The Development and Psychometric Properties of the Interpersonal Sexual Objectification Scale—Perpetration Version

Sarah J. Gervais and M. Meghan Davidson University of Nebraska-Lincoln Kara Styck University of Texas-San Antonio

Gary Canivez Eastern Illinois University David DiLillo University of Nebraska-Lincoln

Objective: This research developed and examined the psychometric properties of the 15-item Interpersonal Sexual Objectification Scale—Perpetration Version (ISOS-P). *Method:* Specifically, the ISOS-P was developed by modifying the original Interpersonal Sexual Objectification Scale (Kozee, Tylka, Augustus-Horvath, & Denchik, 2007) to assess sexual objectification perpetration. *Results:* Exploratory factor analyses revealed 3 correlated factors for both men and women—body gazes, body comments, and unwanted explicit sexual advances—with bifactor hierarchical structure. Confirmatory factor analyses supported bifactor structure with 3 specific group factors. Results did not support measurement invariance of the ISOS-P across women and men, suggesting that ISOS-P scores do not represent the same underlying construct across these groups. Supporting its construct validity, the ISOS-P was positively associated with self-objectification, other-objectification, and sexual violence perpetration, as well as hostile sexism, benevolent sexism, and enjoyment of sexualization. *Conclusions:* The current study contributes to a more comprehensive understanding of the objectification phenomenon that is inclusive of both victims and perpetrators of objectification.

Keywords: objectification, aggression, sexual violence, sex, gender

Sexual objectification occurs when someone is treated as a sexual thing, rather than a person. When sexually objectified, people are reduced to their appearance, sex appeal, and sexual body parts for the use and pleasure of others (Fredrickson & Roberts, 1997). Sexual objectification fundamentally changes social perception and moral treatment of perpetrators toward sexually objectified targets. For example, when sexually objectified, people are dehumanized (see Heflick & Goldenberg, 2014, for review), paving the way for violence to be perpetrated against them (Gervais, DiLillo, & McChargue, 2014; Loughnan, Pina, Vasquez, & Puvia, 2013). Sexual objectification also influences the ways in which objectification recipients think and act. To wit, when objectified during interpersonal interactions, people show reduced cognitive functioning, increased body shame and anxiety, and disordered eating (see Moradi & Huang, 2008, for review). An important step toward ameliorating these negative consequences, and ultimately facilitating efforts to stop objectification from occurring, is to better understand people who perpetrate objectification. The purpose of the present study was to validate a measure to assess objectification perpetration.

The present work examined the psychometric properties of the Interpersonal Sexual Objectification Scale-Perpetration Version (ISOS-P). The ISOS-P was developed by modifying the original Interpersonal Sexual Objectification Scale (ISOS; Kozee, Tylka, Augustus-Horvath, & Denchik, 2007) in order to assess sexual objectification perpetration among women and men. The measure is gender-neutral; it assesses objectification behaviors that can be enacted toward anyone by anyone. The ISOS-P is rooted in objectification theory (Fredrickson & Roberts, 1997) and was derived from the ISOS (Kozee et al., 2007; see also Davidson, Gervais, Canivez, & Cole, 2013), which assesses people's experiences of objectification from others. Analogous to measures examining both perpetrators and victims using similarly worded items (e.g., focusing on victimization or perpetration of sexual violence; Koss, Gidycz, & Wisniewski, 1987; Koss et al., 2007), the ISOS-P mirrors the original ISOS in terms of content but revises the wording to focus on perpetration rather than victimization.

There were three purposes of the present work: (a) explore and confirm the factor structure of the ISOS-P (Study 1 and 2); (b) examine measurement invariance of the ISOS-P for women and men, considering whether ISOS-P scores are influenced by gender and whether they represent the same underlying construct across

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Sarah J. Gervais, Department of Psychology, University of Nebraska-Lincoln; M. Meghan Davidson, Department of Educational Psychology, University of Nebraska-Lincoln; Kara Styck, Department of Educational Psychology, University of Texas-San Antonio; Gary Canivez, Department of Psychology, Eastern Illinois University; David DiLillo, Department of Psychology, University of Nebraska-Lincoln.

Correspondence concerning this article should be addressed to Sarah J. Gervais, Department of Psychology, University of Nebraska-Lincoln, 219 Burnett Hall, Lincoln, NE 68588. E-mail: sgervais2@unl.edu

groups (Study 1 and 2); and (c) consider the construct validity of the ISOS-P, examining relations between objectification perpetration and closely related constructs derived from objectification theory and related research (Study 3a–3c).

Objectification Theory

In their seminal articulation of objectification theory, Fredrickson and Roberts (1997) posited that women are made into objects through the lens of a male gaze present in the media, other visual representations of women (e.g., art), and interpersonal interactions. Because of structural power differences between men and women, women internalize objectified views of themselves. This selfobjectification causes short-term negative cognitive, emotional, and behavioral consequences, laying the foundation for long-term mental health problems that disproportionately affect women (e.g., sexual dysfunction, Moradi & Huang, 2008 for review).

In addition to these important developments, objectification theory has inspired researchers to more closely consider and investigate the causes of sexual objectification (see Heflick & Goldenberg, 2014, for recent review of this burgeoning literature). Yet, a lack of systematic understanding of how, who, when, why, and with what consequences people sexually objectify others from the perspective of perpetrators remains. Women's (Kozee et al., 2007) and men's (Davidson et al., 2013) self-reported sexual objectification experiences provide empirical evidence for the frequency of objectification from the perspective of recipients, but less is understood regarding its perpetration. Thus, it remains unclear (a) whether the behaviors reported by recipients correspond to the behaviors reported by people who perpetrate objectification, (b) who is most likely to engage in these objectifying behaviors, and (c) when and why they do so. These knowledge gaps are critical to address to develop a comprehensive understanding of the objectification phenomenon that includes the perpetration side of the objectification equation.

ISOS-P

Based on objectification theory and related empirical research, the original ISOS was developed by Kozee et al. (2007) to assess women's experiences of sexual objectification, and later refined by Davidson et al. (2013) to assess men's experiences of such behaviors. The present study modified the original ISOS to assess perpetration rather than victimization, developing the ISOS-P. The ISOS-P examined in the current investigation contains the same items as the original ISOS, reworded to assess perpetration rather than victimization of sexual objectification. The content and exact language of items are identical to the ISOS items (Davidson et al., 2013; Kozee et al., 2007) with the only modification being the action of the objectification from experienced to perpetrated; thus, the ISOS-P contains self-reported perpetration of sexually evaluative and aggressive behaviors derived from objectification theory (Fredrickson & Roberts, 1997).

First, the most common and subtle form of objectification is the objectifying gaze—visually scanning people's bodies or staring at people's sexual body parts (Fredrickson & Roberts, 1997). Second, the ISOS-P contains items assessing body commentary (e.g., cat calls, evaluative commentary, sexual innuendos). Unlike gazes, body comments are more explicit manifestations of sexual objec-

tification. Finally, the ISOS-P assesses unwanted sexual advances, marked by unwelcome touching, sexual harassment, and sexually degrading gestures (Kozee et al., 2007). The present study extends past work by explicitly assessing the psychometric properties of a self-report measure of objectification perpetration behaviors.

Factor Structure of the ISOS-P (Research Question 1)

We first investigated the factor structure of the ISOS-P to examine the psychometric properties of this perpetration version of the ISOS. Kozee et al. (2007) found evidence for a two-factor structure consisting of a body evaluation factor (composed of body gazes and body comments) and an unwanted explicit sexual advances factor among female recipients. In contrast, Davidson et al. (2013) found evidence for a three-factor bifactor hierarchical structure among male recipients consisting of body gazes, body comments, and unwanted explicit sexual advances. In addition, Davidson et al. (2013) found confirmatory factor analytic evidence for a bifactor model specifying one general and three group factors, suggesting that total scores rather than subscale scores should be used to assess objectification in men. Thus, in the current study, we explored both the two-factor (Kozee et al., 2007) and threefactor (Davidson et al., 2013) structures, as well as higher-order and bifactor models.

Gender and the ISOS-P (Research Question 2)

We then examined whether the same ISOS-P factor structure was supported for both men and women. If so, this would allow for direct comparisons of objectification perpetration between men and women. The ISOS-P has the advantage of being developed as a gender-neutral assessment of objectification perpetration, and thus, may better clarify the extent to which objectification is engaged in by both genders. Because objectification theory focuses on men and not women as perpetrators of objectification, we were open to the possibility that different factor structures might emerge for women and men, as it seems unlikely that women engage in some behaviors (e.g., catcalling) similar to men. Thus, we explored measurement invariance across gender for the ISOS-P. Although the ISOS-P is also gender-neutral with respect to gender of the target, it can be modified to assess whether people are engaging in objectification of women, men, or both (either with respect to the entire scale [see Study 3c] or individual items).

Construct Validity of the ISOS-P (Research Question 3). We also explored construct validity for the measure by examining relations between the ISOS-P and closely associated constructs derived directly from objectification theory and related research for both men and women, including: (a) other-objectification (i.e., the degree to which one values other people's observable physical appearance attributes compared to nonobservable physical competence attributes; **Strelan & Hargreaves**, 2005); (b) body surveillance (i.e., persistently focusing on how one's body appears to others; **McKinley & Hyde**, 1996); and (c) sexual violence perpetration (i.e., engaging in sexual acts without consent; **Koss et al.**, 1987). Second, we examined associations between the ISOS-P and constructs not theorized when objectification theory was originally articulated (Fredrickson & Roberts, 1997) but have been linked to self-objectification and objectification perpetration in past research, including ambivalent sexism (benevolent and hostile sexism; Calogero & Jost, 2011), enjoyment of sexualization (Liss, Erchull, & Ramsey, 2011), as well as socially desirable responding.

Study 1: Exploratory Factor Analyses (Research Question 1)

The purpose of Study 1 was to conduct an initial examination of the ISOS-P factor structure using separate exploratory factor analyses (EFA) for women and men.

Method

Participants and procedure. Participants across the studies were undergraduate students at a large, Midwestern university who participated for course credit. Of 1,595 women and 980 men, 116 women and 117 men did not complete one or more ISOS-P items and were deleted listwise. The remaining 1,479 women and 863 men were randomly bifurcated into EFA and confirmatory factor analyses (CFA)samples. Data from all of the studies are available from the first author upon request. Study 1 contained 739 women and 431 men (see Table 1 for gender, age, race/ethnicity, and sexual orientation data for all studies).

Participants were recruited through an online advertisement in the psychology department subject pool for a mass screening session in which the ISOS-P was included along with other measures presented in random order. Most of the participant pool was comprised of students in introductory psychology courses, and given that students typically only complete one of these courses, the likelihood of duplicative participation was reduced.

Institutional review board approval was obtained for all studies prior to recruitment. Following informed consent procedures in which participants were told sensitive questions would be asked and were provided resources should they experience adverse reactions while completing the study, participants completed an online survey comprised of a measurement battery including the ISOS-P and demographics, that took approximately 1 hr to complete.

Instrument. The ISOS-P contains similar behavioral items as the original ISOS with two exceptions. First, the wording was modified to reflect perpetration rather than victimization (Davidson et al., 2013; Kozee et al., 2007; see Table 2). Second, the wording was modified to be gender neutral with respect to the target (see Davidson et al., 2013). Items assess the frequency of perpetrating objectifying gazes, appearance commentary, and unwanted explicit sexual advances during the past year using the same 5-point Likert scale as in the original ISOS ranging from 1 (*never*) to 5 (*almost always*). As Kozee et al. (2007) noted, these behaviors were theorized to be the most common interpersonal manifestations of sexual objectification (Fredrickson & Roberts, 1997).

Results and Discussion

EFA: Women. EFA with principal axis factoring (Tabachnick & Fidell, 2007) was conducted using SPSS 21 for Macintosh OSX to analyze the item Pearson correlation matrix. We limited iterations in first-order principal axis factoring extraction to two in estimating final communality estimates (Gorsuch, 2003), balancing sampling error and measurement error in estimating communality. Principal axis EFA produced a Kaiser-Meyer-Olkin Measure of sampling adequacy coefficient of .86 and Bartlett's test of sphericity was 4,404.72, p < .0001, indicating that the correlation matrix was not random (Tabachnick & Fidell, 2007). EFA was appropriate based on communality estimates that ranged from .121 to .770 (Mdn = .501), number of variables, factors, and sample size (MacCallum, Widaman, Zhang, & Hong, 1999).

Visual scree (Cattell, 1966) and parallel analysis (Horn, 1965) both suggested three factors be extracted, while standard error of scree (Zoski & Jurs, 1996) suggested four, and minimum average partials (Velicer, 1976) suggested two. Prior research (Davidson et al., 2013; Kozee et al., 2007) indicated two or three factors. Extraction of four factors resulted in the fourth factor including only two items and thus was judged unacceptable. The three-factor solution (see Table 2) produced simple structure (items loading on one latent factor), although Item 1 failed to load (\geq .30) on any of the three factors; however, its highest pattern coefficient (.27) was on the theoretically consistent dimension. Unrotated factor structure coefficients (loadings) on the first factor indicated each item's correlation to an overall general factor (ISOP) and ranged from .32 to .67. Factor I (unwanted explicit sexual advances [UESA]; Items 12–15) accounted for 29.72% of variance and $\alpha = .87$. Factor II (body gazes without a concomitant negative or positive appraisal [BG]; Items 2-5, 8, and 10) accounted for 13.26% of variance and

Table 1	
Key Demographics Across All Studies	

Study	Age	White	Asian A.	Hisp/Lat	Black/African A.	Native A.	Hetero	Gay	Bisexual
Study 1 (739 women)	$17-31 \ (M = 18.98, SD = 1.49)$	86.1%	4.5%	4.1%	2.8%	.3%	93%	1%	2%
Study 1 (431 men)	$17-40 \ (M = 19.32, SD = 1.98)$	85.6%	5.1%	4.9%	2.1%	0%	93%	2%	1%
Study 2 (740 women)	$16-46 \ (M = 18.99, SD = 1.89)$	86.6%	3.5%	3.9%	1.6%	.8%	95%	1%	2%
Study 2 (432 men)	$17-55 \ (M = 19.31, SD = 2.28)$	86.6%	4.9%	2.8%	2.8%	0%	93%	2%	2%
Study 3a (438 women, 232 men)	17-36 (M = 18.81, SD = 1.64)	81.5%	6.6%	3.6%	4.5%	.7%	91%	1%	3%
Study 3b (471 women, 296 men)	$17-40 \ (M = 19.04, SD = 1.73)$	87.2%	4.8%	3.9%	2.7%	.8%	94%	1%	1%
Study 3c (510 women, 195 men)	$17-42 \ (M = 19.99, SD = 1.64)$	76.2%	6.2%	5.2%	5.2%	0%	89%	1%	3.3%

Note. Asian A. = Asian American; Hisp/Lat = Hispanic/Latino; Black/African A. = Black/African American; Native A. = Native American; Hetero = Heterosexual; Gay = Gay or Lesbian. Where percentages do not equal a sum of 100, there were participants who identified as "other" or did not indicate identification. Failing to report their gender, 12 people were eliminated from Study 3a, 28 people were eliminated from Study 3b, and four people were eliminated from Study 3c.

Table 2

One and Three-Factor ISOS-P Solution From Principal Axis Extraction (2 Iteration Limit) and Promax Rotation Using 15 Item Pearson Correlations for Women (n = 739)

	Unrotated factor coefficients ^a	Prom	ax rota	ted factor	patterr	n (P) & str is	ructure	(S)
	Factor 1	F1 (UI	ESA)	F2 (BG)		F3 (BC)		
ISOS-P item (How often have you)	(ISO-P)	Р	S	Р	S	Р	S	h^2
1. Whistled at someone while she/he was walking down a street?	.34	.15	.26	.01	.20	.27	.33	.13
2. Stared at someone's breasts/chest when you are talking to them?	.37	.10	.18	.37	.40	.01	.29	.17
3. Evaluated someone's physical appearance?	.42	09	.03	.69	.63	08	.32	.41
4. Stared at someone's body?	.60	.01	.14	.91	.82	15	.43	.68
5. Leered at someone's body?	.57	01	.18	.51	.63	.19	.51	.42
6. Made a rude, sexual remark about someone's body?	.63	.01	.30	.03	.46	.69	.71	.50
7. Honked at someone when she/he was walking down the street?	.32	.10	.22	03	.19	.31	.34	.12
8. Stared at one or more of someone's body parts?	.62	02	.18	.65	.73	.13	.53	.55
9. Made inappropriate sexual comments about someone's body?	.67	04	.29	04	.48	.83	.79	.63
10. Gazed at someone's body or a body part, instead of listening to what								
she/he was saying?	.60	.11	.29	.43	.59	.21	.52	.40
11. Made sexual comments or innuendos when noticing someone's body?	.67	02	.29	.04	.50	.74	.76	.58
12. Touched or fondled someone against her/his will?	.59	.89	.88	01	.18	02	.35	.77
13. Perpetrated sexual harassment (on the job, in school, etc.)?	.54	.82	.82	06	.14	.03	.33	.68
14. Grabbed or pinched someone's private body areas against her/his will?	.57	.84	.83	.04	.19	04	.33	.69
15. Made a degrading sexual gesture towards someone?	.52	.58	.63	.04	.23	.10	.37	.42
Eigenvalue		4.94		2.39		1.23		
% Variance		29.7	72	13.2	26	4.5	7	
r_{α}	.83 ^b	3.	37°	.8	30 ^c	.88	8°	
Scale M	24.27	4.1	14	13.3	30	6.8	3	
Scale SD	5.55	3.	31	3.7	70	2.2	3	

Note. ISOS-P = Interpersonal Sexual Objectification Scale—Perpetration; UESA = unwanted explicit sexual advances; BG = body gazes; BC = body comments. As per Gorsuch (2003) iterations in first-order limited to 2. Salient factor pattern coefficients (\geq .30) are presented in bold. h^2 = communality. Factor 1 (UESA) includes ISOS-P Items 12–15; Factor 2 (BG) includes ISOS-P Items 2–5, 8, and 10; and Factor 3 (BC) includes ISOS-P Items 6, 7, 9, and 11; based on salient factor pattern coefficients \geq .30. Item 1 failed to saliently load on any factor but had strongest loading on the theoretically consistent factor (Factor 3: BC).

^a Factor structure coefficients. ^b Internal consistency (r_{α}) estimate for the total scale (all 15 items included). ^c Internal consistency (r_{α}) estimates based on items with salient factor pattern coefficients (\geq .30). Factor correlations from oblique solution: $r_{1,2} = .216$, $r_{1,3} = .411$, $r_{2,3} = .625$.

 α = .80. Factor III (body comments [BC]; Items 6, 7, 9, and 11) accounted for 4.57% of variance and α = .88.

EFA: Men. Principal axis EFA produced a Kaiser-Meyer-Olkin Measure of sampling adequacy coefficient of .88 and Bartlett's test of sphericity was 3,385.25, p < .0001, indicating that the correlation matrix was not random. Communality estimates ranged from .313 to .744 (Mdn = .624); thus, the present sample size was judged adequate for factor analysis. Like women, visual scree and minimum average partials suggested three factors be extracted, while standard error of scree suggested four, and parallel analysis suggested two. Extraction of four factors resulted in the fourth factor including only two items and was judged unacceptable. Three-factor extraction (see Table 3) produced simple structure. Unrotated factor structure coefficients on the first factor indicated each item's correlation to an overall ISOP, ranging from .46 to .76. Factor I (BG; Items 2-5, 8, and 10) accounted for 36.79% of variance and $\alpha = .86$. Factor II (BC; Items 1, 6, 7, 9, and 11) accounted for 14.35% of variance and $\alpha = .84$. Factor III (UESA; Items 12–15) accounted for 5.02% of variance and α = .85.

Bifactor models for women and men. Correlated factors for women and men were further examined with hierarchical EFA using the Schmid and Leiman procedure (recommended by Carroll, 1993). First-order factors were orthogonalized using the Schmid and Leiman procedure, creating an approximate exploratory bifactor model (Reise, 2012). Model-based reliabilities were estimated with coefficients omega-hierarchical ($\omega_{\rm H}$) and omegahierarchical subscale ($\omega_{\rm HS}$) with suggested recommendations of $\omega_{\rm H}$ and $\omega_{\rm HS}$ exceeding .50, but preferably .75 (Reise, Bonifay, & Haviland, 2013). Hierarchical EFA (exploratory bifactor) results for women are presented in Table 4. The general ISOP dimension accounted for a larger proportion of total (20.9%) and common (44.1%) variance. At the subscale level, the UESA dimension accounted for the next largest portion of total (14.0%) and common (29.6%) variance. The BG and BC dimensions accounted for smaller portions of total and common variance. Inspection of the $\omega_{\rm H}$ coefficient for the general ISOP and $\omega_{\rm HS}$ coefficient for the UESA dimension were much larger than the $\omega_{\rm HS}$ coefficients for the BG and BC, suggesting that the constructs of BG and BC were bettered assessed with the ISOP general dimension.

Hierarchical EFA (exploratory bifactor) results for men are presented in Table 5. For men, the general ISOP dimension accounted for a larger proportion of total (27.3%) and common (48.8%) variance. At the subscale level, the UESA dimension accounted for the next largest portion of total (13.0%) and common (23.2%) variance. Similar to women, the BG and BC dimensions accounted for smaller portions of total and common variance, and inspection of the $\omega_{\rm HS}$ coefficient for the general ISOP and the $\omega_{\rm HS}$ coefficient for the UESA dimension were much larger than the $\omega_{\rm HS}$ coefficients for the BG and BC.

Table 3

One and Three-Factor ISOS-P Solution From Principal Axis Extraction (2 Iteration Limit) and Promax Rotation Using 15 Item Pearson Correlations for Men (n = 431)

	Unrotated factor coefficients ^a	Pron	nax rota	ated facto	r patter efficier	m (P) & s nts	tructure	(S)
	Factor 1	F1 (E	BG)	F2 (BC)		F3 (UESA)		
ISOS-P item (How often have you)	(ISO-P)	Р	S	Р	S	Р	S	h^2
1. Whistled at someone while she/he was walking down a street?	.51	01	.34	.55	.56	.04	.30	.31
2. Stared at someone's breasts/chest when you are talking to them?	.64	.68	.71	.03	.49	.05	.21	.51
3. Evaluated someone's physical appearance?	.46	.64	.62	.03	.36	17	02	.41
4. Stared at someone's body?	.64	.95	.84	18	.43	.01	.12	.72
5. Leered at someone's body?	.65	.63	.69	.05	.51	.13	.28	.49
6. Made a rude, sexual remark about someone's body?	.73	.01	.51	.76	.79	.04	.40	.62
7. Honked at someone when she/he was walking down the street?	.57	.05	.39	.50	.59	.13	.38	.36
8. Stared at one or more of someone's body parts?	.69	.75	.81	.12	.55	10	.11	.67
9. Made inappropriate sexual comments about someone's body?	.71	05	.50	.90	.82	12	.30	.68
10. Gazed at someone's body or a body part, instead of listening to what								
she/he was saying?	.65	.54	.65	.14	.54	.12	.29	.46
11. Made sexual comments or innuendos when noticing someone's body?	.76	.14	.59	.71	.79	02	.35	.64
12. Touched or fondled someone against her/his will?	.46	.00	.15	03	.36	.81	.79	.63
13. Perpetrated sexual harassment (on the job, in school, etc.)?	.47	.00	.14	05	.36	.85	.83	.68
14. Grabbed or pinched someone's private body areas against her/his will?	.49	03	.14	02	.38	.88	.86	.74
15. Made a degrading sexual gesture towards someone?	.57	01	.29	.32	.54	.49	.64	.48
Eigenvalue		5.9	96	2.5	53	1.1	8	
% Variance		36.7	79	14.3	35	5.0	2	
r_{α}	.90 ^b	3.	86°	.8	4 ^c	.8	5°	
Scale M	31.95	17.6	66	9.5	51	4.7	8	
Scale SD	8.14	4.5	54	3.6	60	1.8	2	

Note. ISOS-P = Interpersonal Sexual Objectification Scale—Perpetration; BG = body gazes; BC = body comments; UESA = Unwanted explicit sexual advances. As per Gorsuch (2003) iterations in first-order limited to 2. Salient factor pattern coefficients (\geq .30) are presented in bold. h^2 = communality. Factor 1 (BG) includes ISOS-P Items 2–5, 8, and 10; Factor 2 (BC) includes ISOS-P Items 1, 6, 7, 9, and 11; and Factor 3 (UESA) includes ISOS-P Items 12–15; based on salient factor pattern coefficients \geq .30.

^a Factor structure coefficients. ^b Internal consistency (r_{α}) estimate for the total scale (all 15 items included). ^c Internal consistency (r_{α}) estimates based on items with salient factor pattern coefficients (\geq .30). Factor correlations from oblique solution: $r_{1,2} = .637$, $r_{1,3} = .206$, $r_{2,3} = .476$.

To compare ISOS-P EFA structures between women and men, salient variable similarity indices (with salience \pm .30) and coefficients of congruence were estimated. Table 6 illustrates the highly similar factor structures obtained for women and men with salient variable similarity indices ranging .80–1.0, and coefficients of congruence (.96–.99) in the "good" to "excellent" range (Mac-Callum et al., 1999, p. 99).

Study 2: Confirmatory Factor Analyses (Research Questions 1 and 2)

The purpose of Study 2 was to examine the three-factor structure of the ISOS-P with independent samples of women and men using CFA. We hypothesized that a bifactor model including one general factor and three group factors (BG, BC, and UESA) would be supported. Measurement invariance across gender was assessed.

Method

The procedure and instruments for Study 2 were identical to those described for Study 1. Participants in Study 2 included 740 women and 432 men (see Table 1 for demographics).

Results and Discussion

CFA: Women. EQS 6.2 (Bentler & Wu, 2012) was used to conduct CFA using maximum likelihood estimation and robust

maximum likelihood estimation per Satorra and Bentler's (S-B χ^2 ; Satorra & Bentler, 2001) corrected chi-square. Model fit was examined using the following standard criteria: normed fit index (NFI) \geq .95 and comparative fit index (CFI) \geq .95, root mean square error of approximation (RMSEA) ≤.06 (Hu & Bentler, 1999). In addition, χ^2 and Akaike information criterion (AIC) values were examined. These statistics revealed increasingly better fit from the null independence model to three oblique factors (see Table 7); however, fit statistics indicated that the one factor (ISOP), two oblique factor (Kozee et al., 2007), and three oblique factor models were inadequate (see Table 7). Of the first-order oblique models, the three oblique factor model fit the data best. Because of the oblique nature of the latent ISOS-P factors, hierarchical and bifactor representations were compared. The threefactor bifactor model was significantly better (Bryant & Satorra, 2012) than the three-factor higher-order model ($\Delta \chi^2(12) = 109.08$, p < .0001), and differences were considered meaningful $(\Delta RMSEA > -.015, Chen, 2007; \Delta CFI > +.01, Cheung & Rens$ vold, 2002). Examination of the standardized path model for the bifactor model found three items that had small negative path coefficients between the BC factor and ISOS-P Items 6, 9, and 11. Consequently, these item paths were deleted (see Figure 1) and the bifactor model was re-estimated and fit these data better as a result (see Table 7).

Table 8 presents item variance estimates of the ISOS-P based on the bifactor model. The general ISOP factor accounted for greater

	General	(ISO-P)	F1 (UI	ESA)	F2 (E	BG)	F3 (I	BC)		
ISOS-P item	b	S^2	b	S^2	b	S^2	b	S^2	h^2	u^2
1	.286	.082	.137	.019	.004	.000	.150	.023	.123	.877
2	.310	.096	.087	.008	.270	.073	.008	.000	.177	.823
3	.376	.141	082	.007	.502	.252	045	.002	.402	.598
4	.510	.260	.006	.000	.655	.429	082	.007	.696	.304
5	.505	.255	007	.000	.370	.137	.107	.011	.403	.597
6	.589	.347	.006	.000	.022	.000	.389	.151	.499	.501
7	.278	.077	.089	.008	023	.001	.178	.032	.117	.883
8	.553	.306	018	.000	.472	.223	.076	.006	.535	.465
9	.644	.415	037	.001	025	.001	.471	.222	.639	.361
10	.518	.268	.100	.010	.314	.099	.118	.014	.391	.609
11	.634	.402	018	.000	.032	.001	.421	.177	.581	.419
12	.359	.129	.801	.642	004	.000	009	.000	.771	.229
13	.334	.112	.746	.557	042	.002	.017	.000	.670	.330
14	.347	.120	.757	.573	.027	.001	023	.001	.695	.305
15	.357	.127	.529	.280	.026	.001	.058	.003	.411	.589
% Total variance	20.	9	14.0		8.1	l	4.3		47.4	52.6
% Common variance	44.	1	29.6		17.1	l	9.1			
$\omega_{\rm H}/\omega_{\rm HS}$		663	.7	02		374	.22	24		

Sources of Variance in the ISOS-P From SL Transformation of Pearson Correlation EFA With 2 Iteration Limit: Women EFA Sample

Note. ISOS-P = Interpersonal Sexual Objectification Scale—Perpetration; UESA = unwanted explicit sexual advances; BG = body gazes; BC = body comments; b = standardized loading of the item on the factor; S^2 = variance explained in the item; h^2 = communality; u^2 = uniqueness; $\omega_{\rm H}$ = ω -Hierarchical (general factor); $\omega_{\rm HS}$ = ω -Hierarchical Subscale (group factors). Bold type indicates the factor on which the respective item loads statistically.

portions of common and total variance relative to the group factors. The $\omega_{\rm H}$ and $\omega_{\rm HS}$ coefficients presented in Table 8 provided estimates of the reliability of unit-weighted composites based on the latent constructs. In the case of the three ISOS-P subscales, $\omega_{\rm HS}$ coefficients estimated the scale reliabilities with the effects of the general factor and other group factors removed and ranged from .054 (BC) to .738 (UESA; see Table 8). In addition to the

general ISOP dimension, the UESA subscale alone may also be useful as it appears to capture sufficient unique true score variance, but the BG and BC subscales do not.

CFA: Men. Model fit statistics for men are presented in Table 7 and illustrate the increasingly better fit from the null independence model to three oblique factors. Like women, however, fit statistics indicated that the one factor (ISOP), two oblique factor

Table 5

Table 4

Sources of Variance in the ISOS-P From SL Transformation of Pearson Correlation EFA With 2 Iteration Limit: Men EFA Sample

	General	(ISO-P)	F1 (E	BG)	F2 (E	BC)	F3 (UI	ESA)		
ISOS-P item	b	S^2	b	S^2	b	S^2	b	S^2	h^2	u^2
1	.482	.232	010	.000	.277	.077	.035	.001	.310	.690
2	.510	.260	.505	.255	.017	.000	.046	.002	.518	.482
3	.376	.141	.472	.223	.016	.000	151	.023	.387	.613
4	.487	.237	.704	.496	089	.008	.004	.000	.741	.259
5	.523	.274	.466	.217	.025	.001	.112	.013	.504	.496
6	.684	.468	.008	.000	.387	.150	.034	.001	.619	.381
7	.522	.272	.036	.001	.250	.063	.119	.014	.350	.650
8	.564	.318	.559	.312	.061	.004	087	.008	.642	.358
9	.694	.482	036	.001	.457	.209	104	.011	.703	.297
10	.536	.287	.400	.160	.070	.005	.104	.011	.463	.537
11	.701	.491	.106	.011	.361	.130	021	.000	.633	.367
12	.352	.124	.002	.000	015	.000	.715	.511	.635	.365
13	.353	.125	002	.000	023	.001	.751	.564	.689	.311
14	.373	.139	022	.000	008	.000	.775	.601	.740	.260
15	.492	.242	010	.000	.160	.026	.435	.189	.457	.543
% Total variance	27.	3	11.2		4.5		13.0	1	55.9	44.1
% common variance	48.	8	20.0		8.0		23.2			
$\omega_{\rm H}/\omega_{\rm HS}$		688	.4	50	.20)1	.6	43		

Note. ISOS-P = Interpersonal Sexual Objectification Scale—Perpetration; BG = body gazes; BC = body comments; UESA = unwanted explicit sexual advances; b = standardized loading of the item on the factor; S^2 = variance explained in the item; h^2 = communality; u^2 = uniqueness; $\omega_{\rm H}$ = ω -Hierarchical (general factor); $\omega_{\rm HS}$ = ω -Hierarchical Subscale (group factors). Bold type indicates the factor on which the respective item loads statistically.

Table 6

Factor I	Invariance	Indicators	Comparing	Factor	Pattern
Coeffici	ents Betwee	en Women	and Men		

	Fac invar indie	ctor iance cator
Factor solution	S	r _c
Three-factor solution		
Unwanted explicit sexual advances	1.000	.9858
Body gazes	1.000	.9784
Body comments	.800	.9610
One-factor solution		
Interpersonal Sexual Objectification Scale—Perpetration	1.000	.9824

Note. s = Salient variable similarity index (factor coefficient salience set at \pm .30 [Velicer, Peacock, & Jackson, 1982]); r_c = coefficient of congruence. r_c values between .98–1.00 = excellent, .92–.98 = good, .82–.92 = borderline, .68–.82 = poor, and below .68 = terrible (MacCallum, Widaman, Zhang, & Hong, 1999, p. 93).

(Kozee et al., 2007), and three oblique factor models were inadequate for men. Because of the oblique nature of the latent ISOS-P factors, hierarchical and bifactor representations were compared. The three-factor bifactor model was significantly better than the three-factor higher-order model, $\Delta \chi^2(12) = 159.05$, p < .0001, and differences were meaningful. Examination of the standardized path model for the bifactor model identified two items that had moderate negative path coefficients between the BC factor and ISOS-P Items 1 and 7 (likely due to the dominance of the general ISOP dimension); thus, these item paths were deleted (see Figure 2) and the bifactor model was re-estimated, but model fit did not improve as a result (see Table 7).

The general ISOP factor accounted for greater portions of common and total variance relative to the group factors (see Table 9). In the case of the three ISOS-P subscales, ω_{HS} coefficients estimated the unit-weighted composite reliabilities with the effects of the general factor and other group factors removed and ranged from .008 (BC) to .550 (UESA). Table 9 presents the item variance estimates for the ISOS-P based on the bifactor model. From these results (as with women), the general ISOP is the most useful, but the UESA subscale could also be valuable.

Measurement invariance. The *lavaan* package (Yves, 2012) in R Version 3.2.2 (R Core Team, 2015) was used to evaluate measurement invariance across gender for the ISOS-P three-factor bifactor model. First, the three-factor bifactor model was fit to men and women separately following recommendations by Meade, Johnson, and Braddy (2008) and results indicated adequate fit of the model in each group (see Table 10; Models 1a and 1b).

Next, configural invariance was evaluated across gender to determine the degree to which the same underlying structural model was observed in both women and men. The multigroup three-factor bifactor model of the ISOS-P fit the data well as evidenced by RMSEA values <.06 (see Table 10, Model 2, Hu & Bentler, 1999). However, the NFI and CFI values fell below established thresholds for adequate model fit. Nevertheless, the configural model was determined to have acceptable fit due to identifying the same underlying structural model in each group when testing the baseline model in the initial step.

Metric invariance, which evaluates the degree to which the underlying structural model and factor loadings are the same across groups, was tested next across women and men. Results indicated the metric invariance model fit the data better than the configural invariance model, S-B $\chi^2(30) = 125.72$; p < .05, and the RMSEA value fell below prespecified criteria for adequate model fit; albeit, the NFI and CFI values decreased, while the RMSEA and AIC values increased (see Table 10, Model 3a). As a result, the direction of the changes to supplemental fit statistics

Table 7

CFA Fit Statistics From ISOS-P Pearson Correlations for Women (n = 740) and Men (n = 432)

Model	S-B χ^2	df	NFI	CFI	RMSEA	90% CI RMSEA	AIC
Women							
Independence (null)	1,161.53	105					951.53
One factor	619.53*	90	.467	.499	.089	.083, .096	439.53
Two oblique factors ^a	399.17*	89	.656	.706	.069	.062, .076	221.17
Three oblique factors	256.64*	87	.779	.839	.051	.044, .059	82.64
Three factor HO	266.48	87	.771	.830	.053	.046, .060	92.48
Three factor bifactor	138.13*	75	.881	.940	.034	.025, .042	-11.87
Three factor bifactor ^b	67.25	78	.942	1.00	.000	.000, .014	-88.75
Men							
Independence (Null)	1,280.53	105					1,070.53
One factor	809.58*	90	.368	.388	.136	.127, .145	629.58
Two orthogonal factors	440.02^{*}	90	.516	.549	.117	.108, .125	440.02
Two oblique factors ^a	596.66*	89	.534	.568	.115	.106, .124	418.66
Three oblique factors	361.76*	87	.717	.766	.086	.076, .095	187.76
Three factor HO	362.02	87	.717	.766	.086	.076, .095	188.02
Three factor bifactor	164.15*	75	.872	.924	.053	.042, .063	14.15
Three factor bifactor ^c	192.53	77	.850	.902	.059	.049, .069	38.53

Note. Analyses based on item Pearson correlation matrix. ISOS-P = SOS-P = Interpersonal Sexual Objectification Scale—Perpetration; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; AIC = Akaike information criteria. ^a The oblique two-factor model is identical to the model specified for women by Kozee, Tylka, Augustus-Horvath, and Denchik (2007). ^b Negative path coefficients from three factor bifactor model (BE to ISOS-P Items 6, 9, and 11) deleted. ^c Negative path coefficients from three factor bifactor model (BE to ISOS-P Items 6, 9, and 11) deleted.

* Statistically different (p < .001) from previous factor model.



Figure 1. Standardized bifactor measurement model of the Interpersonal Sexual Objectification Scale— Perpetration for women (n = 740) with small negative paths deleted.

suggests that the metric model does not fit the data better than the configural model. An inspection of the modification indices for the metric invariance model indicated a number of factor loadings were invariant across women and men. The largest modification indices were observed for Items 2 (i.e., stared at someone's breasts/chest when you are talking to them?), 4 (i.e., stared at someone's body?), 7 (i.e., honked at someone when she/he was walking down the street?), and 8 (i.e., stared at one or more of someone's body parts?). Men endorsed these four items more often than women on average. Moreover, Items 2 and 7 were both positively skewed and leptokurtic for women to a larger extent compared to men, which indicates that the majority of women reported that they never or rarely engaged in these behaviors. However, permitting the factor loadings to vary freely across

gender on these four items did not substantially improve the model according to supplemental fit statistics (see Table 10, Model 3b). Consequently, the metric invariance model was not supported and indicates that factor loadings are not invariant across gender.

Study 3: Construct Validity (Research Question 3)

In Study 3, we explored the construct validity of the ISOS-P in three separate samples. Because data were analyzed for men and women separately, participants were eliminated from the data sets if they did not report their gender (see Table 1). Pairwise deletion was used if participants were missing responses. In Study 3a we expected scores on the ISOS-P to be positively associated with constructs established in prior research that reflect objectified views of the self Table 8

Sources of Variance in the ISOS-P Women Sample (n = 740) According to Bifactor Model (Negative Standardized BE Paths to ISOS-P Items 6, 9, 7, and 11 Deleted)

	General (ISO-P)		В	С	В	G	UE	SA		
Item	b	S^2	b	S^2	b	S^2	b	S^2	h^2	u^2
1	.367	.135	.443	.196					.331	.669
2	.435	.189			.123	.015			.204	.796
3	.372	.138			.546	.298			.437	.564
4	.473	.224			.731	.534			.758	.242
5	.494	.244			.415	.172			.416	.584
6	.711	.506							.506	.494
7	.414	.171	.646	.417					.589	.411
8	.529	.280			.505	.255			.535	.465
9	.801	.642							.642	.358
10	.571	.326			.160	.026			.352	.648
11	.759	.576							.576	.424
12	.264	.070					.814	.663	.732	.268
13	.310	.096					.811	.658	.754	.246
14	.280	.078					.726	.527	.605	.395
15	.455	.207					.610	.372	.579	.421
% Total variance	25.	9	4.1		8	.7	14.3	8	53.4	46.6
% Common variance	48.	4	7.7	1	16	.2	27.2	7		
$\omega_{\rm H}/\omega_{\rm HS}$		694	.0	92		.347		742		

Note. ISO = Interpersonal Sexual Objectification—Perpetration; BC = body comments; BG = body gazes; UESA = unwanted explicit sexual advances; b = standardized loading of the item on the factor; S^2 = variance explained in the item; h^2 = communality; u^2 = uniqueness; $\omega_H = \omega$ -Hierarchical (general factor); $\omega_{HS} = \omega$ -Hierarchical Subscale (group factors).

and/or others, including other-objectification (i.e., the relative importance people place on observable physical appearance compared to nonobservable attributes in other people, Strelan & Hargreaves, 2005), body surveillance (i.e., the degree to which people persistently watch their body and focus on their appearance; McKinley & Hyde, 1996), sexual violence perpetration (i.e., the frequency with which people report committing sexually assaultive behaviors; Gervais et al., 2014; see also Loughnan et al., 2013). The ISOS-P is distinct from these other measures because it assesses perpetration of objectification behaviors toward others. We also included a measure of social desirability; we expected scores on the ISOS-P to be weakly related to socially desirable responding, suggesting that ISOS-P is not simply measuring the likelihood of responding in ways deemed more or less acceptable by others.

In Study 3b, we examined whether the ISOS-P was associated positively with constructs that are distinct from objectification but have been linked to objectification in prior research, including ambivalent sexism (i.e., sexist attitudes reflecting benevolence toward women who fit traditional gender roles and hostility toward women who violate these roles; Glick & Fiske, 1996; see Calogero & Jost, 2011) and enjoyment of sexualization (i.e., the degree to which people report enjoying being sexually admired by others, Liss et al., 2011). We reasoned that sexist attitudes may be associated with objectification perpetration, and that those who enjoy being sexualized may be able to justify objectification perpetration toward others.

Finally, in Study 3a and 3b, we estimated correlations among these variables separately for men and women and examined potential gender differences due to (a) prior research yielding such differences on these constructs (e.g., Glick & Fiske, 1996) and (b) some of these constructs being developed primarily with either women (e.g., McKinley & Hyde, 1996; Liss et al., 2011) or men (Koss et al., 1987; cf., Koss et al., 2007), and/or revealing gender differences (e.g., women report more body surveillance than men, McKinley, 2006). In

Study 3c, we explored whether men and women reported directing objectifying behaviors toward women, men, or both.

Participants and Procedure

Study 3a used the same procedures as Study 1 and 2, except embedded within this survey was the 10-item Other-Objectification Questionnaire (Strelan & Hargreaves, 2005), the eight-item (1 = *strongly disagree*, 7 = *strongly agree*) body surveillance subscale of the Objectified Body Consciousness Scale (McKinley & Hyde, 1996), the 12-item (1 = *never*, 3 = *occasionally*, 5 = *often*) Sexual Experiences Survey—Perpetration Version (Koss et al., 1987), and the 13-item (true or false) Marlowe-Crowne Social Desirability Scale—Short Form (Reynolds, 1982). Likewise, embedded within Study 3b was the 22-item (1 = *disagree strongly*, 7 = *agree strongly*) Ambivalent Sexism Inventory (Glick & Fiske, 1996) and an eight-item (1 = *disagree strongly*, 6 = *agree strongly*) Enjoyment of Sexualization Scale (Liss et al., 2011). Each of these scales has strong validity and reliability.

Finally, in Study 3c, following completion of the ISOS-P, participants were asked to, "Consider the behaviors described above and think about how often you directed these behaviors toward men and/or women. Please indicate *who* you directed these behaviors toward." Response options included "men only," "men more than women," "men and women equally," "women more than men," and "women only."

Results and Discussion

Study 3a

Because the results from Study 1 and 2 did not support measurement invariance of the ISOS-P across women and men, and men



Figure 2. Standardized bifactor measurement model of the Interpersonal Sexual Objectification Scale— Perpetration for men (n = 432) with negative paths deleted.

reported more objectification perpetration than women (see Table 11), we estimated correlations between the ISOS-P and measures of related constructs separately for women and men. Also, the bifactor ISOP model was deemed best in Study 1 and 2, so we examined correlations between the ISOS-P total scale and the other predictors.

For men, consistent with hypotheses, ISOS-P scores were positively associated with other-objectification, body surveillance, and sexual violence (see Table 11). However, these correlations ranged from small to moderate (.21 to .28), suggesting that interpersonal sexual objectification perpetration is related to these constructs, but is theoretically distinct among men. A negative correlation between the ISOS-P and social desirability also emerged among men, suggesting that reporting more objectification perpetration is associated with less socially desirable responding. For women, ISOS-P scores were positively and weakly associated with other-objectification and body surveillance (.14 to .16), unrelated to sexual violence perpetration, and negatively associated with socially desirable responding (see Table 11). This pattern suggests that the ISOS-P is assessing related, but distinct constructs to objectification of others, body surveillance, and socially desirable responding and a construct unrelated to sexual violence perpetration in women. While the pattern of significant correlations appeared weaker for women than men, the only correlation that was significantly different was between the ISOS-P and sexual violence (see Table 11).

We also controlled for socially desirable responding and estimated partial correlations between the ISOS-P and other-objectification ($r_{\text{men}} = .15$, p = .02; $r_{\text{women}} = .13$, p = .006), body surveillance

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Table 9

Sources of Variance in the ISOS-P Men Sample (n = 432) According to Bifactor Model (Negative Standardized BE Paths to ISOS-P Items 1 and 7 Deleted)

	General	(ISOS-P)	В	С	В	G	UE	SA		
Item	b	S^2	b	S^2	b	S^2	b	S^2	h^2	u^2
1	.692	.479							.479	.521
2	.590	.348			.320	.102			.451	.550
3	.301	.091			.648	.420			.511	.489
4	.452	.204			.766	.587			.791	.209
5	.517	.267			.490	.240			.507	.493
6	.646	.417	.418	.175					.592	.408
7	.720	.518							.518	.482
8	.471	.222			.505	.255			.477	.523
9	.644	.415	.652	.425					.840	.160
10	.651	.424			.160	.026			.449	.551
11	.629	.396	.478	.228					.624	.376
12	.489	.239					.750	.563	.802	.198
13	.459	.211					.639	.408	.619	.381
14	.473	.224					.750	.563	.786	.214
15	.575	.331					.286	.082	.412	.588
% Total variance	31.	9	5.5	5	10.	9	10.	8	59.1	40.9
% Common variance	54.0	0	9.4	Ļ	18.	4	18.	2		
$\omega_{\rm H}/\omega_{\rm HS}$		752	.1	55		416		523		

Note. ISOS = Interpersonal Sexual Objectification Scale—Perpetration; BC = body comments; BG = body gazes; UESA = unwanted explicit sexual advances; b = standardized loading of the item on the factor; S^2 = variance explained in the item; h^2 = communality; u^2 = uniqueness; ω_H = ω -Hierarchical (general factor); ω_{HS} = ω -Hierarchical Subscale (group factors).

 $(r_{\text{men}} = .20, p = .002; r_{\text{women}} = .10, p = .048)$, and sexual violence perpetration $(r_{\text{men}} = .24, p < .0001; r_{\text{women}} = -.08, p = .54)$, and the magnitude of correlations was somewhat reduced, but remained significant, suggesting that the relations between the ISOS-P and the construct validity variables held above and beyond concerns regarding impression management.

Study 3b

Consistent with hypotheses for both women and men, ISOS-P scores were positively associated with both hostile sexism and benevolent sexism as well as enjoyment of sexualization (see Table 11). These correlations ranged from small to moderate for both women (.11 to .24) and men (.17 to .36), suggesting that interpersonal sexual objectification perpetration is related to these constructs, but is theoretically distinct from them. The only significant gender difference in the magnitude of correlations was the ISOS-P was more strongly correlated with hostile sexism in men, than women (see Table 11).

Study 3c

A chi-square test of independence revealed a significant relation between participant gender and gender of the objectification target, $\chi^2(4, n = 698) = 367.09, p < .0001$. Men reported directing

Table 10

Goodness-of-Fit Indices for Invariance Testing of the ISOS-P Across Gender for the Three-Factor Bifactor Model of the ISOS-P

Model	S-B χ^2	df	NFI	CFI	RMSEA (90% CI)	AIC	Model Comparison	Δ S-B χ^2	Δdf	ΔCFI	ARMSEA
Phase I: Baseline model fit for each group											
1a. Women $(n = 740)$	137.93	75	.881	.940	.034 (.027, .040)	15,378.00	_			_	
1b. Men $(n = 432)$	163.76	75	.872	.924	.052 (.043, .061)	12,045.70	_			_	
Phase II: Testing invariance											
across groups											
2. Configural invariance	297.59	150	.877	.933	.041 (.036, .046)	27,423.70	_			_	
3a. Metric invariance	423.31	180	.825	.890	.048 (.044, .052)	27,668.58	2 vs. 3a	125.72*	30	.052	.007
3b. Metric invariance ^a	441.23	187	.817	.885	.048 (.044, .052)	27,671.54	3a vs. 3b	17.92	7	.005	.000

Note. S-B χ^2 = Satorra-Bentler chi-square; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean squared error of approximation; AIC = Akaike's information criterion; Δ CFI = change in the comparative fit index; Δ S-B χ^2 = change in the Satorra-Bentler chi-square; Δdf = change in degrees of freedom; $|\Delta$ RMSEA| = absolute value of the change in the root mean squared error of approximation. Fit statistics were computed using the *lavaan* package in *R* Version 3.2.2. Consequently, some values may be discrepant from those reported in confirmatory factor analyses due to computational differences in software.

^a Partial metric invariance with factor loadings for ISOS-P items 2, 4, 7, and 8 free to vary across gender.

^{*} Statistically different from previous factor model at p < .05.

	Women M (SD)	Men M (SD)	Alpha	1	2	3	4	5
Measure (Study 3a)								
1. ISOS-P total ^{***}	1.81 (.39)	2.16 (.47)	.86		.21**	$.28^{***}$.25***	32**
2. Other-objectification*	1.23 (8.64)	2.70 (8.46)	N/A	.16**		.15*	02	21**
3. Body surveillance ^{***}	4.18 (.79)	3.64 (.90)	.79	.14**	.17***		.05	30***
4. Sexual experiences survey	1.09 (.28)	1.12 (.23)	.81	08	.16	12		.08
5. Social desirability scale*	1.58 (.20)	1.54 (.21)	.64	23***	12^{*}	21^{***}	.00	_
Measure (Study 3b)								
1. ISOS-P total ^{***}	1.51 (.34)	2.03 (.61)	.90	_	.36***	.31***	.17**	_
2. Enjoyment of sexualization**	4.03 (.97)	4.26 (1.02)	.8990	.24***	_	.20**	.17**	_
3. Hostile sexism***	2.83 (.95)	3.36 (.93)	.84	.11*	.05	_	.30***	_
4. Benevolent sexism**	3.17 (.89)	3.36 (.86)	.76	.12**	01	.25***		_
Measure (Study 3c)								
1. ISOS-P total***	1.86 (.42)	1.63 (.36)	.84					

 Table 11

 Means, Standard Deviations, and Intercorrelations of the Measures From Study 3a, 3b, and 3c

Note. ISOS-P = SOS-P = Interpersonal Sexual Objectification Scale—Perpetration. Men's correlations are reported above the diagonal and significant gender differences in the magnitude of the correlations are denoted in bold (ISOS-P and sexual violence, Fischer's z = 2.31, p = .02; ISOS-P and hostile sexism, Fischer's z = 2.90, p = .004). Independent samples *t* tests were run comparing men and women's responses to all of the measures and are reported in the Measure column. * p < .05. ** p < .01.

objectifying behaviors most often toward "women only" (51%), followed by "women more than men" (25%), followed by "men more than women" (8%), followed by "women and men equally" (7%), and followed by "men only" (6%). Women reported directing these behaviors most often toward "men more than women" (42%), "men only" (26%), "men and women equally" (16%), "women more than men" (9%), and "women only" (1%). Thus, both genders reported most often directing these behaviors toward another gender recipient, but these effects were more pronounced for men than women.

General Discussion

Sexual objectification can be manifested as a form of interpersonal behavior in which people are treated as sex objects rather than people. In the present work, we (a) explored and confirmed the factor structure of the ISOS-P (Kozee et al., 2007, Study 1 and 2, Research Question 1); (b) examined measurement invariance of the ISOS-P for women and men, considering whether ISOS-P scores differ according to gender and whether they represent the same underlying construct across groups (Study 2, Research Question 2); and (c) considered the construct validity of the ISOS-P (Study 3a-3c, Research Question 3).

Research Implications

Complementary EFA and CFA revealed that the ISOS-P is best conceptualized by a bifactor model with a general ISOS-P factor and three group factors. Participants from large independent samples across two studies reported three distinguishable types of objectifying behaviors, including BG, BC, and UESA (e.g., sexually touching another person). Although ISOS-P scores were internally consistent based on alpha coefficients, such coefficients are potentially misleading due to a number of violations of alpha assumptions (multidimensionality and tau-equivalence; Chen, Hayes, Carver, Laurenceau, & Zhang, 2012). It is likely that alpha coefficients for unit-weighted BG and BC scores are inflated due to the item variance attributed to the general ISOP general factor. More appropriate indicators of true score variance (ω_H and ω_{HS}) captured by the various ISOS-P dimensions found appreciable amounts of true score variance for the general ISOS factor and for the UESA factor, but limited portions for BG and BC after the general factor item variance and other group sources of variance were removed. This is why ω_{H} and ω_{HS} must be routinely reported (Reise, 2012). Thus, the primary utility for the ISOS-P likely resides in a unit-weighted total score and a unit-weighted UESA score. It is also important to note that some items were not normally distributed, which may accurately reflect the nature of objectification in the general population; most people likely engage in objectifying behaviors infrequently, but a few individuals engage in these behaviors at high rates. Principal axis factoring in EFA and robust maximum-likelihood estimation for CFA, however, were used to account for departures from normality and evidence of a three-factor structure remained.

With regard to the construct validity of the ISOS-P, it was associated positively with other-objectification, body surveillance, and sexual violence perpetration (in men), as well as ambivalent sexism and sexualization enjoyment. Like other scales that assess sensitive topics (e.g., violence, immorality), ISOS-P scores were also related negatively to socially desirable responding; however, the relations between the ISOS-P and other variables held even when controlling for social desirability, suggesting that the ISOS-P is not simply assessing people's desire to make positive impressions on others. Measuring and controlling for social desirability is recommended for future research employing the ISOS-P.

The present work also sheds further light on the extent to which both genders engage in objectification because it is gender-neutral and thus can be completed by both men and women. The original ISOS is also gender-neutral with respect to perpetrators, denoting "someone" rather than a man or woman specifically as engaging in objectifying behaviors toward a recipient (Kozee et al., 2007). Although both men and women reported engaging in objectification perpetration, results did not support measurement invariance of the ISOS-P across genders, suggesting that scores do not represent the same underlying construct across groups. Consistent with the notion that objectification is used by men to create, maintain, and reinforce patriarchy (Fredrickson & Roberts, 1997), objectifying behaviors were associated more strongly with sexual violence perpetration and hostile sexism for men than women, and half of men reported directing objectification at "women only," whereas only one-quarter of women reported directing objectification at "men only." Future research should examine when and why both men and women perpetrate objectification toward women and men, including considerations of power and oppression, in addition to mere sexual attraction.

Limitations

Despite the implications of the present work, it is not without its limitations. First, the original ISOS was developed to assess women's experiences with objectification, and later refined to assess men's experiences with objectification (Davidson et al., 2013). Because we did not sample perpetrators' experiences to develop the ISOS-P, it is possible that objectifying behaviors that are not detected or reported by recipients will not be captured by this measure. One prior study (Gervais et al., 2014) did modify the ISOS to assess perpetration and found hypothesized relations among variables, providing initial evidence for the potential utility of a perpetration version of the ISOS. Yet, we found a more nuanced factor structure for the ISOS-P than did Kozee et al. (2007) for the original ISOS in which body gazes and body comments emerged as separate factors, similar to Davidson et al. (2013). Future research could adopt an inductive approach with an item pool based specifically on objectification perpetration. This may be particularly important for female perpetrators because the original version of the ISOS was created through the lens of objectification theory (Fredrickson & Roberts, 1997), which focused primarily on male perpetrators.

As with the original ISOS, the samples in this investigation were primarily young, White, heterosexual, college students drawn from psychology courses (Kozee et al., 2007). Using these samples limits the potential utility of the ISOS-P with noncollegiate samples with more age, racial/ethnic, and sexual diversity. It would be interesting, for example, to examine the antecedents of objectification of same-sex individuals; while sexual orientation due to attraction may be an important predictor of same-sex objectification, it is possible that heterosexual individuals also objectify same-sex individuals as a means of gender policing (e.g., heterosexual women making negative appearance comments toward lesbians; heterosexual men harassing gay men). The ISOS-P could be easily modified to assess the target gender of objectification (similar to Study 3c or by individual item) to aid in these investigations. Thus, future research is needed to examine the psychometric properties of the ISOS-P (and the ISOS) among these populations as well as a range of recipients. Finally, analyses were performed on cases with complete data for men and women, but this assumes missing data is completely random. Future researchers may wish to use more robust methods for dealing with missing data (Baraldi & Enders, 2010).

Clinical and Policy Implications

The current findings supporting the psychometrics of the ISOS-P may also open the door for researchers to pose new questions about the role and function of objectification perpetration. For example, the findings from Study 3a suggest that men's objectification may increase risk of engaging in sexual assault (see also Loughnan et al., 2013). If men's objectification of women is a precursor to more severe sexual violence, the ISOS-P may be useful as an early detection tool of men at-risk for sexual assault perpetration, and could serve as a measure of change for men undergoing treatment to promote greater humanization of women.

Concluding Thoughts

We provided psychometric evidence for the ISOS-P. In doing so, the current study contributes to a more comprehensive understanding of the objectification phenomenon that is inclusive of both victims and perpetrators of objectification. We hope this provides the foundation for using the ISOS-P to understand when and why objectification is perpetrated toward others, with the ultimate goal of reducing this problematic behavior.

References

- Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analyses. *Journal of School Psychology*, 48, 5–37. http://dx.doi.org/ 10.1016/j.jsp.2009.10.001
- Bentler, P. M., & Wu, E. J. C. (2012). EQS for Windows. Encino, CA: Multivariate Software, Inc.
- Bryant, F. B., & Satorra, A. (2012). Principles and practice of scaled difference chi-square testing. *Structural Equation Modeling*, 19, 372– 398. http://dx.doi.org/10.1080/10705511.2012.687671
- Calogero, R. M., & Jost, J. T. (2011). Self-subjugation among women: Exposure to sexist ideology, self-objectification, and the protective function of the need to avoid closure. *Journal of Personality and Social Psychology*, 100, 211–228. http://dx.doi.org/10.1037/a0021864
- Carroll, J. B. (1993). Human cognitive abilities. Cambridge, United Kingdom: Cambridge University Press. http://dx.doi.org/10.1017/ CBO9780511571312
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245–276. http://dx.doi.org/10.1207/s15327906 mbr0102_10
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14, 464–504. http://dx.doi.org/10.1080/10705510701301834
- Chen, F. F., Hayes, A., Carver, C. S., Laurenceau, J.-P., & Zhang, Z. (2012). Modeling general and specific variance in multifaceted constructs: A comparison of the bifactor model to other approaches. *Journal* of Personality, 80, 219–251. http://dx.doi.org/10.1111/j.1467-6494 .2011.00739.x
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9, 233–255. http://dx.doi.org/10.1207/S15328007SEM0902_5
- Davidson, M. M., Gervais, S. J., Canivez, G. L., & Cole, B. P. (2013). A psychometric examination of the Interpersonal Sexual Objectification Scale among college men. *Journal of Counseling Psychology*, 60, 239– 250. http://dx.doi.org/10.1037/a0032075
- Fredrickson, B. L., & Roberts, T. (1997). Objectification theory: Towards understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, *21*, 173–206. http://dx.doi.org/10.1111/j .1471-6402.1997.tb00108.x
- Gervais, S. J., DiLillo, D., & McChargue, D. M. (2014). Understanding the link between men's alcohol use and sexual violence perpetration: The

mediating role of sexual objectification. *Psychology of Violence*, 4, 156–169. http://dx.doi.org/10.1037/a0033840

- Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality* and Social Psychology, 70, 491–512. http://dx.doi.org/10.1037/0022-3514.70.3.491
- Gorsuch, R. L. (2003). Factor analysis. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: Vol. 2. Research methods in psychology* (pp. 143–164). Hoboken, NJ: Wiley.
- Heflick, N., & Goldenberg, J. (2014). Seeing eye to body: The literal objectification of women. *Current Directions in Psychological Science*, 23, 225–229. http://dx.doi.org/10.1177/0963721414531599
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30, 179–185. http://dx.doi.org/10.1007/ BF02289447
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. http://dx.doi.org/10.1080/ 10705519909540118
- Koss, M. P., Abbey, A., Campbell, R., Cook, S., Norris, J., Testa, M., ... White, J. (2007). Revising the SES: A collaborative process to improve assessment of sexual aggression and victimization. *Psychology of Women Quarterly*, 31, 357–370. http://dx.doi.org/10.1111/j.1471-6402 .2007.00385.x
- Koss, M. P., Gidycz, C. A., & Wisniewski, N. (1987). The scope of rape: Incidence and prevalence of sexual aggression and victimization in a national sample of higher education students. *Journal of Consulting and Clinical Psychology*, 55, 162–170. http://dx.doi.org/10.1037/0022-006X .55.2.162
- Kozee, H. B., Tylka, T. L., Augustus-Horvath, C., & Denchik, A. (2007). Development and psychometric evaluation of the interpersonal sexual objectification scale. *Psychology of Women Quarterly*, *31*, 176–189. http://dx.doi.org/10.1111/j.1471-6402.2007.00351.x
- Liss, M., Erchull, M. J., & Ramsey, L. R. (2011). Empowering or oppressing? Development and exploration of the Enjoyment of Sexualization Scale. *Personality and Social Psychology Bulletin*, 37, 55–68. http://dx .doi.org/10.1177/0146167210386119
- Loughnan, S., Pina, A., Vasquez, E., & Puvia, E. (2013). Sexual objectification increases rape blame and decreases perceived suffering. *Psychology of Women Quarterly*, 37, 455–461. http://dx.doi.org/10.1177/ 0361684313485718
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4, 84–99. http://dx.doi .org/10.1037/1082-989X.4.1.84
- McKinley, N. (2006). Longitudinal gender differences in objectified body consciousness and weight-related attitudes and behaviors: Cultural and developmental contexts in the transition from college. Sex Roles, 54, 159–173. http://dx.doi.org/10.1007/s11199-006-9335-1
- McKinley, N. M., & Hyde, S. J. (1996). The objectified body consciousness scale: Development and validation. *Psychology of Women Quar*-

terly, 20, 181–215. http://dx.doi.org/10.1111/j.1471-6402.1996 .tb00467.x

- Meade, A. W., Johnson, E. C., & Braddy, P. W. (2008). Power and sensitivity of alternative fit indices in tests of measurement invariance. *Journal of Applied Psychology*, 93, 568–592. http://dx.doi.org/10.1037/ 0021-9010.93.3.568
- Moradi, B., & Huang, Y. P. (2008). Objectification theory and psychology of women: A decade of advances and future directions. *Psychology of Women Quarterly*, 32, 377–398. http://dx.doi.org/10.1111/j.1471-6402 .2008.00452.x
- R Core Team. (2015). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from http://www.R-project.org/
- Reise, S. P. (2012). The rediscovery of bifactor measurement models. *Multivariate Behavioral Research*, 47, 667–696. http://dx.doi.org/10 .1080/00273171.2012.715555
- Reise, S. P., Bonifay, W. E., & Haviland, M. G. (2013). Scoring and modeling psychological measures in the presence of multidimensionality. *Journal of Personality Assessment*, 95, 129–140. http://dx.doi.org/ 10.1080/00223891.2012.725437
- Reynolds, W. M. (1982). Development of reliable and valid short forms of the MCSDS. *Journal of Clinical Psychology*, *38*, 119–125. http://dx.doi .org/10.1002/1097-4679(198201)38:1<119::AID-JCLP2270380118>3 .0.CO;2-I
- Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, 66, 507–514. http://dx.doi.org/10.1007/BF02296192
- Strelan, P., & Hargreaves, D. (2005). Women who objectify other women: The vicious circle of objectification? Sex Roles, 52, 707–712. http://dx .doi.org/10.1007/s11199-005-3737-3
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education, Inc.
- Velicer, W. F. (1976). Determining the number of components form the matrix of partial correlations. *Psychometrika*, 41, 321–327. http://dx.doi .org/10.1007/BF02293557
- Velicer, W. F., Peacock, A. C., & Jackson, D. N. (1982). A Comparison of component and factor patterns: A Monte Carlo approach. *Multivariate Behavior Research*, 17, 371–388. http://dx.doi.org/10.1207/ s15327906mbr1703_5
- Yves, R. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48, 1–36. Retrieved from http://www .jstatsoft.org/v48/i02/
- Zoski, K. W., & Jurs, S. (1996). An objective counterpart to the visual scree test for factor analysis: The standard error scree. *Educational and Psychological Measurement*, 56, 443–451. http://dx.doi.org/10.1177/ 0013164496056003006

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