -.204$), slightly less likely to be Caucasian ($\chi^2(1) = 13.75$, $p < .0005$, $\phi = .079$), and with slightly fewer years of education ($F(1, 2195) = 51.90$, $p < .0005$, $\eta^2 = .023$). Taken as a set, the attrition analyses suggested only nominal to modest differences in the sample providing follow-up data.

Measures: Item Pool

Measures of Attitudes Toward Sex (Erotophilia/Erotophobia)

The items from the four existing scales of erotophilia/erotophobia were included in the item pool. These items were rated on 6-point response scales (“Strongly agree” to “Strongly disagree” for the SOS, MMCSI, & CWSMYA; “Extremely Pleasurable” to “Extremely Discomforting” for the SAS). Responses were recoded (as necessary) and then averaged so that higher scores reflected higher levels of the construct being assessed for each subscale of the existing measures.

SOS Erotophilia (Fisher, 1998). The Sexual Opinion Survey has historically been the most widely used measure of

Table 1 Sample characteristics

	N	Percentages within (sub)samples			N	Percentages within (sub)samples						
		Full sample (%)	Males (%)	Females (%)		Non-binary (%)	Full sample (%)	Males (%)	Females (%)	Non-binary (%)		
<i>Gender identity</i>												
Male	1061	48	76	58	0	728	33	33	33	46		
Female	1098	50	9	24	16	135	6	5	7	4		
Non-binary/fluid/other	46	2	4	10	49	264	12	11	13	9		
<i>Sexual orientation</i>												
Heterosexual	1429	66	10	5	24	323	15	11	18	22		
Heteroflexible	362	17	1	3	11	73	3	3	4	0		
Bisexual	172	8	8	10	24	682	31	37	25	20		
Homosexual	170	8	10	5	24	1100	75	77	74	56		
Asexual	41	2	1	3	11	211	14	13	15	40		
<i>Race</i>												
Caucasian	1800	82	81	84	85	140	10	10	10	4		
Black/African American	128	6	7	5	2	10	1	0	1	0		
Asian	131	6	8	5	4	742	34	35	34	30		
Other	126	6	5	6	9	867	40	39	40	54		
<i>Ethnicity</i>												
Hispanic/Latinx	152	7	8	6	4	291	13	12	15	9		
Not Hispanic/Latinx	2017	93	92	94	96	273	13	14	11	7		
<i>Age</i>												
18–21	292	13	10	16	24	1434	65	56	74	85		
22–29	680	31	29	33	42	533	24	28	21	13		
30–39	588	27	31	23	24	229	10	16	5	2		
40–49	293	13	14	13	4	735	33	22	44	41		
50–76	327	15	16	15	4	631	29	30	27	37		
<i>Levels of education</i>												
High school or less	180	8	10	6	7	834	38	48	29	22		
Some college or trade	704	32	35	29	43	536	26	20	31	17		
Bachelor's degree	805	37	36	38	28	266	13	11	14	12		
Graduate degree	508	23	19	27	22	484	23	25	21	34		
<i>Income</i>												
Less than 10 k	147	7	6	7	16	795	38	43	34	37		
10–40 k	566	26	26	26	28	243	11	10	12	15		
40–70 k	587	27	27	27	26	683	31	31	32	15		

Table 1 (continued)

	N	Percentages within (sub)samples			N	Percentages within (sub)samples			
		Full sample (%)	Males (%)	Females (%)		Non-binary (%)	Full sample (%)	Males (%)	Females (%)
70–100 k	383	18	17	19	16	45	47	43	57
More than 100 k	488	22	23	22	14	12	12	12	13

Subjects were grouped into categories on the continuous measures presented (i.e., religious behavior, sex drive, attitudes toward casual sex, and erotophilia) by choosing cut-scores tied to the responses given, allowing us to provide concrete distributions on those scales (balancing out the continuous information provided in Table 6). Sample sizes differ slightly across constructs due to small amounts of missing data. ^aOnly individuals indicating a primary relationship (i.e., a relationship stage of dating one person or any higher level of commitment) were asked about their relationship commitment structures

erotophilia/erotophobia. It is a 21-item measure where higher scores indicate higher levels of erotophilia. The purposefully diverse items assess positive to negative affective and evaluative reactions to a various sexual stimuli ranging from interests in erotica (e.g., “I am not curious about explicit erotica”) to attitudes toward diverse sexual activities (e.g., “Engaging in group sex is an entertaining idea”) and homophobia (e.g., “If I found that a close friend of mine was a homosexual, it would annoy me”). Responses were internally consistent in the current sample ($\alpha = .88$).

SAS Erotophilia (Fallis et al., 2011). The Sexual Anxiety scale is a 56-item measure of sexual anxiety (erotophobia). Although the SAS is typically scored so that higher scores indicate higher levels of erotophobia, this was reversed in the current study to help highlight the scales’ notable convergent validity with the other erotophilia scales. The SAS includes 3 subscales asking about discomfort with sex and sexuality from three main sources: exposure to information (e.g., “Hearing about sexual issues or matters from the newspaper or TV”; subscale $\alpha = .89$), sexual communication (e.g., “Talking with my partner about his/her sexual fantasies”; subscale $\alpha = .93$), and solitary-impersonal expression (e.g., “Watching a ‘hardcore’ or ‘pornographic’ film”; subscale $\alpha = .95$) and the total score on the scale was internally consistent ($\alpha = .96$).

MMCSI erotophilia (Tromovitch, 2000). The Multidimensional Measure of Comfort with Sexuality Inventory is a 32-item measure of erotophobia/erotophilia with higher scores representing higher levels of erotophilia. The MMCSI is divided into 4 subscales: talking sexuality (e.g., “I would be comfortable telling a good friend about sexual experiences I have had which I consider to be out of the norm”; $\alpha = .93$), activities personal (e.g., “I am comfortable with my sexual activities, both past and present”; $\alpha = .86$), activities taboo (e.g., “I could be comfortable interacting with a person who I thought might be having a sexual relationship with their sibling”; $\alpha = .63$), activities other (e.g., “I think it is good for people to experiment with a wide range of sexual practices”; $\alpha = .85$) on a “1—Strongly Disagree” to “6—Strongly Agree” scale. To remain consistent with how the scale is commonly used, we also created a total score by averaging responses across all items ($\alpha = .92$).

CWSMYA erotophilia (Rye et al., 2012). The Comfort with Sexual Matters for Young Adolescents is a 6-item scale specifically designed for use in young adolescent populations and includes statements about various sexual acts (e.g., “It is not OK for a person to have more than one sex partner during their lifetime,” “It is OK to enjoy being sexually aroused (turned on) by a sexy story, picture, or movie”) on a “1—Strongly Disagree” to “6—Strongly Agree” scale ($\alpha = .72$).

Conceptually focused sex-positivity and negativity items. As detailed in Introduction, a set of 18 positive (“good,” “comfortable,” “natural,” “easy,” “positive,” “fun,”

“enjoyable,” “pleasant,” “exciting,” “energizing,” “thrilling,” “interesting,” “invigorating,” “enriching,” “natural parts of my life,” “things to be valued,” “enhance my life,” and “should be celebrated”) and 18 negative (“bad,” “awkward,” “embarrassing,” “difficult,” “negative,” “upsetting,” “miserable,” “unpleasant,” “annoying,” “draining,” “tiring,” “troublesome,” “tedious,” “exhausting,” “best not discussed,” “things to be ashamed of,” “crude impulses to be avoided,” and “things I avoid thinking about”) items were developed and written based on the definitions of sex-positivity and sex-negativity guiding the current study. All items were presented with the instructions “IN GENERAL, I feel that sex and sexuality are...” and were rated on the same 6-point response scale (“Not at all,” “A little,” “Somewhat,” “Quite a bit,” “Very much,” “Extremely.”). The final items selected to make up the sex-positive subscales (8-item $\alpha = .96$, 4-item $\alpha = .93$) and sex-negative subscales (8-item $\alpha = .90$, 4-item $\alpha = .90$) demonstrated high levels of internal consistency.

Measures: Conceptual Boundaries

Anchor Constructs from the Nomological Net

Measures assessing attitudes toward homosexuality and casual sex were included to help delineate the boundaries of our conceptual definition of sex-positivity and negativity as those constructs were considered conceptually distinct yet closely related constructs from the nomological net.

Positive attitudes toward casual sex (Penke & Asendorpf, 2008). The 3-item attitude subscale of the Revised Sociosexual Orientation Inventory assesses positive attitudes toward casual sex (e.g., “I can imagine myself being comfortable and enjoying casual sex with different partners”). These items were given on the original 9-point response scales developed for this measure ($\alpha = .84$).

Homophobia (Herek, 1998). The Attitudes Toward Lesbians and Gay Men Scale is a 5-item scale toward non-heterosexual orientations (e.g., “Homosexuality is a natural expression of sexuality,” “Homosexuality is a perversion.” These items were given on a 6-point scale from (“Strongly disagree” to “Strongly agree”; $\alpha = .90$).

Background Factors

Respondents also completed measures of constructs that have been shown to be proximally linked to erotophilia and erotophobia. Unless indicated otherwise below, the items of these scales were given on a 6-point response scale (“Strongly disagree” to “Strongly agree”).

Religious behavior. Respondents completed 4 items assessing their religious behavior (e.g., “How often do you do each of the following? Attend religious services/Read religious texts/Attend social events arranged by your religious

organization/Get together with people from your religious organization,” $\alpha = .93$) on a 6-point scale from (“Never” to “All of the time”).

Optimism. Although erotophilia and sex-positivity have yet to be linked to more general positivity or optimism within the published literature, we felt it represented a meaningful conceptual boundary for these scales. Thus, respondents completed the 6-item Life Orientation Test–Revised (LOT-R; Scheier et al., 1994) to assess general levels of optimism (e.g., “I’m always optimistic about my future,” $\alpha = .89$).

Sex drive. Respondents completed a standard 5-item measure of sex drive (Lippa, 2006; e.g., “In general... I have a strong sex drive,” “I frequently think about sex”) on a 6-point scale from (“Not at all true” to “Extremely true,” $\alpha = .90$).

Sexual sensation seeking. Respondents completed the 9-item Revised Sexual Sensation Seeking Scale (R-SSSS; Kalichman & Rompa, 1995; e.g., “I like wild uninhibited sexual encounters,” “My sexual partners probably think I am a ‘risk taker’”) on a 6-point scale from (“Not at all like me” to “Extremely like me,” $\alpha = .87$).

Anticipated Sexual Jealousy. Respondents completed the 5-item Anticipated Sexual Jealousy Scale (Buunk, 2011; e.g., “How would you feel if your partner were to engage in the following behavior with a very attractive person... Flirting with him/her,” “light petting,”) on a 7-point scale (“Very pleased” to “Very bothered,” $\alpha = .98$).

Neuroticism. Respondents completed the 8 items of the neuroticism subscale of the Big Five Inventory (John et al., 2008; $\alpha = .88$).

Relationship Functioning Outcomes

Respondents in romantic relationships completed the following measures of relationship functioning. Unless indicated otherwise below, the items of these scales were given on a 6-point response scale (“Not at all true” to “Completely true”). As 6% of respondents reported dating multiple individuals and 25% of respondents reported some form of non-monogamous relationship structure, individuals were instructed to consider their primary relationship partner when completing the following measures.

Relationship satisfaction. Respondents completed the 4-item Couples Satisfaction Index (CSI-4; Funk & Rogge, 2007) assessing global relationship quality (e.g., “In general, how satisfied are you with your relationship?”) on the 7-point and 6-point response scales developed for this measure ($\alpha = .94$).

Sexual satisfaction. Respondents completed the 6-item sexual satisfaction subscale of the Quality of Sex Inventory (QSI; Shaw & Rogge, 2016) assessing the quality of respondents’ sexual relationships with their partners (e.g., “I

am happy with the quality of sexual activity in our relationship”; $\alpha = .97$).

Frequency of sexual activity. Respondents completed 4 items that assessed the frequency of sexual activity with their partner in a recent month (“Thinking of a recent representative month, on how many days did you do each of the following with your partner... receive oral sex, provide oral sex, have penis-in-vagina intercourse, have penis-in-anus intercourse”) allowing respondents to type in the number of days up to 31 ($\alpha = .78$).

Frequency of physical affection. Respondents completed 4 items that assessed the frequency of physical affection with their partner in a recent month (“Thinking of a recent representative month, on how many days did you do each of the following with your partner... cuddle, hold one another, hug, deep kiss/make out”; $\alpha = .90$).

Relationship commitment structure. Based on recent person-centered findings identifying and characterizing fundamental types of relationships structures (Hangen et al., 2020), individuals actively in relationships were also asked, “What is the commitment structure of your relationship?” with the following response options: (1) “Monogamous (a more traditional commitment structure in which you both have agreed to not engage in sexual activity with others),” (2) “Fully consensual open relationship (both partners engage in sex with others, are comfortable with this arrangement, consent to this arrangement, and communicate openly with each other about their sex with others),” (3) “Partially open relationship (one or both partners engage in sex with others, but at least one of you has more mixed feelings toward those activities, experiences some discomfort from this arrangement, and would rather not discuss those sexual activities),” (4) “A one-sided open relationship (only one of you engages in sex with others even though that is likely to upset the other partner, and so there is minimal discussion of those activities),” (5) “Not committed,” (6) “Other—please explain.”

Individual Functioning Outcomes

Finally, respondents completed measures of loneliness and vitality to assess their current levels of individual functioning.

Loneliness (ULS-8; Hays & DiMatteo, 1987). Respondents completed the 8-item version of the UCLA Loneliness Scale (e.g., “How often do you feel isolated from others”; $\alpha = .94$) on a 6-point scale (“Never” to “Always”).

Vitality. Respondents completed 10 items assessing their life vitality in the past two weeks (e.g., “I had energy and spirit,” “I felt alive and vital,” “I felt really ‘up’ or lively,” $\alpha = .98$) on a 6-point scale (“Not at all” to “Extremely”).

Data Analysis

First, to evaluate the correlational structure of the SOS, MMCSI, CWSMYA, and SAS scales in direct comparison with the SPN item pool and the items of a number of conceptual boundary constructs, we first conducted an exploratory factor analysis (EFA) on a combined pool of 158 items across the entire sample. This allowed us to examine the homogeneity and heterogeneity of the various scales at the level of individual items. Second, we ran separate IRT analyses on the 18 sex-positivity items and the 18 sex-negativity items in the entire sample, identifying the 8 most effective and informative items within each pool of possible items to create the SPN scales. Third, we ran subsequent IRT analyses evaluating those same pools of sex-positivity and sex-negativity items in the two primary genders separately (estimating item parameters in the 1061 respondents identifying as male separately from estimating them in the 1098 identifying as female), allowing us to verify that the items operated nearly identically across men and women. Fourth, we evaluated the information and power offered by the SOS and SPN sex-positivity scales across 15 erotophilia groups spanning the entire sample. Fifth, we split the sample into two random halves and ran EFA’s focused on the 16 items of the SPN in one half and Confirmatory Factor Analyses (CFA’s) on the SPN items in the other half to ensure the stability of the SPN factor structure. Sixth, we examined correlations among the SPN, SOS, MMCSI, CWSMYA, and SAS scales along with a range of boundary constructs and anchor scales from the nomological net to examine convergent and discriminant validity. Seventh, we calculated means, standard deviations, and Cronbach’s alpha coefficients for the SOS and SPN scales across 37 demographic subgroups to provide normative data and ensure the generalizability of internal consistency. Although all of the previous measure development and validation steps were conducted in the cross-sectional baseline data (as is typical), we extended this by conducting a final path analysis within the 1,190 respondents providing 6-month follow-up data to evaluate the incremental validity of the SPN for predicting changes in relationship dynamics over and above the predictive validity of the SOS.

Results

Characteristics of the Sample

As shown in Table 1, the sample was fairly evenly split between primary gender identities. Although a majority of the sample was Caucasian (82%) and heterosexual (66%), the sample contained a diversity of sexual orientations. The sample spanned a range of ages from 18 to 76 with a majority of the respondents in their 20s and 30s. The sample also

spanned a wide range of incomes and was fairly well educated with a majority of respondents having attended at least some college. A majority of the respondents (61%) were in committed relationships, with 75% of those individuals reporting monogamous relationship structures, 14% consensual non-monogamous structures with high levels of mutual comfort and communication (including swinging, polyamory, and open relationships), and 10% with partially open relationships marked by lower levels of mutual comfort and communication (reflecting categories based on the results of Hangen et al., 2020). As 6% of respondents reported dating multiple individuals and 25% of respondents reported some form of non-monogamous relationship structure, individuals were instructed to consider their primary relationship partner when completing measures assessing romantic relationship dynamics and quality. A majority of the sample (74%) reported never or rarely engaging in religious behavior like reading religious texts, attending services, and attending religious social events, with 13% reporting occasional and 13% frequent religious behavior. Although the sample primarily disavowed homophobia (65%), felt comfortable with casual sex (61%), and exhibited generally erotophilic affective responses on the diverse array of sexual stimuli within the SOS (89%), it still contained individuals representing a diverse range on those sexual variables (Table 1). Thus, the sample contained a diverse array of individuals to support the evaluation of existing erotophilia scales and the development of a new scale.

Examining Dimensions within the Existing Scales

To determine the naturally occurring dimensions within the item pool, we ran an EFA on a set of 158 items, including the 36 items we developed for this study, all existing measures of erotophobia/erotophilia (114 items), as well as items representing close conceptual boundary constructs: the SOI (3 items) and the ATLG (5 items). The EFA was conducted using principle axis factoring with direct oblimin rotation (allowing the extracted factors to correlate). When we extracted the 21 factors suggested by the Kaiser-Guttman criteria (accounting for 64% of the variance), only 15 possible factors emerged containing at least one item loading strongly (i.e., a pattern coefficient $\geq .50$). A subsequent EFA extracting 15 factors accounted for 60% of the variance and revealed 13 robust factors containing multiple items. In the interest of space and clarity, Tables 2 and 3 present the EFA results for 56 of those 158 items loading across 6 of the 13 factors (see Supplemental Table S1 for full EFA output). As seen in Table 2, our conceptually focused items emerged as two separate factors (sex-positivity and sex-negativity), suggesting that our conceptual definition of sex-positivity/negativity is somewhat distinct from previous operationalizations of erotophilia/erotophobia. Consistent with the purposefully

heterogeneous content of existing scales, a number of additional factors emerged comprised of subsets of items spanning multiple existing scales. As shown in Table 2, these included factors representing the more specific attitudes like discomfort with pornography, comfort with casual sex, homophobia, and discomfort with masturbation (see the rows of Table 4 for a description of all 13 factors that emerged).

Heterogeneity of Existing Scales

Notably, the items of the SOS, SAS, and CWSMYA were spread across multiple factors when analyzed with EFA in this massive item pool, suggesting diverse and complex factor structures for these scales that often fail to correspond to how those measures are scored. As the SOS is the most widely used and cited measure of erotophilia, Table 3 specifically presents the loadings of all 21 items of the SOS. As can be seen in Table 3, consistent with its design, the SOS items loaded across multiple factors assessing various sexual attitudes. To further clarify the distribution of items of existing scales across the extracted factors, Table 4 summarizes the primary item loadings that emerged for all scales examined across the 13 factors that emerged containing items. As can be seen in Table 4, the SOS was particularly varied, with its 21 items spread across 5 factors and with 6 items so diverse that they failed to sufficiently correlate with any of the other items in the pool sufficiently to load onto a common factor (i.e., stray items). Although these results are consistent with the design of the SOS, the results also highlight potential concerns. As five of the SOS items (nearly a quarter of its items) loaded on a factor representing attitudes toward LGBT individuals, five on a factor representing discomfort with pornography (another quarter of the items), two on a factor assessing attitudes toward casual sex, and another two on a factor assessing comfort with masturbation, the results suggest that the items of the SOS are not evenly diverse. In fact, these localized concentrations of sexual stimuli assessing specific attitudes more intensely within the SOS would serve to inflate correlations between SOS total scores and measures assessing those specific attitudes, inadvertently obscuring or contaminating the assessment of gut-level positive to negative affective and evaluative responses to sexual stimuli with the assessment of these more specific attitudes due to predictor–criterion overlap. This would be a particular concern for the constructs of attitudes toward LGBT individuals and discomfort with pornography as nearly half of the items of the SOS assess those two specific constructs. Similarly, despite having only 6 items, the CWSMYA loaded across 3 different factors and a single item did not load strongly onto any factor (emerging as a stray item). In fact, as 3 items of the CWSMYA assess comfort with non-heterosexual orientations, it could be argued that this scale represents a measure

Table 2 Sample items for 6 factors from the larger EFA yielding 13 factors out of 158 items

Factor description		Pattern coefficients					
		Sex Pos– Neg Scale		Remaining factors in origi- nal EFA			
Item source	Item text	NEG	POS	F3	F4	F5	F6
<i>SPN-sex negative</i>		f3					
*SPN-negative	Miserable	.76	– .01	– .03	.02	.03	.09
*SPN-negative	Unpleasant	.70	– .10	.04	– .02	– .02	.02
*SPN-negative	Negative	.69	– .09	– .01	.03	.05	.04
*SPN-negative	Upsetting	.71	– .04	.03	.01	– .01	.01
SPN-negative	Draining	.72	– .05	.03	.02	.03	.04
SPN-negative	Annoying	.72	– .12	.00	– .01	– .02	.04
SPN-negative	Bad	.67	– .04	– .01	.03	.05	.01
SPN-negative	Awkward	.58	– .10	.02	– .09	– .09	– .12
<i>SPN-sex positive</i>		f3					
*SPN-positive	Fun	– .02	.82	– .03	.06	.01	– .05
*SPN-positive	Pleasant	– .10	.80	– .04	– .01	.01	– .03
*SPN-positive	Invigorating	– .01	.85	– .02	.03	– .01	.00
*SPN-positive	Positive	– .08	.79	.00	– .04	– .05	.02
SPN-positive	Enjoyable	– .07	.79	– .04	.01	.02	– .05
SPN-positive	Exciting	.02	.85	– .05	.05	.02	– .02
SPN-positive	Enriching	– .03	.85	.02	– .03	– .03	.00
SPN-positive	Good	– .06	.80	.02	– .02	– .01	– .04
<i>F3: Discomfort with porn</i>		f3					
SAS-solitary/impers	Watching a “hardcore” or “pornographic” film	.02	– .01	.84	– .03	– .01	.01
SAS-solitary/impers	Looking at hardcore or pornographic photographs in a magazine (explicit scenes of the genitals and penetration)	.03	.01	.78	– .04	– .01	.02
SAS-solitary/impers	Visiting Internet sites that feature hardcore or pornographic photographs or video clips	.02	.01	.84	– .06	.01	.04
SAS-solitary/impers	Visiting Internet sites that feature erotic or softcore photographs or video clips	– .03	– .03	.71	– .02	.03	.10
SAS-solitary/impers	Looking at erotic or softcore photographs in a magazine	.01	.02	.50	– .02	.02	.15
<i>F4: Comfort with casual sex</i>		f3					
SOI-attitudes	I do not want to have sex with a person until I am sure that we will have a long-term, serious relationship	.03	– .07	.00	– .79	.02	.03
SOI-attitudes	I can imagine myself being comfortable and enjoying casual sex with different partners	– .01	.08	.00	.75	.04	– .03
SOI-attitudes	Sex without love is OK	.03	.04	– .02	.63	– .27	– .08
SAS-solitary/impers	Engaging in a casual sexual encounter (e g, a one-night stand): Discomfort at doing each of the following?	.02	– .03	.03	– .72	– .06	.07
SAS-solitary/impers	Discomfort at being invited by an acquaintance/friend/partner to engage in an unusual sexual act	.01	– .01	.17	– .39	– .02	– .01
<i>F5: Homophobia</i>		f3					
ATLG	Sex between two men or two women is just plain wrong	.02	.00	.03	– .05	.92	– .03
CWSMYAG	It is OK for two men to have sex with each other or two women to have sex with each other	.05	.04	– .01	.07	– .89	– .04
ATLG	Homosexuality is a perversion	.04	– .04	.00	.00	.89	– .06
ATLG	I think gay men and lesbians are disgusting	.06	.00	– .02	.01	.84	– .04
ATLG	Homosexuality is a natural expression of sexuality	.04	.08	– .01	.02	– .78	– .06
<i>F6: Discomfort with masturbation</i>		f3					
SAS-solitary/impers	Discomfort at masturbating	.10	.00	.15	– .11	.01	.61
SAS-solitary/impers	Discomfort at fantasizing about arousing sexual thoughts during masturbation in order to enhance my sexual excitement	.02	– .01	.12	– .08	.03	.56

Table 2 (continued)

Factor description		Pattern coefficients					
		Sex Pos– Neg Scale		Remaining factors in origi- nal EFA			
Item source	Item text	NEG	POS	F3	F4	F5	F6
SAS-solitary/impers	Discomfort at exploring erogenous, or sexually exciting, parts of my body when I am alone	.05	– .04	.11	– .06	.02	.58
SAS-solitary/impers	Discomfort at using sex toys, such as a vibrator, when I am alone	.01	.01	.04	– .05	.10	.51

This table displays a subset of the results of an EFA (principle axis factoring with oblimin rotation) that extracted 15 factors from 158 items, accounting for 60% of the variance in the original correlation matrix. Although 13 factors emerged containing multiple items within that analysis, in the interest of space, the table only presents results for 6 of those factors. The full pattern matrix (15 factors, 158 items) is available in the online supplemental material. * = 4-item short forms of the SPN scale. For ease of interpretation, each item's largest pattern coefficient has been bolded

of LGBT-positive attitudes rather than a measure of sex-positive attitudes.

Turning to the results for the multidimensional erotophilia measures (i.e., the MMCSI and the SAS), the results demonstrated a partial replication of their intended factor structures. As these scales were designed to have more focused subscales, the scales take a markedly different approach from the SOS to assessing erotophilia (creating more focused and internally consistent subscales). Thus, their resulting quality is more directly linked to the replication of their factor structures. For the MMCSI, with the exception of the activities of others subscale (whose items split across two factors and included three additional stray items) the MMCSI replicated its intended factor structure for its three remaining subscales. In contrast, the results with the SAS were less consistent with its intended factor structure once analyzed in a large and diverse item pool. Although the expected 3 factors emerged within a subset of 28 of its 56 items, the remaining 28 items split across 6 additional factors and included 6 stray items correlating so poorly with the rest of the items in the 158-item pool that they failed to load even weakly (i.e., $\geq .30$) on any of the 13 factors. Taken as a set, these results therefore highlight concerns over the heterogeneity within the SAS subscales and with the activities of others MMCSI subscale, suggesting that those subscales likely contain contaminating items assessing distinct constructs, thereby introducing possible predictor–criterion overlap that could artificially inflate observed predictive associations.

Selecting Items for the Sex Positivity-Negativity Scale

We conducted separate IRT analyses on our pools of sex-positive and sex-negative items to select the items that provided optimal information for distinguishing subjects' sex-positive and sex-negative attitudes. These analyses were conducted with Multilog 7.03 (Thissen et al., 2002) using the Graded Response Model (Samejima, 1997). Based on the results of

the IRT analyses, we chose the 8 most effective items for each subscale—specifically selecting the items that gave us most information for detecting meaningful individual differences across the widest range of both sex-positive and sex-negative attitudes. We further identified the 4 most informative and effective items within each subscale, giving us shorter versions of each subscale that could be used in studies with more restrictive lengths (e.g., phone surveys, diary studies). As previous work has determined that men and women might respond differently to items assessing constructs related to sex (e.g., Shaw & Rogge, 2016), we also examined the SPN items for stability of their properties across gender by estimating item parameters separately in males and females and then examining their consistency across those two groups. These analyses suggested a high level of agreement between the item parameters across males and females, suggesting that (1) the IRT solution was highly stable, (2) men and women generally read and responded to these items in similar ways, and (3) SPN scores would be directly comparable across men and women.

Factor Structure of the Sex Positivity-Negativity Scale

Once we selected optimized sets of items from the IRT analyses, we conducted EFA and CFA to validate the factor structure of the SPN scale. In accordance with best practices (Fabrigar et al., 1999) we split the sample into two random halves and conducted EFA in one half (using principle axis factoring with direct Oblimin rotation) and CFA in the other half to determine the stability of the structure of the SPN scale. In the EFA, both the scree plot and the Kaiser-Guttman criteria supported a two-factor solution accounting for 72% of the variance, yielding the two expected factors (Table 5). A corresponding 2-factor CFA model demonstrated reasonable fit in the other sample half: $\chi^2(100) = 737.1$, $p < .001$, comparative fit index (CFI) = .960, standardized root mean square residual (SRMR) = .048, root mean square error

Table 3 Loadings of the SOS items across these 6 factors from the larger EFA results

Factor description		Pattern coefficients					
		SPN scale		Remaining factors			
		NEG	POS	F3	F4	F5	F6
Item source	Item text						
SOS	I personally find that thinking about engaging in sexual intercourse is arousing	-.04	.25	-.15	.06	.10	-.24
SOS	I do not enjoy daydreaming about sexual matters	.04	-. 23	.17	-.04	-.03	.12
SOS	I think it would be very entertaining to look at hardcore erotica	-.01	.04	-. 78	.05	.04	-.05
SOS	I would not enjoy seeing an erotic movie	.01	-.09	.64	-.01	.01	.01
SOS	I am not curious about explicit erotica	-.04	-.11	.59	.01	.03	.07
SOS	Seeing an erotic movie would be sexually arousing to me	-.04	.08	-. 56	.02	.04	-.18
SOS	Almost all sexually explicit material is nauseating	.10	-.01	.42	-.06	.13	.06
SOS	If people thought I was interested in oral sex, I would be embarrassed	.07	-.07	.13	-.21	.01	-.06
SOS	Watching an exotic dancer of the opposite sex would not be very exciting	.01	-.06	.18	-.09	-.09	-.08
SOS	The thought of having long-term sexual relations with more than one sex partner is not disgusting to me	.04	.02	-.08	.40	-.09	-.06
SOS	Engaging in group sex is an entertaining idea	.01	.04	-.24	.40	-.02	-.01
SOS	The thought of engaging in unusual sex practices is highly arousing	-.02	.10	-.22	.23	.03	-.05
SOS	It would be emotionally upsetting to me to see someone exposing themselves publicly	.05	.01	.15	-. 21	.07	-.18
SOS	Swimming in the nude with a member of the opposite sex would be an exciting experience	.03	.14	-.06	.15	.10	-.02
SOS	If I found that a close friend of mine was a homosexual, it would annoy me	.03	.01	-.01	.04	.65	.01
SOS	The idea of my being physically attracted to members of the same sex is not depressing	.00	.02	.00	-.01	-. 45	-.20
SOS	Thoughts that I may have homosexual tendencies would not worry me at all	-.05	-.04	.02	.01	-. 44	-.15
SOS	When I think about seeing pictures showing someone of the same sex as myself masturbating, it nauseates me	.02	.01	.08	.07	.34	.24
SOS	Erotica is obviously filthy and people should not try to describe it as anything else	.06	.00	.24	-.12	.31	.12
SOS	Masturbation can be an exciting experience	-.05	.09	-.13	.09	.00	-. 60
SOS	Manipulating my genitals would probably be an arousing experience	-.01	.01	-.10	.02	.00	-. 34
<i>Correlations among these factors</i>							
NEG: Conceptually focused sex-negativity		1.00					
POS: Conceptually focused sex-positivity		-.44	1.00				
F3: Discomfort with pornography		.16	-.31	1.00			
F4: Comfort with casual sex		-.14	.24	-.50	1.00		
F5: Homophobia		.08	-.05	.19	-.28	1.00	
F6: Discomfort with masturbation		.09	-.21	.39	-.17	.34	1.00
<i>Eigenvalues and sums of squares</i>							
Initial eigenvalues		12.04	4.78	2.33	4.45	7.46	1.50
Rotated sums of squares		16.57	24.61	19.66	15.62	13.52	12.41

This table displays a subset of the results of an EFA (principle axis factoring with oblimin rotation) that extracted 15 factors from 158 items, accounting for 60% of the variance in the original correlation matrix. Pattern coefficients are semi-partial correlations between each item and the unique part of each factor (sharing no variance with the other factors). In the interest of space, we only display loadings on 6 of the 13 factors containing items and for 51 of the 158 items to demonstrate how the items of existing scales like the SOS were found to be scattered across multiple factors (with only modest between-factor correlations). For ease of interpretation, each item's largest pattern coefficient has been bolded. The NEG, POS, F3, F4, F5, and F6 factors shown were actually the 2nd, 5th, 9th, 6th, 3rd, and 14th factors extracted (respectively)

Table 4 Summary of EFA results extracting 15 factors (yielding 13 with items loading) from 158 items

EFA factors	New focused items		Anchor scales		MMCSI		SAS			SOS CWSMYA				
	Sex-Pos	Sex-Neg	SOI	ATLG	Talking sexual-ity	Act. personal	Act. other	Act. taboo	Exposure to info	Sexual comm	Solitary/impersonal	Not on a subscale		
Total number of items	18	18	3	5	11	8	8	4	14	16	23	3	21	6
Items loading on each EFA factor														
Sex-positivity	18													
Sex-negativity		18												
Attitudes toward casual sex			3								3		2	1
Attitudes toward LGBT and divergent sex				5			2		1				5	3
Comfort with discussing sex					11				2					1
Comfort with own sexual history						8								
Intolerance of taboo sexual behavior							4							1
Discomfort with exposure to sex-related information									10					
Comfort with sexual communication and assertiveness with partner										11	1	1	1	1
Discomfort with pornography											7			5
Comfort with masturbation										1	4			2
Tolerance of sex portrayed in the media										3	4			
Tolerance of other's diverse sexual behavior							3					1		
Stray items							3		1	1	3	1	6	1

This table displays a summary of the results of an EFA (principle axis factoring with oblimin rotation) that extracted 15 factors from 158 items, accounting for 60% of the variance in the original correlation matrix. Each column represents an existing scale (or a specific subscale) of sexual attitudes, whereas the rows represent the 13 factors containing multiple items that were extracted in the EFA. The table presents the number of items from each scale that loaded onto the factors extracted in the EFA run on all 158 items presented in the previous tables. For each column, the number of items representing the largest proportion of items has been bolded for ease of interpretation. Stray items = items failing to load $\geq .30$ on any of the 15 factors

Table 5 Exploratory and confirmatory factor analyses on the final items of the Sex Positivity–Negativity scale conducted in separate random sample halves

Subscale	EFA pattern coefficients in first random sample half (n = 1101)		CFA standardized path Coefficients in second random sample half (n = 1104)		
	Sex-positive	Sex-negative	β	SE	p
<i>Sex-Positive subscale</i>					
*Fun	.91	.02	.91	.006	<.001
*Pleasant	.89	– .04	.91	.006	<.001
*Positive	.82	– .09	.84	.010	<.001
*Invigorating	.89	.07	.85	.009	<.001
Good	.81	– .09	.84	.010	<.001
Enjoyable	.89	.00	.92	.006	<.001
Exciting	.91	.06	.88	.007	<.001
Enriching	.82	– .02	.80	.012	<.001
<i>Sex-Negative subscale</i>					
*Miserable	.09	.89	.85	.010	<.001
*Unpleasant	– .06	.80	.86	.009	<.001
*Negative	.05	.89	.81	.012	<.001
*Upsetting	.01	.80	.83	.011	<.001
Draining	– .07	.59	.65	.019	<.001
Bad	.08	.84	.72	.016	<.001
Annoying	– .12	.70	.82	.011	<.001
Awkward	– .19	.48	.59	.021	<.001
Eigenvalues	9.00	2.54			
Correlation between factors	– .57		– .57		

All items were presented with the instructions "IN GENERAL, I feel that sex and sexuality are..." and 6 response options ("Not at all," "A little," "Somewhat," "Quite a bit," "Very much," "Extremely.") EFA = exploratory factor analysis (run in SPSS 24.0 using principle axis factoring with oblimin rotation to allow the factors to correlate). A two-factor solution (accounting for 72% of the variance) was supported by the scree plot and the Kaiser-Guttman criteria. CFA = confirmatory factor analysis run in Mplus 7.2 and demonstrated reasonable fit: $\chi^2(100) = 737.1$, $p < .001$, CFI = .960, SRMR = .048, RMSEA = .076, 95%CI LL = .071, UL = .081). The EFA and CFA were run in separate random sample halves so as to confirm the correlational structure of the SPN scale. Significant pattern and path coefficients have been bolded for ease of interpretation. The asterisks identify the items on the 4-item versions of each SPN subscale

of approximation (RMSEA) = .076, 90%CI LL = .071, UL = .081. Within that model, the items of the two SPN subscales demonstrated robust loadings onto their respective latent factors (Table 5). In contrast, a CFA model specifying a single dimension demonstrated poor fit: $\chi^2(101) = 3879$, $p < .001$, CFI = .762, SRMR = .148, and RMSEA = .184, 90%CI LL = .179, UL = .189. These results therefore converged to support the 2-dimensional factor structure of the SPN.

Information Provided by the Sex Positivity–Negativity and the Sexual Opinion Survey Scales

To evaluate the quality of information provided by the SPN sex-positivity subscale in comparison with the most widely used and cited measure of erotophilia, the SOS, we ran an IRT analysis including the 18 items of the sex-positive pool along with the 21 items of the SOS. As mentioned above, IRT can generate information profiles for sets of items (termed test information curves or TICs), detailing the amount of discriminating information provided by specific scales across various levels of the construct being assessed. The greater height those curves have above the x-axis, the more discriminating information provided. The TICs presented in Fig. 1A therefore show that both the SPN Sex-Pos 8-item and 4-item versions provide more information than the 21-item SOS, suggesting that the SPN scale allows for markedly better discrimination of sex-positivity between individuals than the SOS despite being notably shorter in length.

Power Provided by the Sex Positivity–Negativity and the Sexual Opinion Survey Scales

To evaluate how the enhanced information provided by the SPN might translate into effect sizes in future studies, we examined the varying abilities of the SPN and the SOS to detect small differences in sex-positivity between groups. Toward that end, we used the IRT estimates of sex-positivity (i.e., the θ scores generated for each subject when evaluating the items) to create 16 roughly equally sized groups. We then estimated a set of Cohen's d's for each scale representing the standardized mean differences between adjacent sex-positivity groups. This helped to quantify the ability of each scale to detect small differences in sex-positivity between groups. As seen in Fig. 1B, both the 8-item and 4-item versions of the SPN Sex-Positivity subscale offered markedly larger standardized effects than the SOS when detecting slight differences in sex-positivity between adjacent groups. In fact, testing the relative size of these effects across scales (Meng et al., 1992) suggested that the 8-item SPN sex-positivity scale gave stronger between group effects than the SOS on 14 of the 15 adjacent-group contrasts and the 4-item version gave stronger effects than the SOS on 13 of the 15 contrasts. Taken together, these results suggest that in addition to greater information (precision) provided, the SPN scales correspondingly provide greater statistical power for detecting differences on sex-positivity despite being far shorter in length. Consistent with the information curves, the 8-item subscale yielded stronger between group effects than the 4-item scale on 14 of the 15 tests. This suggests that using the longer version of the SPN when possible would offer researchers greater power for their analyses. Taken as a

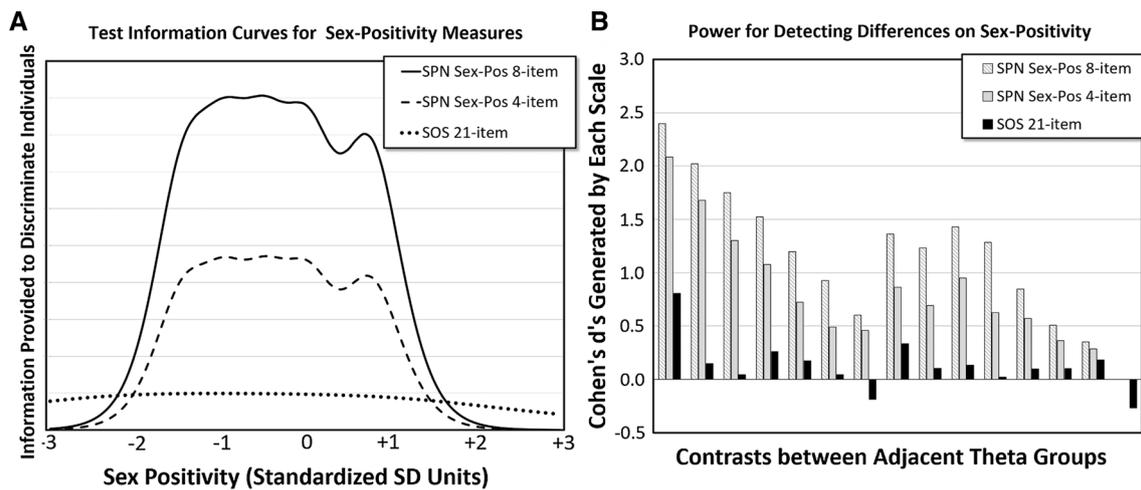


Fig. 1 Information and power provided by the SPN Sex-Positivity Subscale. Figure 1A presents the test information curves (TICs) from IRT analyses conducted with the 21 items of the SOS and the 4- and 8-item versions of the SPN Sex-Positivity Scale. Figure 1B presents

the power (Cohen's d 's) for detecting differences between 15 adjacent theta groups (15 roughly equally sized groups with different theta cut scores)

larger set, these results suggest that the SPN scale will offer researchers better precision in determining individual and group levels of sex-positivity.

Convergent and Discriminant Validity of the Sex Positivity-Negativity Scale with Existing Scales

As seen in the “Correlations among sex attitude scales” section of Table 6, we compared the SPN subscales with the existing measures of erotophobia/erotophilia. The Sex-Positive subscales demonstrated low to moderate convergent validity with the existing measures, with correlation coefficients ranging from $r = .42$ to $r = .46$ in men and $r = .48$ to $r = .56$ in women. However, as those moderate correlations suggest that the existing scales only share between 17 and 31% of their variance with the SPN, those correlations are also suggestive of a fair-degree of discriminant validity for the SPN, likely due to the more focused conceptual definition guiding its creation (i.e., focusing on sex-positivity and sex-negativity as key facets of erotophilia and erotophobia). The Sex-Negative subscale demonstrated even more discriminant validity with the existing measures suggesting that this a novel aspect of sexual attitudes not adequately measured in the previous measures. Among themselves, the SOS, SAS, and MMCSI demonstrated moderate levels of convergent validity, with correlation coefficients ranging from $r = .51$ to $r = .74$ in men and $r = .48$ to $r = .83$ in women, suggesting a fair amount of both unique (i.e. discriminant) and shared (i.e., convergent) variance among the existing measures. Finally, the Sex-Positive and Sex-Negative subscales were appropriately related, yet still distinct from one another, with

correlations ranging from $r = -.46$ to $r = -.50$ in men and $r = -.54$ to $r = -.60$ in women for the 4 and 8-item versions.

Linking the Sex Positivity-Negativity Scale and Existing Scales to the Larger Literature

As seen in the “Correlations with conceptually distinct (boundary) constructs” section of Table 6, we examined links between the SPN scale and constructs from nomological net surrounding sexual attitudes, including multiple measures of: background factors, relationship functioning, and individual functioning. When tested for differences using the equations of Meng et al. (1992), these correlations highlighted that erotophilia scores on the SOS were more strongly linked to other sexual attitudes (e.g., discomfort with pornography, sexual aversion, homophobia) and background attitudes/traits (e.g., jealousy, religious behavior) than the SPN sex-positivity subscale (Fig. 2A; see the final column of Table 6 for tests of these differences). In contrast, the SPN sex-positivity was more strongly linked to relationship and individual functioning than the SOS (Fig. 2B). Taken together, these results begin to suggest that the SPN assesses a form of sex-positivity notably more directly related to how individuals function in their daily lives and in their sexual relationships and notably less confounded with their more specific attitudes to masturbation, pornography, homosexuality, and casual sex. Thus, by taking a slightly different conceptual approach and focusing in on sex-positivity and negativity as critical facets of erotophilia and erotophobia SPN might offer researchers a more precise method for examining links between global sex-positivity and interpersonal functioning.

Table 6 Correlations among scales in the study

Class of measures	Sex Positivity–Negativity scale																
	Existing scales																
	Total/composite scores					MMCSI subscales					SAS subscales						
	SEX-NEG	SEX-POS	SOS	SAS	MM	CW	TS	AP	AO	AT	EXP	SC	SI				
Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Correlations among sex attitude scales																	
<i>Erotophilia and erotophilia scales</i>																	
1	SPN Sex-Neg-4	.94	-.54	-.34	-.39	-.37	-.21	-.27	-.47	-.20	-.02	-.18	-.48	-.31			
2	SPN Sex-Neg-8	.93	-.60	-.36	-.42	-.41	-.20	-.30	-.49	-.20	-.03	-.19	-.52	-.34			
3	SPN Sex-Pos-4	-.46	-.50	.48	.55	.50	.26	.42	.51	.29	.02	.23	.67	.45			
4	SPN Sex-Pos-8	-.46	-.50	.49	.56	.50	.26	.42	.51	.29	.02	.23	.68	.46			
5	SOS Erotophilia	-.34	-.32	.42	.42	.64	.58	.50	.44	.63	.17	.41	.66	.87			
6	SAS (reversed)	-.27	-.30	.45	.45	.71	.52	.62	.47	.60	.16	.67	.85	.93			
7	Erotophilia (MMCSI total)	-.26	-.29	.45	.46	.67	.48	.89	.70	.73	.31	.55	.58	.62			
8	Embracing of non-hetero orientations (CWSMYA)	-.33	-.28	.29	.29	.69	.51	.32	.31	.62	.03	.31	.42	.51			
<i>MMCSI subscales</i>																	
9	Talk @ sex	-.11	-.16	.32	.32	.45	.87	.28	.42	.53	.16	.53	.49	.52			
10	Act—personal	-.44	-.46	.55	.56	.70	.45	.42	.42	.36	.12	.28	.49	.40			
11	Act—other	-.27	-.26	.34	.35	.76	.77	.67	.49	.52	.15	.47	.44	.56			
12	Act—taboo	.16	.14	-.05	-.04	.10	.31	-.01	.21	-.03	.08	.15	.04	.17			
<i>SAS subscales</i>																	
13	Exposure to Info	-.01	-.04	.16	.16	.38	.71	.54	.24	.23	.40	.23	.39	.47			
14	Sexual comm	-.38	-.40	.56	.56	.62	.86	.55	.47	.40	.50	.54	.40	.71			
15	Solitary— impers Expression	-.26	-.28	.40	.40	.78	.94	.62	.54	.49	.43	.59	.14	.52	.76		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Z(4v5)
Correlations with conceptually distinct (boundary) constructs																	
<i>Background Att/traits</i>																	
(F)	Discomf w pornography	.23	.24	-.37	-.38	-.73	-.43	-.40	-.34	-.40	-.15	-.22	-.55	-.88	21.10		
(F)	Discomf w masturbation	.30	.31	-.40	-.41	-.72	-.79	-.49	-.52	-.35	-.01	-.38	-.72	-.79	18.22		
(F)	Sexual aversion	.37	.38	-.41	-.41	-.79	-.61	-.50	-.49	-.37	-.41	-.22	-.52	-.65	24.16		
	Homophobia	.17	.14	-.13	-.13	-.48	-.36	-.41	-.71	-.24	-.26	.04	-.32	-.29	.31	17.03	
	Jealousy	-.04	-.04	-.05	-.05	-.29	-.10	-.27	-.24	-.24	-.13	-.23	-.26	-.30	.16	8.89	
	Neuroticism	.23	.28	-.25	-.25	-.08	-.13	-.18	.03	-.31	-.02	-.10	-.02	-.15	-.12	-7.64	
	Religious behavior	.14	.11	-.06	-.06	-.39	-.28	-.54	-.16	-.21	-.39	.02	-.13	-.18	-.32	15.15	

Table 6 (continued)

	1	2	3	4	5	6	9	8	9	10	11	12	13	14	15	Z(4v5)
<i>Sex-Pos traits</i>																
Comfort with casual sex	-.21	-.23	.31	.31	.61	.55	.53	.54	.41	.37	.50	.15	.29	.38	.61	-15.84
Sexual sensation seeking	-.22	-.27	.54	.54	.59	.62	.51	.25	.44	.38	.36	.20	.23	.54	.65	-3.01
Sex drive	-.24	-.30	.58	.59	.41	.47	.37	.13	.31	.35	.19	.09	.11	.48	.49	9.67
Optimism	-.19	-.22	.23	.23	.09	.13	.15	.01	.09	.26	.04	.02	.10	.17	.08	6.24
<i>Relationship functioning</i>																
Affection	-.10	-.11	.16	.16	.11	.14	.18	.10	.14	.18	.15	-.01	.11	.20	.06	1.73
Sex activity	-.07	-.11	.21	.21	.11	.17	.19	.04	.19	.15	.06	.09	.09	.20	.14	3.83
Sex satisfaction	-.18	-.19	.31	.32	.00	.09	.18	-.02	.17	.23	.03	-.03	.06	.22	-.01	12.02
Rel satisfaction	-.16	-.17	.25	.25	-.01	.05	.12	-.02	.09	.21	.03	-.04	.02	.17	-.03	9.76
<i>Individual functioning</i>																
Loneliness	.29	.33	-.23	-.23	-.05	-.11	-.19	.02	-.15	-.31	-.03	.02	-.09	-.17	-.04	-8.03
Vitality	-.15	-.20	.32	.31	.05	.14	.18	-.04	.16	.25	-.01	.05	.09	.18	.09	12.02

In the Correlations Among Sex Attitudes Scales section of the table, the correlations are shown separately for males and females, with results for females above the diagonal and males below the diagonal. We also tested for statistically significant differences in the correlations of the SPN Sex-Positive Subscale and the SOS on all measures of the distinct boundary constructs. For ease of interpretation, correlations above .39 are bolded. Z(4v5) = Testing the difference between dependent correlations for the SOS in comparison with the 8-item SPN sex-positivity subscale using the equations of Meng et al. (1992)

Generalizability of the Sex Positivity-Negativity and Sexual Opinion Survey Scales

To ensure that the SPN subscales would function well across a diverse variety of future samples, we examined the internal consistencies of the SPN Scale's 4-item and 8-item positive and negative subscales across a broad range of subsamples. As shown in Table 7, the SPN sex-positive subscales demonstrated excellent internal consistency across all subsamples examined (Cronbach's alphas ranging from .97 to .90), demonstrating comparable if not higher levels of internal consistency to that observed for the SOS despite being far shorter in length. The SPN sex-negativity subscales also demonstrated reasonably high levels of internal consistency across these subsamples (Cronbach's alphas ranging from .94 to .75). To provide initial subsample norms to be used in future research, Table 7 also presents means and standard deviations for the SPN scales in the demographic groups examined.

Unique Predictive Validity of the Sex Positivity-Negativity Scale

To examine how the SPN scales might contribute novel information to predictive models of relationship functioning above and beyond the insights provided by the SOS, we ran path models in the 1,137 respondents providing information on their current romantic relationships. As shown in Fig. 3, we specifically allowed baseline scores on the SOS and the two SPN subscales to predict residual change over six months in three indices of relationship quality (i.e., relationship satisfaction, sexual satisfaction, and dedication to the relationship). We allowed those sexual attitudes to predict the outcomes both directly and indirectly by also allowing them to predict residual change in physical affection and sexual behavior within those relationships. The path model was estimated with Mplus 7.11 using full maximum likelihood estimation with 1,000 rounds of bias-corrected bootstrapping. As the model was fully saturated, it yielded perfect fit and Fig. 3 presents the significant paths that emerged. Sex-positivity assessed with the SPN predicted residual increases in physical affection and sexual activity, which in turn predicted corresponding residual increases in all three outcomes. This would suggest that having generally positive attitudes toward sex might promote the quality of romantic relationships across time by encouraging both sexual and non-sexual expressions of that emotional bond (supported by the significant indirect paths that emerged, Fig. 3). In sharp contrast, erotophilia assessed with the SOS predicted corresponding residual drops in sexual activity within a primary relationship, suggesting that after controlling for general sex-positivity and sex-negativity, the unique aspects of being embracing of alternative sexualities and casual sex might serve to reduce sexual behavior within monogamous primary relationships,

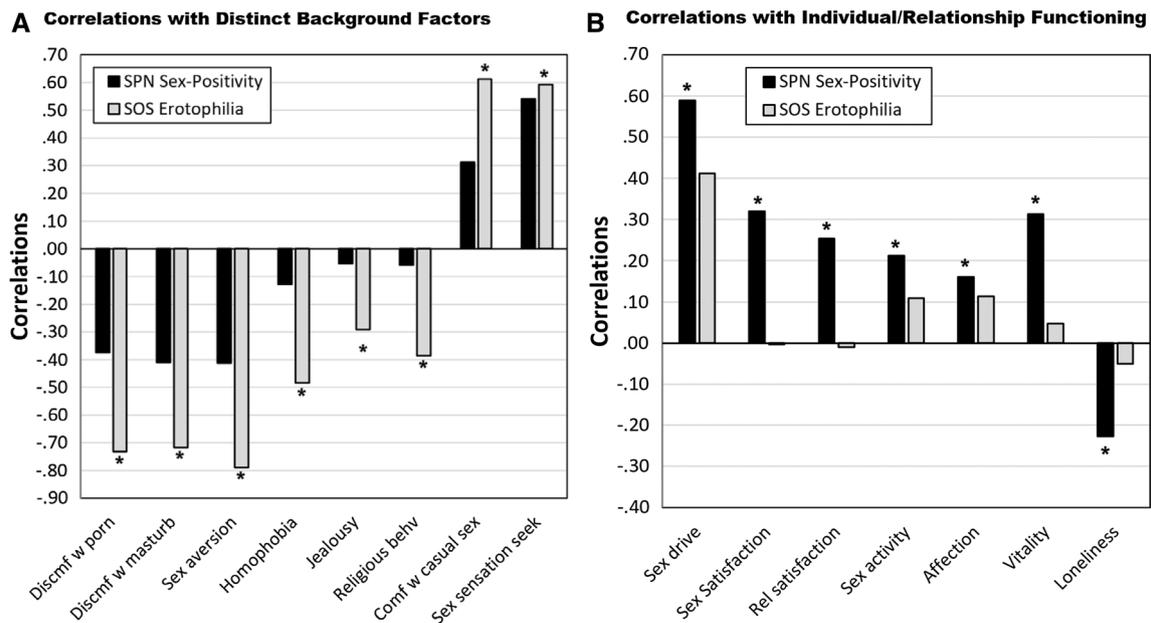


Fig. 2 Correlations of the SPN Sex-Positive Subscale and SOS with background factors and individual/relationship functioning. Displayed are the correlation coefficients of the SPN Sex-Positive Subscale and the SOS with measures of background factors and individual/rela-

ship functioning. *statistically significant difference when the correlations with the SPN and SOS are compared using the equations of Meng et al. (1992; see the final column in Table 6)

potentially eroding their quality over time. Although sex-negativity failed to show significant links to residual change in relationship behaviors, it predicted residual drops in relationship dedication over 6 months. Taken together, these results highlight the novel information offered by the new conceptualization of erotophobia as sex-positivity within the SPN scale.

Discussion

Guided by more focused conceptual and operational definitions, the current work used a combination of traditional, correlation-based, measure-development analyses in combination with IRT to develop conceptually clear and psychometrically optimized measures of sex-positivity and sex-negativity. Using a large and diverse item pool in a large-scale online sample, we selected small sets of the most effective and informative items to create the Sex Positivity–Negativity (SPN) scale. The results suggested that the SPN scale: (1) assesses the sex-positivity and sex-negativity facets of erotophilia/erotophobia, (2) offers high levels of precision and power despite being notably shorter than previous measures, (3) has a stable 2-subscale structure, (4) demonstrates more discriminant than convergent validity with existing erotophilia scales given its novel focus, (5) shows stronger links to individual, sexual, and relationship functioning than existing scales, and (6) demonstrates incremental predictive

validity for changes in romantic relationship dynamics over 6 months over the prediction achieved with the SOS. Thus, the SPN scale offers researchers optimized measures of sex-positivity and sex-negativity with the potential to offer greater insights into individual well-being and interpersonal functioning.

Implications

The Sex Positivity–Negativity Scale Offers Conceptual Clarity

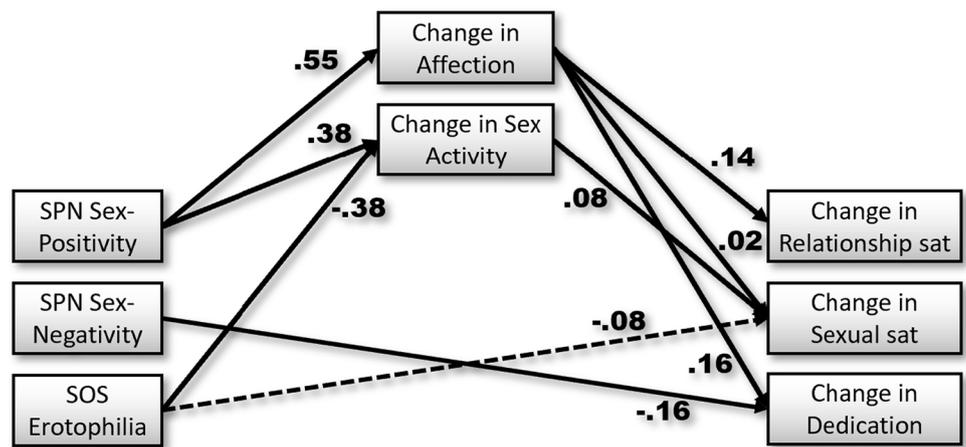
When the existing scales like the SOS (Fisher et al., 1988a) were created, the nomological net was fairly sparse and constructs such as comfort with casual sex, attitudes toward pornography, attitudes toward masturbation, and attitudes toward homosexuality had not yet been clearly defined or operationalized via well validated and widely used self-report scales. As a result, those more specific constructs had yet to fully emerge within the literature as distinct constructs. Thus, the developers of the original erotophilia scales took a purposefully broad-band approach to assessing sex-positive and sex-negative attitudes by including items assessing a wide array of sexual stimuli with the intent of assessing gut-level, positive–negative affective and evaluative responses to those stimuli. This proved to be an effective method of assessing erotophilia/erotophobia as demonstrated by the robust predictive validity of the SOS in predicting a broad range of

Table 7 Normative data and generalizability of scale internal consistencies across demographic subsamples

Statistic BY subsample	Subsample N	Means and (standard deviations) of the SPN subscales				Cronbach's alpha coefficients				
						SOS	NEW SPN subscales			
		POS8	POS4	NEG8	NEG4		POS8	POS4	NEG8	NEG4
<i>BY gender identity</i>										
Male	1098	5.15 (0.96)	5.14 (0.97)	1.41 (0.67)	1.25 (0.65)	.88	.96	.92	.90	.90
Female	1061	4.94 (1.15)	4.93 (1.17)	1.4 (0.62)	1.25 (0.61)	.89	.96	.93	.90	.89
Non-binary/fluid/other	46	4.6 (1.38)	4.53 (1.35)	1.73 (1.1)	1.53 (1.1)	.90	.96	.91	.95	.96
<i>BY race</i>										
Caucasian	1800	5.04 (1.07)	5.03 (1.09)	1.39 (0.62)	1.23 (0.6)	.89	.96	.93	.89	.89
Black/African American	128	5.01 (1.14)	5.01 (1.17)	1.45 (0.78)	1.32 (0.79)	.86	.97	.94	.90	.92
Asian	131	4.82 (1.08)	4.82 (1.12)	1.62 (0.86)	1.45 (0.86)	.84	.96	.92	.93	.92
Other/biracial	126	5.11 (1.07)	5.11 (1.07)	1.48 (0.81)	1.36 (0.85)	.86	.96	.90	.93	.93
<i>BY ethnicity</i>										
Hispanic/Latino	152	5.09 (1)	5.09 (1.02)	1.45 (0.83)	1.35 (0.88)	.91	.96	.91	.94	.93
Non-Hispanic/Latino	2017	5.03 (1.08)	5.02 (1.1)	1.41 (0.64)	1.25 (0.62)	.88	.96	.93	.90	.90
<i>BY age</i>										
18–21 yo	292	4.84 (1.21)	4.84 (1.24)	1.47 (0.68)	1.28 (0.67)	.88	.96	.93	.89	.89
22–29 yo	680	4.97 (1.11)	4.96 (1.13)	1.49 (0.71)	1.32 (0.71)	.89	.96	.92	.90	.89
30–39 yo	588	5.08 (0.98)	5.07 (1)	1.42 (0.68)	1.27 (0.66)	.88	.96	.92	.91	.91
40–49 yo	293	5.17 (1.07)	5.16 (1.08)	1.3 (0.57)	1.19 (0.56)	.89	.97	.94	.90	.92
50–75 yo	327	5.09 (1.01)	5.1 (1.02)	1.29 (0.55)	1.18 (0.52)	.86	.96	.92	.90	.88
<i>BY education level</i>										
High school or less	180	5.06 (1.1)	5.04 (1.12)	1.36 (0.6)	1.22 (0.6)	.87	.97	.94	.90	.91
Some college/trade school	704	5.02 (1.08)	5.02 (1.1)	1.42 (0.69)	1.27 (0.67)	.87	.96	.92	.90	.91
Bachelor's degree	805	5.03 (1.06)	5.03 (1.09)	1.4 (0.62)	1.25 (0.59)	.89	.96	.92	.89	.88
Graduate degree	508	5.03 (1.07)	5.02 (1.08)	1.42 (0.69)	1.28 (0.7)	.89	.96	.93	.92	.92
<i>BY income level</i>										
0–\$10 k	147	4.59 (1.33)	4.57 (1.36)	1.63 (0.88)	1.47 (0.91)	.88	.97	.94	.92	.93
\$10–\$40 k	566	4.98 (1.1)	4.97 (1.11)	1.47 (0.71)	1.31 (0.71)	.88	.96	.92	.90	.90
\$40–\$70 k	587	5.09 (1.01)	5.08 (1.03)	1.4 (0.67)	1.26 (0.67)	.88	.96	.93	.91	.90
\$70–\$100 k	383	5.09 (1.03)	5.07 (1.06)	1.35 (0.55)	1.19 (0.5)	.89	.96	.92	.88	.87
More than \$100 k	488	5.12 (1)	5.13 (1.03)	1.32 (0.55)	1.17 (0.51)	.88	.96	.93	.89	.89
<i>BY relationship stage</i>										
Single	0	4.67 (1.23)	4.67 (1.25)	1.62 (0.81)	1.42 (0.83)	.88	.96	.93	.91	.90
Dating multiple people	0	5.39 (0.84)	5.38 (0.85)	1.3 (0.46)	1.16 (0.43)	.88	.95	.91	.84	.85
Dating one person	0	5.17 (0.85)	5.17 (0.85)	1.33 (0.52)	1.19 (0.49)	.86	.94	.88	.88	.87
Long-term committed rel	0	5.22 (0.98)	5.21 (1.02)	1.29 (0.47)	1.17 (0.45)	.88	.96	.93	.84	.81
Engaged	0	5.14 (1.05)	5.11 (1.05)	1.42 (0.79)	1.3 (0.83)	.89	.97	.94	.94	.93
Married	0	5.19 (0.96)	5.19 (0.97)	1.29 (0.56)	1.17 (0.53)	.89	.96	.92	.90	.91
<i>BY relationship commitment structure</i>										
Monogamous	1100	5.17 (0.96)	5.17 (0.97)	1.3 (0.53)	1.17 (0.51)	.88	.96	.92	.89	.89
Consensual non-monogamy	211	5.36 (0.83)	5.34 (0.88)	1.32 (0.62)	1.21 (0.6)	.88	.94	.90	.91	.91
Partially open—ambiguous	140	5.31 (0.87)	5.29 (0.9)	1.33 (0.48)	1.18 (0.44)	.84	.94	.89	.84	.82
<i>BY sexual orientation</i>										
Heterosexual	1429	5.07 (1.02)	5.06 (1.04)	1.38 (0.62)	1.24 (0.61)	.87	.96	.93	.89	.90
Heteroflexible	362	5.12 (0.96)	5.11 (0.97)	1.39 (0.66)	1.24 (0.64)	.86	.95	.90	.91	.92
Bisexual	172	4.93 (1.13)	4.94 (1.14)	1.42 (0.64)	1.26 (0.61)	.87	.96	.93	.90	.88
Homosexual	170	5.25 (0.89)	5.23 (0.92)	1.32 (0.42)	1.18 (0.42)	.83	.95	.90	.78	.75
Asexual	41	2.83 (1.51)	2.79 (1.54)	2.45 (1.17)	2.13 (1.25)	.88	.95	.91	.90	.88

Subjects were grouped into categories on the continuous measures presented (i.e., religious behavior, sex drive, attitudes toward casual sex, and erotophilia) by choosing cut-scores tied to the responses given, allowing us to provide concrete distributions on those scales (balancing out the continuous information provided in Table 6). Sample sizes differ slightly across constructs due to small amounts of missing data. Only individuals indicating a primary relationship (i.e., a relationship stage of dating one person or any higher level of commitment) were asked about their relationship commitment structures

Fig. 3 Predicting residual change in relationships over 6 months. *Note* These analyses were run in the 1137 respondents providing information on their romantic relationships. More specifically, the path model was run in Mplus with 1,000 rounds of bias-corrected bootstrapping (to estimate the asymmetric confidence intervals of the indirect effects). The model was fully identified thereby yielding perfect fit. In the interest of parsimony, only the (unstandardized) coefficients of the significant paths are shown. Paths significant at $p < .05$ are shown with solid lines, whereas marginally significant paths ($p < .10$) are shown with dashed lines



Indirect effects evaluated with bias-corrected bootstrapping	Est	95% CI	
		LL	UL
Sex-Positivity → Δ Affection → Δ Relationship Satisfaction	.075	.005	.162
Sex-Positivity → Δ Affection → Δ Sexual Satisfaction	.011	.000	.031
indirect path above using 90% Confidence Intervals		.002	.028
Sex-Positivity → Δ Affection → Δ Dedication	.011	.001	.029
Sex-Positivity → Δ Sex-Activity → Δ Sexual Satisfaction	.030	.009	.062
Erotophilia → Δ Sex-Activity → Δ Sexual Satisfaction	-.029	-.061	-.009

approach and avoidance responses to sexuality, including use of specific types of contraception (e.g., Sanders et al., 2006), breast self-examination behavior (e.g., Labranche et al., 1997), medical student willingness to treat patients with sexual concerns (e.g., Fisher et al., 1988b), greater levels of sexual satisfaction (Hurlbert et al., 1993), and more satisfying orgasms with a romantic partner (Arcos-Romero et al., 2018). Given this robust literature supporting the predictive validity of the SOS, it remains the gold standard for assessing erotophilia/erotophobia. Despite the robust literature supporting the predictive validity of the SOS, over the last 30 years the field of sex research has matured, and now there exist specific scales and corresponding literature examining homophobia (e.g., Luchetta & Pardie, 1999) and attitudes toward prostitution (e.g., Levin & Peled, 2011), masturbation (e.g., Weis et al., 1992), pornography (e.g., Evans-Decicco & Cowan, 2001), and casual sex (e.g., Penke & Asendorpf, 2008). In light of these conceptual advances in the field, the current results highlight potential challenges for the SOS as it contains localized concentrations of items assessing what have now become discrete constructs in the literature like attitudes toward LGBT individuals and discomfort with pornography. Such overrepresentations of specific attitudes within the sexual stimuli of the SOS would serve to obscure and contaminate the assessment of erotophilia with the assessment of those more specific attitudes (due to

unintended predictor–criterion overlap), inflating the resulting correlations between erotophilia and those attitudes. The current results also identified excessive heterogeneity (and the associated the possibility of obscuring and contaminating assessments) as a problem for one of the four MMCSI subscales and for all three of the SAS subscales (highlighting issues with half of its 52 items). Thus, the current results suggest that scores on the SOS, MMCSI, and SAS are potentially being obscured or contaminated by assessments of what have now become distinct constructs within the literature, thereby artificially inflating their correlations with those more precise attitudes and constructs. The SPN scale approached the assessment of erotophilia using distinct conceptual and operational definitions by focusing the items directly on sex-positivity and sex-negativity rather than assessing positive–negative affective-evaluative responses across items representing a diverse array of sexual attitudes, behaviors, and sexual stimuli. The SPN was therefore developed to measure global positive and negative affective-evaluative sets or trait dispositions toward sex by using globally evaluative items with clear positive and negative content. Thus, to write new items to augment the item-pool, we drew upon previous measurement work on global evaluations, including the semantic differentials literature (e.g., Osgood, 1964), the positive–negative affect literature (e.g., Watson et al., 1988), and recent advances in the relationship quality literature

(e.g., Rogge et al., 2016), rather than drawing heavily upon the items of existing scales. Given the distinct conceptual approach, we have shifted from using the terms erotophilia and erotophobia to the terms sex-positivity and sex-negativity to highlight that conceptual transition toward assessing key facets of erotophilia and erotophobia. Consistent with this conceptual shift, the EFA on the full item pool suggested that whereas the SPN items emerged as two internally consistent factors, the items of the existing scales were generally scattered across multiple factors, representing a more heterogeneous amalgam of attitudes.

The Sex Positivity-Negativity Scale Offers Increased Precision and Power

The IRT analyses suggested that the SPN scales represent not only shorter scales but also psychometrically optimized scales, offering greater discriminating information (and correspondingly higher levels of power) for detecting differences between individuals. This type of increased information/precision/power has been linked to greater levels of responsiveness to change, even yielding stronger treatment effects for optimized scales when used as outcome measures (Rogge et al., 2016). Thus, the current findings suggest that by using a more focused conceptual definition, large item pools, and a blend of correlational and IRT measurement analyses, we were able to create shorter and more focused scales that are more likely to yield statistically significant findings for researchers. This aspect of the SPN scales would be most critical for researchers conducting studies in smaller samples where power would be a primary concern.

The Sex Positivity-Negativity Scale Offers Two Different Lengths

The current study validated both a 16-item version of the SPN (with two 8-item subscales) and an 8-item version (with two 4-item subscales). The results presented in Fig. 1 highlight the value of using the longer version of the scale whenever possible, as it provides greater information for discriminating differences between subjects, yielding greater precision and power. Using the longer version of the SPN would therefore be particularly critical in studies conducted in smaller samples, as analyses in those samples have lower overall levels of power for detecting meaningful effects. However, we also developed a shorter version of the scale for use in studies that could not accommodate 16-item scales (e.g., national phone surveys, diary studies).

Distinguishing Sex-Positivity from Sex-Negativity

The current results also serve to highlight the novel information provided by assessing sex-positivity and sex-negativity as distinct constructs. The SPN sex-negativity and sex-positivity subscales only correlated with one another moderately ($-.46$ to $-.60$), suggesting that they shared only 21 to 36% of their variance, highlighting that both subscales have unique variance to contribute to models. The SPN sex-negativity subscale also demonstrated a unique pattern of correlations with the components of the nomological net (presented in Table 6), further highlighting its discriminant validity from erotophilia and from sex-positivity. Most strikingly, when the SPN sex-negativity subscale was treated as a distinct and separate variable in the longitudinal path model predicting changes in relationship dynamics over 6 months, it demonstrated unique predictive variance above and beyond the SPN sex-positivity subscale and the SOS erotophilia scores. Taken together, the results of the current study therefore strongly encourage the use of the SPN sex-negativity as a separate construct in models.

The Sex Positivity-Negativity Scale Will Perform Well Across a Diverse Range of Future Samples

When conducted in a sufficiently large and diverse sample, IRT analyses become sample-independent. This means that the information curves obtained are likely to hold true for a diverse range of future samples. The generalizability of internal consistency analyses presented in Table 7 strongly support this tenet of IRT, as the SPN subscales demonstrated reasonable levels of internal consistency across the wide range of demographic subsamples tested. Thus, the results presented help to validate the use of the SPN in a diversity of future samples.

The Sex Positivity-Negativity Scale Clarifies the Nomological Net Surrounding Sex-Positivity/Negativity

With its conceptual clarity and psychometric precision, the SPN demonstrated a distinct pattern of correlations with constructs related to sexual attitudes from the SOS—the most widely used existing measure. Specifically, although the SPN still showed correlations with other distinct sexual attitudes, those correlations were significantly lower than those observed for the SOS. We would argue that this reflects the conceptual focus of the SPN and its corresponding ability to avoid including excessive concentrations of potentially contaminating items of more specific sexual attitudes. In creating the SPN, we treated those constructs as conceptual boundaries and actively enforced those boundaries by (1) including full measures of those other sexual attitudes in the study, and then (2) running EFAs on the entire item pool to

identify distinct sets of items. This not only served to clarify the underlying factor structures of the existing erotophilia measures, but it also allowed us to ensure that none of the items within the final SPN would more appropriately belong on a scale assessing conceptually distinct attitudes. The correlations presented in Table 6 and Fig. 2 suggest that our efforts were successful in removing any potentially contaminating items. Notably, by creating a conceptually focused measure of sex-positive attitudes, the SPN subscale demonstrated stronger associations with current individual and romantic relationship functioning than the SOS. The associations demonstrated for the SOS are consistent with previous work linking erotophilia to greater levels of sexual satisfaction (Hurlbert et al., 1993) and to more satisfying orgasms with a romantic partner (Arcos-Romero et al., 2018). Given that sex and sexuality are often an important part of romantic relationships, it could be anticipated that having strong sex-positive or sex-negative attitudes could markedly facilitate or impair the quality of sexual interactions with a partner. Thus, the stronger associations with relationship functioning demonstrated by the SPN further support the idea that the SPN scale more cleanly assesses sex-positivity, potentially with far less contaminating variance from other attitudes that may not inherently affect relationship functioning (e.g., attitudes toward pornography, homophobia, etc.). These findings therefore highlight that the use of the SPN in future studies might uncover even stronger effects of sex-positivity and sex-negativity in daily life and in relationship functioning.

The Sex Positivity-Negativity Scale Offers Unique Predictive Validity

The vast majority of previous work on erotophilia has been based on analyses in cross-sectional studies. The current study advanced this work by examining how erotophilia, sex-positivity, and sex-negativity uniquely predict change in romantic relationships over 6 months. The results presented in Fig. 3 highlight how sex-positivity and sex-negativity could shape the course of romantic relationships over time. Sex-positivity was linked to improvements in relationship quality by predicting residual increases in sexual activity and physical affection. These results extend previous work by offering possible mechanisms of action explaining previous cross-sectional links between erotophilia and sexual satisfaction (e.g., Hurlbert et al., 1993). Strikingly, after controlling for sex-positivity and sex-negativity, erotophilia assessed with the SOS predicted drops in sexual activity with a primary romantic partner and marginally predicted drops in sexual satisfaction. This begins to suggest that the part of SOS erotophilia distinct from the SPN global positivity toward sex and sexuality might represent the more divergent attitudes contained within that scale, potentially reflecting desires for activities like casual sex and masturbation, which could serve

to reduce the frequency of sex with a primary partner and an individual's sexual satisfaction with a primary partner. The results presented in Fig. 3 therefore extend the bivariate correlational findings presented in Table 6 and Fig. 2, further clarifying the distinctions between assessing erotophilia with the SOS and sex-positivity with the SPN.

Strengths and Limitations

The current work developed a conceptually focused and psychometrically optimized measure of sex-positivity and sex-negativity, helping to clarify the relationship between attitudes toward sex and relationship/individual functioning and offering researchers with a practical tool. Despite these strengths, a number of limitations offer key areas for future research. First, this study relied entirely self-report measures, which could have introduced biases as such data relies not only on subjects' comfort with answering questions in honest ways but also their own level of insight into their attitudes. Future studies could incorporate indirect assessments such as the implicit-association test (IAT) or the go/no-go association test (GNAT) which have been shown to be effective measures of attitudes toward sexuality (Geer & Robertson, 2005) to augment and extend the current findings. Second, the current study was completed entirely online, which might have screened out participants of lower socioeconomic status as this requires access to the Internet. Future studies examining the SPN scale should seek to include a more diverse subject pool to ensure the generalizability of the findings. Third, the current sample was primarily Caucasian (82%) and well-educated sample (60% completed college and/or graduate degree), raising additional concerns that the results might not generalize to all populations. Thankfully, the sheer size of the sample still offered 405 non-Caucasian participants and 180 participants who only completed high school or less, and the SPN scale continued to show reasonable internal consistency in those subsamples. Future work should seek to validate these findings in more diverse samples. Fourth, the current work was correlational and only involved a 2-wave longitudinal design, limiting our ability to assess potential causal associations. Future work could therefore use experimental and multiwave longitudinal designs to extend this work. Fifth, although the SPN demonstrated incremental predictive validity above and beyond the SOS when predicting change in relationship dynamics over 6 months, future work is necessary to evaluate if the sex-positivity and sex-negativity as assessed with the SPN will continue to predict a similarly diverse and impressive range of approach and avoidance responses to sexuality to the predictive effects demonstrated by the SOS (i.e., demonstrating comparable criterion validity). Finally, the current study did not include a measure of social desirability, so future work is needed to evaluate the degree to which responses on the SPN might be influenced

by that response bias. Despite these limitations, the current findings offer strong support for the validity, internal consistency, precision, and power of the SPN scale as a conceptually focused measure of sex-positivity and sex-negativity.

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Availability of data and material The authors have made the syntax and study materials freely available on the open science framework at: <https://osf.io/fc72h/>. A de-identified version of the data set is also stored under that project in osf.io and will be made available upon request.

Declarations

Conflict of interest The authors have no financial conflicts of interest to report.

Ethical Approval and Informed Consent The study was evaluated and approved as a minimal risk study by the University of Rochester Research Subjects Review Board. Participants were presented with an information sheet on the first page of the survey to obtain informed consent, and the study was conducted conforming to all ethical guidelines.

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