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# Measuring self-objectification and sexually objectifying media experiences in cisgender women and men

**Hu Zhuozhuo**

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## Abstract

Sexual objectification is the experience of being treated as a body existing for the use and pleasure of others. When sexually objectified, individuals may experience self-objectification and other body image concerns. It is currently unclear whether existing measures of self-objectification, which are primarily designed for women, adequately capture self-objectification in cisgender heterosexual men. In addition, current measures of experiences of sexually objectifying media may not fully capture the experiences of cisgender heterosexual women and men. Six studies were conducted in this PhD to address these gaps in the literature. Studies 1 and 2 examined the psychometric properties of the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998), the Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996), and the Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Dunn, 2017) in cisgender heterosexual women and cisgender heterosexual men using a longitudinal study design. Studies 3a, 3b, 4, and 5 developed and evaluated two novel measures of sexually objectifying media experiences for age-representative samples of cisgender heterosexual women (Women-SOMS) and men (Men-SOMS). Studies 3a and 3b generated the initial item pools for the Women-SOMS and the Men-SOMS based on a literature review and two online surveys. Study 4 conducted Exploratory Factor Analysis for both measures. Study 5 conducted Confirmatory Factor Analysis and examined the validity and reliability of the Women-SOMS and the Men-SOMS. Studies 1 and 2 indicated that the SOBBS was the most robust measure of self-objectification for cisgender heterosexual women and men. Studies 3a, 3b, 4, and 5 demonstrated that the Women-SOMS and Men-SOMS are generally psychometrical

sounds for measuring experiences of sexual objectification in the media. Future research should continue to investigate the validity of the SOBBS, Women-SOMS and Men-SOMS in women and men.

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## Declaration

*I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously presented for an award at this, or any other, university.*

*The studies in Chapters 2 and 3 are being prepared for submission to peer-reviewed journals as follows:*

Hu, Z., Wood, C., & Buckland, N. J. *Measuring Self-Objectification in Cisgender Women and Men: A Psychometric Validation.* [Manuscript being prepared for submission for *Sex Roles*].

Hu, Z., Wood, C., & Buckland, N. J. *Development and Psychometric Validation of The Women-Sexually Objectifying Media Scale (Women-SOMS) and Men-Sexually Objectifying Media Scale (Men-SOMS).* [Manuscript being prepared for submission for *Psychology of Women Quarterly*].

*The studies in Chapters 2 and 3 have been presented at the following conferences:*

Hu, Z., Wood, C., & Buckland, N. J. *The Sexually Objectifying Media Scale: Development and Psychological evaluation for Cisgender Women and Men.* [Oral Presentation in the British Psychological Society Cyber Psychology Section Annual Conference 2022, Brighton].

Hu, Z., Wood, C., & Buckland, N. J. *The Sexually Objectifying Media Scale: Development and Psychological evaluation for Cisgender Women and Men.* [Oral Presentation in the British Psychological Society Social Psychology Section Annual Conference 2022, London].

Hu, Z., Wood, C., & Buckland, N. J. *The Sexually Objectifying Media Scale: Development and Psychological evaluation for Cisgender Women and Men.* [Oral Presentation in the British Psychological Society PsyPAG Conference 2022, Online].

Hu, Z., Wood, C., & Buckland, N. J. *The Self-Objectification Beliefs and Behaviours Scale: Psychometric properties validation for cisgender females and males.* [Oral Presentation in the British Psychological Society Social Psychology Section Annual Conference 2021, Online]

# Chapter 1

## Introduction

> These ads don't directly cause violence against women, but they normalise dangerous attitudes and create a climate in which women are often seen as things, as objects. And certainly, turning a human being into a thing is almost always the first step to justifying violence against that person, and that step is constantly taken with women and girls.
>
> -Jean Kilbourne, 2014, 13:55

The body is the traditional basis for the distinction between biological sex. Yet, it is also a social construct and shapes the gendered experience of women and men in this heterosexual and patriarchal society (Fredrickson & Roberts, 1997). The video *10 hours of walking in NYC as a woman* (Rob Bliss, 2014) captures the experience of a woman silently walking through Manhattan for ten hours. During this time, more than 100 instances of street harassment occurred, including winking, whistling, calling names, body-related comments, staring at body parts, and inappropriate chatting. Since being published on YouTube, this video has been viewed almost 51 million times, attracting 130 thousand comments sharing the similar experiences of being treated as an object for others' sexual pleasure.

Fredrickson and Roberts (1997) defined sexual objectification as the experience of a woman being treated as a body existing for the use and pleasure of others. Objectification Theory (Fredrickson & Roberts, 1997) was developed to understand women's lived experiences of sexual objectification and the risks that self-objectification - the internalisation of those experiences and perspectives -

presents to women's mental health. According to Objectification Theory (Fredrickson & Roberts, 1997), when girls and women encounter sexual objectification and engage in self-objectification; as a result, they may experience feelings of body shame, physical appearance anxiety, poor cognitive performance and insensitivity to internal body cues. Such negative psychological consequences may contribute to depression, sexual dysfunction and development of eating disorders.

The focus on women in definitions of and theoretical approaches to sexual objectification has been mirrored in the empirical literature. Measures of self-objectification (e.g., The Objectified Body Consciousness Body Surveillance Scale, McKinley & Hyde, 1996; Sexual Objectification Questionnaire, Noll & Fredrickson, 1998) were developed for assessing self-objectification in women. Recent research has also applied the tenets of objectification theory to men to understand their lived experiences (Moradi & Huang, 2008). However, as most existing measures of self-objectification are designed for women, it is unclear if they adequately measure self-objectification in men.

Beyond social encounters, media is also a source of sexual objectification. As mentioned by activist Jean Kilbourne, quoted above, visual media (specifically advertisement) constantly portrays women and girls as sexual objects. Measures of experiences of sexual objectification in the media accordingly focus on visual media, including magazine advertisements, TV programmes (Aubrey, 2006), and music videos (Vandenbosch & Eggermont, 2012). However, in the current cyber era, the increased popularity of digital and social media (Cheng et al., 2021) questions the validity of existing measures, as they may not be able to capture the experiences of sexual objectification in all forms of contemporary media.

To address those gaps in the literature on sexual and self-objectification, this thesis reports six studies that examine the psychometric properties of existing self-objectification measures in cisgender heterosexual women and cisgender heterosexual men, and that develop and evaluate the psychometric properties of two novel sexually objectifying media experience measures for cisgender heterosexual women and cisgender heterosexual men.

This introductory chapter is structured as follows: The first section discusses philosophical and psychological perspectives of sexual objectification. The second section introduces the Objectification Theory (Fredrickson & Roberts, 1997) and the definition of self-objectification. The third section argues for the significance and scope of studying the measurement of self-objectification and sexual objectification - existing measures of self-objectification and sexual objectification experiences are also briefly introduced. The fourth section presents an overview of the subsequent chapters in this thesis: Two chapters comprising six empirical studies, followed by a general discussion chapter.

## Sexual Objectification

### *A Philosophical Perspective*

The construct of objectification was first introduced by Philosopher Immanuel Kant approximately between 1775 and 1785 (Kant et al., 2001), who suggested that when a person is objectified, this person's humanity is denied. Objectified people are not treated as individual actors, but as means or tools for the satisfaction of the objectifiers' desires. Philosopher Martha Nussbaum (1995) identified seven features of objectification that include instrumentality (i.e., treated as a tool for another's purpose), denial of autonomy (i.e., treated as lacking in autonomy and self-determination), inertness (i.e., treated as lacking in agency and activity), fungibility

(i.e., treated as something interchangeable), violability (i.e., treated as something permissible to violate), ownership (i.e., treated as something owned by others), and denial of subjectivity (i.e., treated as something whose experience and needs could be ignored). Langton (2009) further added a further three additional characteristics: of the reduction of a person to their body, their appearance, and the denial of voice or individual experience. Langton suggested that people are merely identified with their bodies or body parts when they are objectified. Their appearances primarily determine how they are treated, and their personal thoughts, feelings and experiences are neglected as if they are silent, lacking the capacity to speak.

From Kant's perspective, it is sexual desire and pleasure from both parties that drive this object-like treatment of persons, and objectification is not related to any issues of people's relative positions in the social hierarchy or to male sexuality (Nussbaum, 1995). In contrast, feminist theorist Catharine MacKinnon (1987) argued that objectification is the attitude created specifically by asymmetrical structures of power, with social hierarchy lying at the root of objectification (MacKinnon, 1987). MacKinnon, therefore, argued for gender-based disparities in objectification, such that men act as objectifiers, and women are objectified as sexual objects to serve men's interests (Mackinnon, 1987). When objectification involves subordination to someone's sexual interests, it becomes sexual objectification (MacKinnon, 1987; Nussbaum, 1995). Bartky (1990) defined sexual objectification as the separation of a woman's body, body parts, or sexual functions from her personality, such that she is reduced to the status of a mere instrument or else regarded as if her instrumental functions were entirely capable of representing her personhood.

### *A Psychological Perspective*

Psychologists have conducted research on sexual objectification from two perspectives. First, researchers have focused on dehumanisation and investigated how objectifiers dehumanise others by reducing their humanity to parts or functions that serve the specific goals of objectifiers (Haslam, 2006; Talmon & Ginzburg, 2016). This body of research centres around the perspective of objectifiers, focusing on how objectifiers perceive others as being less human (e.g., denial of human uniqueness or human nature; Haslam, 2006) and behavioural consequences of dehumanization (e.g., links with prosocial behaviour, Harris & Kruge, 2022; immoral behaviour, Kouchaki et al., 2018). A small amount of research (Loughnan et al., 2017; Ruttan & Lucas, 2018) has also investigated how the objectified internalises dehumanisation and engages in self-dehumanization. As it is outside the remit of this thesis, the literature focusing on objectification from the perspective of dehumanisation will not be discussed in further detail, except for Chapter 1.

Second, and of relevance to the current programme of work, researchers have focused on the impact and implications of sexual objectification for the individuals being objectified, investigating how women's lived experiences, body image concerns and mental health are affected by their sexual objectification experiences (Fredrickson & Roberts, 1997; Mckinley & Hyde, 1996).

**Objectification Theory and Self-objectification**

Fredrickson and Roberts (1997, p. 174) first introduced Objectification Theory to understand the experiences and consequences of sexual objectification for the women being objectified. They defined sexual objectification as 'the experience of women being treated as a body or a collection of body parts, valued predominantly for its use to other people". Objectification Theory starts with the argument that women are chronically sexually objectified in westernised societies during face-to-

face interpersonal social encounters and via visual media (Fredrickson & Roberts, 1997). When women's bodies are evaluated by men, they become objects of male sexual interest and attention. Critically, the sexual objectification experienced by women may lead to self-objectification, the internalisation of the third person's perspective on one's body and viewing oneself predominantly as a body or body parts, resulting in habitual body monitoring (Fredrickson & Roberts, 1997), and a range of negative psychological consequences, discussed in more detail in the next section and Chapter 2.

Self-objectification can be conceptualised as both a state (situational awareness of an actual or imaginary observer's perspective on one's body and a subsequent preoccupation with one's appearance at a particular point in time; Fredrickson et al., 1998) and a trait (the extent to which people internalise observers' perspectives on their bodies and are chronically preoccupied with their physical appearance; Moradi & Huang, 2008). Using laboratory manipulations (e.g., swimsuit sweater paradigm; Fredrickson et al., 1998), state self-objectification in women has been found to increase body shame (Fredrickson et al., 1998), state anxiety (Gapinski et al., 2003), restrained eating behaviour (Fredrickson et al., 1998), and also impair cognitive performance (Hebl et al., 2004). However, state self-objectification only has immediate effects on women's body image and is less able to predict women's chronic mental health status. Trait self-objectification, however, focuses on accumulating effects and is associated with chronic disordered eating (Augustus-Horvath & Tylka, 2009; Tiggemann & Williams, 2012) and depression (Carr & Szymanski, 2011; Harrison & Fredrickson, 2003). Given the extended impact of trait-self objectification on women's psychological experience, this thesis focuses

on trait self-objectification. Hereafter, we use the term “self-objectification” to refer to trait self-objectification unless otherwise specified.

The construct of body surveillance has similarities with the construct of self-objectification. Body surveillance refers to seeing one’s physical appearance as others see them (McKinley & Hyde, 1996), and is considered the behavioural manifestation of the internalisation of a third person’s perspective (Slater & Tiggemann, 2002; Tiggemann & Lynch, 2001; Tiggemann & Slater, 2001). Some researchers (e.g., Dakanalis et al., 2014; Moradi et al., 2005; Slater & Tiggemann, 2010; Tylka & Hill, 2004) argue that self-objectification and body surveillance are interchangeable constructs and represent the same underlying construct, while others argue for the distinction between the cognitive representation of internalised objectification versus its behavioural consequences (Calogero, 2011).

Recently, Moradi (2010) introduced the construct of internalisation of cultural standards of attractiveness (the extent to which someone considers the societal norms of size and appearance to be appropriate standards for their own size and appearance; Thompson & Stice, 2001) to Objectification Theory, revising how self-objectification is conceptualised. In Moradi’s argument, self-objectification is a multifaceted construct including a cognitive dimension (i.e., self-objectification and internalisation of cultural standards of attractiveness) and a behavioural dimension (i.e., body surveillance). Moradi argues that when women experience sexual objectification, they learn about cultural beauty ideals and start internalising these standards. Self-objectification is the perception of oneself as a body composed of physical-appearance attributes necessary for attaining cultural beauty ideals (Fredrickson et al., 1998). Those two cognitions (i.e., self-objectification and internalisation of cultural standards of attractiveness) result in body surveillance

(Moradi et al., 2005). The multifaceted construct of self-objectification has been empirically supported by research (Vandenbosch & Eggermont, 2012; Vangeel et al., 2018).

While Objectification Theory (Fredrickson & Roberts, 1997) and definitions of self-objectification were originally centred on women, experiences of sexual objectification and self-objectification are not restricted to this group. As discussed in more detail in the next section, Chapters 2 and 3, men also experience sexual objectification, self-objectification, body surveillance and internalisation of sociocultural ideals of appearance (Moradi & Huang, 2008).

## Measurement of Self-objectification and Sexual Objectification

### *Significance and Scope*

Sexual objectification is a widespread societal problem across demographic characteristics regardless of gender (Aubrey, 2006), age (Tiggemann & Lynch, 2001), and ethnic background (Schaefer et al., 2018). Swim et al. (2001) found that women experienced sexual objectification incidents 1.38 times per week, compared to .35 times for men. Research indicates that young women experience an even higher number of incidents of sexual objectification; they directly experience sexual objectification approximately every other day and witness others being objectified approximately 1.35 times per day (Holland et al., 2017). The media also sexually objectifies women by portraying their bodies in a sexual manner (Ward, 2016); Stankiewicz and Rosselli (2008) found that half of the magazine advertisements displayed women in an objectified manner, and Downs and Smith (2010) found that 43% of female characters in video games were portrayed partially or fully naked. Similarly, there is evidence that men also experience sexual objectification in their

social encounters (Davidson et al., 2013) and via media more than ever before: male bodies are portrayed in a sexual manner in popular music videos (Aubrey & Frisby, 2011), magazines (Hatton & Trautner, 2011), and video games (Burgess et al., 2007).

Self-objectification negatively impacts individuals' body image and mental health wellbeing. Over the 20 years, a large body of research has demonstrated that self-objectification in women is associated with greater levels of disordered eating (Augustus-Horvath & Tylka, 2009; Muehlenkamp & Saris-Baglama, 2002; Tiggemann & Williams, 2012), depression (Carr & Szymanski, 2011; Grabe et al., 2007; Harrison & Fredrickson, 2003), and sexual dysfunction (Calogero et al., 2009) etc. Research has also found that sexual objectification experiences in men are positively associated with the internalisation of sociocultural ideals of appearance (Morry & Staska, 2001) and self-objectification (Karsay et al., 2018). Greater self-objectification is, in turn, associated with a greater risk of disordered eating (Martins et al., 2007; Morry & Staska, 2001), depression (Chen & Russo, 2010; Tiggemann & Williams, 2012), and sexual dysfunction (Sanchez & Kiefer, 2007).

Given the prevalence of sexual objectification and the negative consequences of self-objectification, measures that enable researchers to accurately and reliably assess sexual objectification experiences and self-objectification are warranted. A psychometrically sound measure would allow researchers to adequately capture individuals' sexual objectification experiences and self-objectification and therefore facilitate a better understanding of the role of self-objectification in women's and men's body image and mental health. Additionally, understanding the measurement of sexual objectification experiences and self-objectification is important given the dramatic increase in research and strong interest in Objectification Theory. Since the

publication of The Objectified Body Consciousness Scale (McKinley & Hyde, 1996), the first measure of constructs related to self-objectification, there has been a 1920% increase in the number of peer-reviewed papers with a focus on self-objectification and sexually objectifying media (Calogero, 2011), particularly after the release of the APA Task Force Report on the sexualisation of girls in 2007 (Report of the APA Task Force on the Sexualization of Girls, APA, 2007). Therefore, investigating the measurement of sexual objectification experiences and self-objectification is imperative for advancing research in this area.

To date, multiple measures have been developed and used to measure self-objectification and experiences of sexual objectification. However, there are limitations and gaps in this literature, particularly with respect to the measurement of self-objectification in men and the measurement of experiences of sexually objectifying media. This is discussed in more detail in the next section.

### *Measuring Self-objectification*

The two measures that have been most commonly used to assess self-objectification are the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998) and the Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996). The SOQ assesses the extent to which individuals view their physical self in observable, appearance-based terms versus non-observable, competence-based terms (Noll & Fredrickson, 1998) and have been validated and used in women (Calogero et al., 2009; Grippo & Hill, 2008). While the SOQ has also been used to measure self-objectification in men (Daniel & Bridges, 2010; Grieve & Helmick, 2008), the validity in men has not been established.

The Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996) measures the frequency with which individuals monitor their body and think of the body in terms of how it looks rather than how it feels (McKinley & Hyde, 1996). The OBC-Surv has been psychometrically validated and used in women (Dakanalis et al., 2017; Lindberg et al., 2006; McKinley & Hyde, 1996) and men (Dakanalis et al., 2017; Lindberg et al., 2006; Martins et al., 2007). However, there is disagreement regarding whether self-objectification measured by the SOQ and body surveillance measured by the OBC-Surv are conceptually equivalent (Greenleaf & McGreer, 2006; Hill & Fischer, 2008), particularly in men, given the negative correlation between the SOQ and OBC-Surv scores in men (Daniel & Bridges, 2010).

The Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Tantleff-Dunn, 2017) is a more recent measure of self-objectification, developed with samples of young women. The SOBBS assesses self-objectification across two factors: internalising an observer's perspective on the body and valuing physical appearance over competence and personhood. The SOBBS has been validated and used in women (Cascalheira et al., 2022; Lang & Ye, 2021; Prusaczyk & Choma, 2018; Siegel & Calogero, 2019) but has not yet been validated or used to measure self-objectification in men. More details on the SOQ, OBC-Surv and SOBBS will be discussed in Chapter 2.

Beyond the three self-objectification measures mentioned above, other self-objectification measures are designed specifically for particular groups. For instance, the Male Assessment of Self Objectification (MASO; Daniel et al., 2013) is designed for measuring self-objectification in men, with a specific focus on men’s drive for muscularity; The Adolescent Femininity Ideology Objectified Relationship With Body

Subscale (Tolman et al., 2006; Tolman & Porche, 2000) is designed for measuring self-objectification in adolescent girls. Additionally, the Female Questionnaire of Trait Self-Objectification focuses on Chinese sociocultural ideals of appearance and is designed for measuring Chinese females' self-objectification (Wu & Lang, 2019).

Overall, existing measures in self-objectification have largely been designed for measuring self-objectification in women and girls. Some of these scales (e.g., SOQ) are being used to measure self-objectification in men without validation. While the MASO is designed specifically for men, it is not designed to and cannot be used to measure self-objectification in women, thus precluding comparison of self-objectification between women and men. It is currently unclear whether any of the existing measures of self-objectification adequately assess self-objectification in both women and men. The studies outlined in Chapter 2 aim to address this gap in the literature.

### *Measuring Sexual Objectification Experiences*

The Interpersonal Sexual Objectification Scale (ISOS; Kozee et al., 2007) is the most prevalent measure of face-to-face sexual objectification directed at cisgender heterosexual women. In women, the ISOS includes two factors: (a) Body evaluation and (b) Unwanted explicit sexual advances. Davidson et al. (2013) later modified the ISOS for use in men, demonstrating a three-factor model for this sample, including body evaluation, body gaze and unwanted explicit sexual advances. Given potential qualitative differences in experiences of sexual objectification by sexual and gender minorities (Hill & Fischer, 2008), Tebbe et al. (2021) developed the Sexual Minority Women's Sexual Objectification Experience Scale for capturing sexual objectification directed at sexual minority women. The

SMW-SOE includes three factors: (a) Sexualization of sexual identity, (b) Intrusive and explicit sexual advances and (c) Body evaluation.

The three sexual objectification measures above focus on in-person experiences of objectification. However, the emergence of the novel coronavirus (COVID-19) pandemic in January 2020 has potentially had an impact on the source and nature of sexual objectification. Multiple COVID-19 quarantine periods (i.e., March to June 2020; November 2020, January to March 2021) have been introduced in the United Kingdom since March 26, 2020, during which time people were asked to stay at home and only leave home for essential purposes, in order to reduce the spread of infections (Bird et al., 2021). The restrictions on travel, prohibition of public gatherings and social events minimised individuals' social interaction with others. As a consequence, individuals' time spent on media to ameliorate social isolation increased (Cellini et al., 2020; Seufert et al., 2022). Given these lifestyle changes, individuals may experience less sexual objectification in person while experiencing more sexual objectification via the media. As a result, it is impossible to fully capture individuals' experience of sexual objectification without considering exposure to sexually objectifying media.

To date, however, there is no existing standardised and sufficiently comprehensive measure for measuring individuals' experiences of sexual objectification in the media environment. One prevalent measure of sexually objectifying media exposure follows a procedure similar to the one described by Aubrey (2006). First, participants report their habitual exposure to popular media types (e.g., television shows and magazines). Second, trained judges rate each episode according to how sexually objectifying they perceive them to be. Third, the mean ratings supplied by the judges are multiplied by participants' frequency-of-

viewing scores for each media type, and these cross-products are averaged. The final score, therefore, reflects both frequency-of-viewing and extremity of sexual objectification. However, this measure can only be used to capture sexually objectifying media experience in a restricted number of visual media types (e.g., music video, TV programmes, magazines etc.) and thus can not fully capture the experience in the broader media environment including in social media and online. Luo et al. (2019) also developed the Online Interpersonal Sexual Objectification Scale for capturing the experiences of Chinese women being sexually objectified in digital communication. However, similar to the rating procedure, this scale can only be used to capture a specific form of sexual objectification experience in one media type and could not capture other possible sexual objectifying media experiences (e.g., sexualised images in the advertisement; Ward, 2016). The studies outlined in Chapter 3 aim to address this need for a more comprehensive measure of sexual objectification experiences.

**Thesis Overview**

The current programme of research contributes to the sexual objectification and sexual objectification literature in two keyways. First, although multiple self-objectification measures exist in the objectification literature, most measures were initially designed to capture cisgender heterosexual women's self-objectification. It is unclear whether those measures could also adequately measure self-objectification in heterosexual, cisgender men. In Chapter 2, we, therefore, report two studies that compare the psychometric properties of common self-objectification measures and provide recommendations for selecting the most appropriate self-objectification measure for future research. Second, no existing measure allows researchers to fully capture cisgender heterosexual women and cisgender heterosexual men's

experiences of sexual objectification in the media. In Chapter 3, we, therefore, report four studies that develop and validate two new measures of sexually objectifying media experiences and address the research gap in objectification literature. We also uncover the gendered difference in their sexually objectifying experience and self-objectification (Chapters 2 and 3).

### *Chapter 2: Measuring Self-Objectification in Cisgender Women and Men: A Psychometric Validation (Studies 1 and 2)*

Existing measures of self-objectification are primarily designed for cisgender heterosexual women. Do those measures adequately measure self-objectification in cisgender heterosexual men? To our knowledge, Study 1 (women = 180, men = 163) and Study 2 (women = 137, men = 138, age-representative samples) are the first studies to examine the psychometric properties of the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998), the Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996), and the Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Dunn, 2017) in cisgender heterosexual women and men, using an online longitudinal study design. The reliability (internal consistency, 2-week interval test-retest reliability), construct validity (convergent validity, discriminant validity, differentiation by known groups), and criterion validity (concurrent validity, predictive validity) of the three self-objectification measures were examined. The studies detailed in Chapter 2 are being prepared for submission to *Sex Roles*, and thus the chapter is presented in manuscript form.

***Chapter 3: Development and Psychometric Validation of the Women-Sexually Objectifying Media Scale (Women-SOMS) and Men-Sexually Objectifying Media Scale (Men-SOMS) (Studies 3a, 3b, 4 and 5)***

Existing measures of sexually objectifying media experience may not fully capture the experience of sexual objectification in the media in cisgender heterosexual women and men. Does the media sexually objectify women and men in the same ways? Studies 3a, 3b, 4 and 5 report the development and validation of 2 novel sexually objectifying media experience scales for cisgender women (Women-SOMS) and men (Men-SOMS). In Studies 3a and 3b, initial item pools were generated by integrating perspectives from the literature on sexually objectifying media with the results of two online surveys, in which participants reported how often they experienced and how sexually objectifying they perceived the items drafted from the objectification literature (women = 80, men = 76, age representative samples). Exploratory factor analysis (Study 4: women = 340, men = 100) and confirmatory factor analysis (Study 5: women = 331, men = 328) were conducted to examine the factor structure of the Women-SOMS and Men-SOMS. In Study 5, the reliability (internal consistency, 2-week interval test-retest reliability), construct validity (convergent validity, discriminant validity, differentiation by known groups), and criterion validity (predictive validity, incremental validity) of the Women-SOMS and Men-SOMS were also examined. The studies detailed in Chapter 3 are being prepared for submission to *Psychology of Women Quarterly*; thus, the chapter is presented in manuscript form.

***Chapter 4: General Discussion***

The final chapter presents a summary of the findings of the six empirical studies that form this thesis, linking them with the literature on objectification, gender,

media research and feminist literature. Key contributions and implications of the overall programme of research are then discussed. Limitations and an agenda for future research are outlined.

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# Chapter 2

# Measuring Self-Objectification in Cisgender Women and Men: A Psychometric Validation

## Abstract

A large body of literature demonstrates that self-objectification can harm individuals' body image. However, measures of self-objectification are primarily designed for cisgender women and have not been adequately validated in cisgender men. The current research investigated the psychometric properties of the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998), the Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996), and the Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Dunn, 2017) in cisgender women and men. Study 1 (women = 180, men = 163) and Study 2 (women = 137, men = 138, age-representative samples) used an online longitudinal study design, with a follow up after two weeks to assess test-retest reliability. While the SOQ, OBC-Surv and SOBBS generally displayed satisfactory psychometric properties in women, only the OBC-Surv and SOBBS displayed satisfactory psychometric properties in men. However, gender differences in OBC-Surv scores were not accounted for by differences in self-objectification experience. Accordingly, the SOBBS is recommended for measuring self-objectification in women and men. Future research should examine the psychometric properties of the SOBBS in men and potential explanations of differentiation by gender in scores on the OBC-Surv.

*Keywords*: self-objectification, sexual objectification, body surveillance, body consciousness, psychometric validation

# Measuring Self-Objectification in Cisgender Women and Men: A Psychometric Validation

Fredrickson and Roberts (1997, p. 175) define sexual objectification as “the experience of a woman being treated as a body existing for the use and pleasure of others”. According to the Objectification Theory (Fredrickson & Roberts, 1997), sexual objectification may lead to self-objectification, the internalisation of an observer's perspective of one’s own physical self, resulting in persistent body surveillance, and a range of negative psychological consequences, including body shame, appearance anxiety, depression, eating disorders and sexual dysfunction (Fredrickson & Roberts, 1997). These proposed negative outcomes of self-objectification on women are supported by a large body of research: greater self-objectification is associated with a greater risk of disordered eating (Augustus-Horvath & Tylka, 2009; Schaefer & Thompson, 2018; Tiggemann & Williams, 2012), depression (Carr & Szymanski, 2011; Harrison & Fredrickson, 2003), sexual dysfunction (Steer & Tiggemann, 2008), and other psychological well-being and health-related effects including increases in women’ appearance-contingent self-worth (Adams et al., 2017) and poorer self-esteem (Befort et al., 2001).

Historically, sexual objectification and self-objectification have been mostly studied in women, for example, the sexual objectification of women in daily life (Swim et al., 2001) and the media (Conley & Ramsey, 2011), and the impact of sexual objectification on women’s self-objectification (Aubrey, 2006b; Vandenbosch et al., 2015). However, men are also objectified in the media (Aubrey, 2006a) and by others (Davidson et al., 2013) more than ever before. Rohlinger’s (2002) analysis of contemporary men’s magazines indicated that sexualised images of men’s bodies

are the most common depiction of masculinity in this type of media. Consistent with patterns in women, men are similarly more likely to engage in self-objectification when they are sexually objectified (Aubrey, 2006a; Hebl et al., 2004), and greater self-objectification in men is associated with a greater risk of disordered eating (Wiseman & Moradi, 2010), depression (Chen & Russo, 2010), sexual dysfunction (Sanchez & Kiefer, 2007), increased appearance-contingent self-worth (Moya-Garófano & Moya, 2019), and poorer self-esteem (Lowery et al., 2005). Additionally, self-objectification contributes to unique consequences for men, including a greater drive for muscularity (Davids et al., 2019), steroid use (Parent & Moradi, 2011) and muscle dysmorphia (Grieve & Helmick, 2008).

However, there are also inconsistencies in the literature. First, some studies have failed to support the association between self-objectification and negative outcomes in men (Fredrickson et al., 1998; Martins et al., 2007; McKinley, 2006; Strelan & Hargreaves, 2005). Fredrickson et al. (1998), for example, found that self-objectification was positively associated with eating disorder symptoms only for women. Martins et al. (2007) found that heterosexual men engaged in self-objectification without accompanying body shame. Strelan and Hargreaves (2005) found that self-objectification was not associated with body dissatisfaction in men. Second, there is debate over whether there are gender differences in self-objectification. While women are argued to experience more sexual objectification than men and thus similarly show greater self-objectification, the evidence for this is equivocal. Some studies find lower levels of self-objectification and body surveillance in men than in women (Aubrey, 2006a; Choma et al., 2010; Grabe et al., 2005; Lowery et al., 2005; Smolak & Murnen, 2011), while others find no gender-differences (Hebl et al., 2004; Morry & Staska, 2001).

## Measuring Self-Objectification

One possible explanation for these inconsistencies is the validity of measures used to assess self-objectification in male and female samples (Daniel & Bridges, 2010). We discuss four common self-objectification measures and their limitations below, namely the Self-Objectification Questionnaire (Noll & Fredrickson, 1998), the Objectified Body Consciousness Body Surveillance scale (McKinley & Hyde, 1996), the Self-Objectification Beliefs and Behaviours Scale (Lindner & Tantleff-Dunn, 2017), and the Male Assessment of Self Objectification scale (Daniel et al., 2014).

### *The Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998)*

The Self Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998) assesses the extent to which individuals view their physical self in observable, appearance-based terms versus non-observable, competence-based terms (Noll & Fredrickson, 1998). Individuals with greater levels of self-objectification rank appearance-based physical attributes (i.e., physical attractiveness, weight, sex appeal, measurements, and firm/sculpted muscle) over competence-based body attributes (i.e., muscular strength, physical coordination, health, physical fitness, and physical energy levels). The SOQ has been used to measure self-objectification in women with different nationalities (Calogero et al., 2009; Grippo & Hill, 2008), sexual orientations (Hill & Fischer, 2008), and ethnic backgrounds (Buchanan et al., 2008; Grabe & Jackson, 2009), and is positively associated with outcomes implicated in Objectification Theory (Fredrickson & Roberts, 1997), including physical appearance anxiety (Fredrickson et al., 1998) and body shame (Lindner & Tantleff-Dunn, 2017).

While the SOQ has also been used to measure self-objectification in men (Daniel & Bridges, 2010; Grieve & Helmick, 2008), the validity of this sample has not

been established. The SOQ is partially based on Franzoi and Shields's (1984) Body Esteem Scale for women and is designed to capture women's thinness concerns (Noll & Fredrickson, 1998). As a result, the attribute of 'strength' in the SOQ is conceptualised as a competence-based scale item, such that ranking strength as having a greater impact on physical self-concept would be interpreted as indicating lower self-objectification (Calogero, 2011). However, as Calogero (2011) argued, young men may perceive 'strength' as an appearance-based scale item with an increased focus on the muscular appearance ideal (Pope et al.,2000) and the desire to increase their muscular mass through strength training (McCreary & Sadava, 2001), casting doubt over the utility of this scale in measuring men's self-objectification.

### *The Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996)*

Body surveillance, the habitual monitoring of one's external appearance (McKinley & Hyde, 1996), is often conceptualised as the behavioural manifestation of self-objectification. Accordingly, some researchers consider the two constructs equivalent, defining self-objectification more narrowly as body surveillance (Dakanalis et al., 2014; Slater & Tiggemann, 2010). The Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996) is therefore considered a key measure of self-objectification. The OBC-Surv measures the frequency of individuals monitoring their bodies and thinking of the body in terms of how it looks rather than how it feels (McKinley & Hyde, 1996). The OBC-Surv and its Youth version display satisfactory construct validity and reliability in women across the lifespan (Dakanalis et al., 2017; Lindberg et al., 2006; McKinley & Hyde, 1996; Sicilia et al., 2020) and predict body shame and appearance anxiety better

than the SOQ (Slater & Tiggemann, 2002; Szymanski & Henning, 2007). This measure has also been psychometrically validated and used in men and boys (Dakanalis et al., 2017; Lindberg et al., 2006; Martins et al., 2007; Sicilia et al., 2020). However, there is disagreement regarding whether self-objectification measured by the SOQ and body surveillance measured by the OBC-Surv are conceptually equivalent (Greenleaf & McGreer, 2006; Hill & Fischer, 2008): SOQ and OBC-Surv scores are positively correlated to an extent in female samples (Szymanski & Henning, 2007; Tiggemann & Slater, 2001), while initial evidence suggests that they may be negatively correlated in male samples (Daniel & Bridges, 2010) Therefore, it is uncertain whether the OBC-Surv adequately measures self-objectification in men.

### *Male Assessment of Self Objectification (MASO; Daniel et al., 2014)*

The Male Assessment of Self Objectification (MASO; Daniel et al., 2014) scale was developed to capture men's unique nature of self-objectification. The MASO displays adequate psychometric properties and is positively associated with the drive for muscularity, body surveillance and body shame in male samples (Daniel et al., 2014). However, the MASO is specifically aimed at assessing male-specific forms of self-objectification (e.g., “How important upper arm diameter is in the way you view your body and its ability”) and is therefore of limited use in comparing self-objectification in men and women. In addition, initial validation of the scale suggests it is no more effective than the SOQ in capturing men’s self-objectification (Daniel et al., 2014).

### *The Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Tantleff-Dunn, 2017)*

The Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Tantleff-Dunn, 2017) is a newly developed measure assessing women's self-objectification as two Factors: Factor 1 taps into the internalisation of an observer's perspective on the body and Factor 2 taps into valuing physical appearance above competence, and a focus on the body as adequately representing the self. The SOBBS displays satisfactory validity and predicts women's body image better than the SOQ and OBC-Surv (Lindner & Tantleff-Dunn, 2017). However, to date, the SOBBS has not been validated or used to measure self-objectification in men. Although the SOBBS is based on women's experiences of self-objectification, the items appear to be gender-neutral and do not refer to any female-specific ideals such as thinness. Accordingly, the SOBBS may be a useful measure of self-objectification in men as well as women.

**The Current Research**

It remains unclear if existing measures of self-objectification adequately measure self-objectification in men and whether they allow an adequate comparison of self-objectification in men and women. The current research, therefore, aims to examine the psychometric properties of the SOQ, OBC-Surv, and SOBBS in men and women. As the MASO is unlikely to be applicable for measuring self-objectification in women, this scale is not included. Given potential differences in self-objectification as a function of sexual orientation (Crawford et al., 2009) and gender identity (Tebbe et al., 2021), the current research samples only cisgender heterosexual women and cisgender heterosexual men. While validation would ideally be carried out in all samples, resources were limited, and thus the focus on cisgender heterosexual samples was a pragmatic choice. Study 1 examines the construct validity (convergent, discriminant validity, differentiation by known groups),

criterion validity (predictive and concurrent validity), reliability ( internal reliability, 2-week interval test-retest reliability) of the SOQ, OBC-Surv, and SOBBS. Building on the findings of Study 1, Study 2 further validates the self-objectification measures in an age-representative sample. Study1 (https://osf.io/94xt7/?view_only=c36f38893f5847af83eb45169d6ab8a1) and Study 2 (https://osf.io/hjx69/?view_only=0b06122116e24bb7b5009659550db685) were pre-registered, and all study materials, data, and data scripts can be found at Open Science Framework. The initial pre-registrations for each study centred solely around validation of the SOBBS, but as the data collected allowed for validation of all three measures of self-objectification, the current paper has been re-positioned as such. The hypotheses for the SOQ and OBC-Surv have, therefore, not been pre-registered but are the same as those made for the SOBBS, except for the hypothesis concerning incremental validity, as detailed below. The statistical analysis of the differentiation by gender in Study 1 deviated from pre-registration. Any other deviations from the pre-registration are made clear in the manuscript.

## Study 1

The SOQ, OBC-Surv and SOBBS are all designed to tap into the construct of self-objectification in women. Accordingly, with the exception of the OBC-Surv, the validity of these scales for measuring self-objectification in men has remained largely unexamined. While there may be some gender differences in the way self-objectification manifests, it seems likely that there is a high degree of overlap in women and men. Accordingly, Hypothesis 1 predicts satisfactory concurrent validity of all three measures in women and men, operationalised as correlations exceeding $r = .4$, as Peers (1996) recommended.

Both Appearance orientation (the extent of investment in one's appearance; Cash, 2018) and appearance-contingent self-worth (the extent to which individuals attach self-worth to their appearance; Crocker et al., 2003) are conceptually aligned with valuing the physical appearance in one's lives and empirically associated with self-objectification (Adams et al., 2017; McKinley & Hyde, 1996; Moya-Garófano & Moya, 2019). Appearance orientation involves appearance-enhancement behaviours (i.e., investing in clothing to look good), and has conceptual overlaps with the behavioural manifestation of self-objectification captured by the OBC-Surv. Appearance-contingent self-worth involves the self-evaluation of the importance of physical appearance in maintaining a positive view of oneself, and thus has conceptual overlap with the cognitive perspective of self-objectification captured by the SOQ. Similarly, the internalisation of sociocultural standards of appearance (the extent to which individuals consider societal norms of size and appearance to be appropriate standards for their own size and appearance; Thompson & Stice, 2001) is argued as a cognitive component of self-objectification (Moradi, 2010), and are associated with higher levels of self-objectification (Kozee et al., 2007; Morry & Staska, 2001). Accordingly, Hypotheses 2, 3 and 4 predict satisfactory convergent validity of all three measures with appearance orientation, appearance-contingent self-worth and internalisation of sociocultural standards of appearance in women and men, operationalised as correlations exceeding $r = .3$, as recommended by Cohen (1992)

Objectification theory (Fredrickson & Roberts, 1997) and some empirical findings (Daniel et al., 2014., Fredrickson et al., 1998) indicate that self-objectification occurs across the body weight and height spectrum and is not associated with Body Mass Index (BMI). Theoretically, self-objectification should not be associated with self-dehumanisation - the denial of the self's fundamental human

needs, such as emotion and feeling (Loughnan et al., 2010). While both self-dehumanisation and self-objectification are related to the denial of individuals' self-efficacy, self-dehumanisation de-emphasises personhood and humanity, and self-objectification instead emphasises the body (Loughnan et al., 2010). Accordingly, Hypotheses 5 and 6 predict satisfactory discriminant validity of all three measures with BMI and self-dehumanisation in women and men, operationalised as no significant correlation.

While findings regarding gender differences in self-objectification are mixed, most research shows greater levels of self-objectification in women than men (Choma et al., 2010; Grabe et al., 2005). Accordingly, Hypothesis 7 predicts greater scores on all three measures in women than men, operationalised as p-values less than .05.

Prichard and Tiggemann (2008) argue that individuals with greater levels of self-objectification may view exercise as a strategy to achieve the internalised body ideal. Women with negative body image concerns tend to endorse appearance rather than health reasons for exercise (Strelan et al., 2003; Vartanian et al., 2012), and both women's and men's self-objectification is positively related to appearance-related exercise reasons (Prichard & Tiggemann, 2008; Strelan et al., 2003; Strelan & Hargreaves, 2005). Accordingly, Hypothesis 8 predicts satisfactory predictive validity of all three measures with appearance-related reasons for exercise in women and men.

The SOBBS was designed to capture more self-objectification facets than the SOQ and OBC-Surv (Lindner & Tantleff-Dunn, 2017). Accordingly, Hypothesis 9 predicts incremental validity of SOBBS in predicting appearance-related exercise

above and beyond SOQ and OBC-Surv in women and men, operationalised as a significant $R^2$ change.

Hypothesis 10 predicts acceptable internal consistency of all three measures in women and men, operationalised as Cronbach's alpha ($\alpha$) exceeding .7, as recommended by Cronbach (1951).

Hypothesis 11 predicts acceptable test-retest reliability over a 2-week test-retest interval in all three measures in women and men, operationalised as an Intraclass Correlation Coefficient (*ICC*) exceeding .6, as recommended by Cicchetti (1994).

## Method

### *Participants*

Data from 180 cisgender heterosexual women ($M_{age}$ = 26.47 years, $SD_{age}$ = 11.23; $M_{BMI}$ = 23.13 years, $SD_{BMI}$ = 6.19), and 163 cisgender heterosexual men ($M_{age}$ = 34.50 years, $SD_{age}$ = 14.54; $M_{BMI}$ = 25.88 years, $SD_{BMI}$ = 6.23) were included at Time 1. Most women (89.4%) and men (85.9%) identified as White (see Appendix A for a full breakdown of the participant sample by gender and ethnicity). Participants were recruited from the participant recruitment platform Prolific (*n* = 180), study participation schemes run for psychology students (*n* = 86), and research volunteering lists for staff and students at a University of North of England (*n* = 77).

Data from 133 cisgender heterosexual women ($M_{age}$ = 27.72, $SD_{age}$ = 11.87) and 137 cisgender heterosexual men ($M_{age}$ = 34.5, $SD_{age}$ = 14.54) were included at Time 2 (78.72% completion rate). Most women (91%) and men (89.1%) identified as White.

Participants who completed both surveys received £4.13 via Prolific, partial course credit or were entered into a prize draw to win a £20 e-shopping voucher, depending on the recruitment method. Participants who completed the Time 1 survey only received £2.88 via Prolific or partial course credit.

As outlined in the pre-registration, the power analysis was conducted based on the lowest observed effect size between the SOBBS and variables broadly relevant to self-objectification (i.e., interpersonal sexual objectification, $r$ = .21; Lindner & Dunn, 2017), due to the limited literature on this relatively new measure. G*Power (version 3.1; Heinrich Heine University Dusseldorf, Germany) analysis showed a minimum requirement of 138 participants per group to detect $r$ = 0.21, with 80% power and $\alpha$ = .05, in a one-tailed bivariate correlation test. We oversampled by 10% to account for loss due to attrition and data screening.

### *Measures*

For the following measures, higher mean scores indicate greater levels of the measured construct unless explicitly stated.

**Self-objectification**. The Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998) measures the extent to which individuals typically view their physical bodies based on 5 physical appearance-based attributes (i.e., “physical attractiveness”, “weight”, “sex appeal”, “measurements”, and “firm/sculpted muscle”) versus 5 physical competence-based attributes (i.e., “muscular strength”, “physical coordination”, “health”, “physical fitness”, and “physical energy level”). Participants were asked to rank attributes in order of importance to their physical self-concept. Final scores (ranging from -25 to 25) are calculated by subtracting the sum of scores for competence attributes from the sum of scores for appearance attributes.

The Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996) is a 9-item measure of body surveillance. Participants rated their level of agreement with each item (e.g., “I rarely think about how I look”) using a 7-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7). Cronbach’s *α* in the current samples of women (*α* = .87*)* and men (*α* = .89*)* was excellent and similar to past research (McKinley & Hyde, 1996; *α* = .89).

The Self-Objectification Beliefs and Behaviours Scale (SOBBS; Lindner & Tantleff-Dunn, 2017) is a 14-item measure of self-objectification composed of two factors. Factor 1 measures the internalisation of an observer’s perspective on the body (e.g., “I try to imagine what my body looks like to others”), and Factor 2 measures treating the body as if it is capable of representing the self (e.g., “Looking attractive to others is more important to me than being happy with who I am inside”). Participants rated their level of agreement with each item using a 5-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (5). Cronbach’s *α* in the current samples of women ($\alpha_{\text{Factor 1}}$ = .89; $\alpha_{\text{Factor 2}}$ = .87; $\alpha_{\text{Total}}$ = .90) and men ($\alpha_{\text{Factor 1}}$ = .91; $\alpha_{\text{Factor 2}}$ = .87; $\alpha_{\text{Total}}$ = .92) were excellent, and similar to past research (Lindner & Tantleff-Dunn, 2017; $\alpha_{\text{Factor 1}}$ = .89; $\alpha_{\text{Factor 2}}$ = .88; $\alpha_{\text{Total}}$ = .91).

**Appearance Orientation.** The Appearance Orientation Subscale of the Multidimensional Body-Self Relations Questionnaire (MBSRQ-AO; Cash, 2018) has 12 items. Participants indicated the extent to which each statement (e.g., “Before going out in public, I always notice how I look”) describes them personally on a 5-point Likert-type scale ranging from “definitely disagree” (1) to “definitely agree” (5). Cronbach’s *α* in the current samples of women (*α* = .88*)* and men (*α* = .90*)* were excellent.

**Appearance-contingent Self-worth.** The Appearance Subscale of Contingencies of Self-Worth Scale (CSWS-AS; Crocker et al., 2003) has 5 items. Participants rated their levels of agreement with each statement (e.g., “My self-esteem does not depend on whether or not I feel attractive”) on a 7-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7). Cronbach’s *α* in the current samples of women (*α* = .80*)* and men (*α* = .84*)* were good.

**The Internalisation of Sociocultural Standards of Appearance.** The Internalisation- General Subscale of The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ3-IG; Thompson et al., 2004) has 9 items. Participants rated their levels of agreement with each statement (e.g., “I would like my body to look like the people who are on TV”) on a 5-point Likert-type scale ranging from “totally disagree” (1) to “totally agree” (5). Cronbach’s *α* in the current samples of women (*α* = .95*)* and men (*α* = .95*)* were excellent.

**Self-dehumanisation**. The 9 items adapted from the Mind Attribution task (MAT; Loughnan et al., 2013) was used to measure mental activities. Participants rated the frequency with which they engaged in the listed mental activities (e.g., “Wishing”) per day on the 7-point Likert-type scale ranging from “hardly ever” (1) to “almost always” (7). Scores were coded such that higher mean scores indicate that people are more likely to dehumanise themselves. Cronbach’s *α* in the current samples of women (*α* = .74*)* and men (*α* = .71*)* were acceptable.

**Reason for Exercise.** The Reason for Exercise Inventory (REI; Silberstein et al., 1988) has 24 items composed of 7 subscales. Participants rated the perceived importance of the listed reasons for exercise (e.g., “Exercising for Weight Control”) on a 7-point Likert-type scale ranging from “not at all important” (1) to “extremely important” (7), such that higher mean scores of the appearance-related subscales

(i.e., “Weight Control”, “Attractiveness” and “Tone” Subscales) indicate that people are more likely to exercise for appearance enhancement. Those who do not exercise did not need to complete the REI. Cronbach’s *α* in the current samples of women ($\alpha_{\text{Weight Control}} = .51$; $\alpha_{\text{Attractiveness}} = .83$; $\alpha_{\text{Tone}} = .70$) and men ($\alpha_{\text{Weight Control}} = .64$; $\alpha_{\text{Attractiveness}} = .86$; $\alpha_{\text{Tone}} = .69$) varied from poor to good.

**Attention Check.** To check the quality of the online survey responses, two attention checks (e.g., select the “often” or “number 2” option) were embedded at Time 1, and one at Time 2. Participants who failed at least one of the attention checks were excluded from all analyses.

### *Procedure*

Questionnaires were administered via the Qualtrics online survey platform at two-time points, two weeks apart. Data was collected from 16th October 2020 to 24th January 2021. The data collection period partially overlapped with the COVID-19 quarantine (i.e., 31st October to 2nd December 2020 and 6th January to 19th July 2021) in the UK but deliberately avoided the Christmas season. Ethical approval was obtained from the Psychology Ethics Subcommittee at a University in the North of England.

At Time 1, participants were asked to report their demographic information, including gender, gender identity, sexual orientation, whether they have lived in the UK most of their life, age, ethnicity, body weight, and height. Participants then completed the key measures presented in random order for each participant. Participants were invited to complete the Time 2 survey two weeks after the Time 1 survey was completed. At Time 2, participants completed the SOQ, OBC-Surv and SOBBS, which were presented in random order for each participant.

## Results

### *Data Screening*

A total of 454 participants completed the Time 1 survey. Participants were excluded from all analyses if they were missing more than 20% of survey items (*n* = 101, 22.34%), missing more than 5 items on a single scale (*n* = 2, .44%), failing attention checks (*n* = 2, .44%), or entering duplicating self-generated ID (*n* = 6, .32%). Of the final 343 participants, 5 participants (1.46%) with missing data that did not meet the above criteria were retained but excluded from any analyses containing the variable with missing data. Self-reported age data from 2 participants (.58%) was manually removed due to likely entry errors (i.e., implausible age).

Data from measured variables were normally distributed with the exception of BMI scores, which showed relatively positive levels of kurtosis ($Kurtosis_{women}$ = 5.16; $Kurtosis_{men}$ = 6.27).

A total of 301 participants completed the Time 2 survey. Participants were excluded from all analyses if they were missing more than 20% of survey items (*n* = 20, 6.64 %), missing more than 5 items on a single scale (*n* = 1, .33%), failing attention checks (*n* = 1, .33%), and entering duplicated self-generated ID (*n* = 1.99%). A self-generated ID entered in both surveys was used to match participants' data across time points. Time 2 data from 3 participants (1.10%) could not be matched with Time 1 data and was excluded, yielding a final sample of 270 participants for conducting test-retest reliability analysis.

### *Concurrent Validity*

In women and men, there were moderate-to-strong positive correlations among SOQ, OBC-Surv and SOBBS scores (see Tables 1 and 2). In line with Hypothesis 1, the concurrent validity of the SOQ, OBC-Surv and SOBBS in women and men was supported.

**Table 1**

*Study 1 Descriptive Statistics, Partial Correlations (Controlling for Age), and Semi-Partial Correlations (sr) among Variables in Women*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. SOQ | 171 | -1.34 | 14.07 | | | | | | | | | | | | | |
| 2. OBC-Surv | 171 | 4.87 | 1.09 | .46*** | | | | | | | | | | | | |
| 3. SOBBS Factor 1 | 171 | 3.69 | 0.85 | .38*** | .64*** | | | | | | | | | | | |
| 4. SOBBS Factor 2 | 171 | 2.06 | 0.74 | .48*** (*sr* = .47***) | .58*** (*sr* = .52***) | .56*** (*sr* = .52***) | | | | | | | | | | |
| 5. SOBBS Total | 171 | 2.87 | 0.70 | .49*** | .70*** | .89*** | .87*** (*sr* = .85***) | | | | | | | | | |
| 6. MBSRQ-AO | 171 | 3.64 | 0.69 | .32*** | .72*** | .50*** | .50*** (*sr* = .46***) | .57*** | | | | | | | | |
| 7. CSWS-AS | 171 | 5.46 | 1.01 | .40*** | .70*** | .61*** | .47*** (*sr* = .45***) | .62*** | .57*** | | | | | | | |
| 8. SATAQ3- IG | 171 | 3.03 | 1.04 | .35*** | .45*** | .43*** | .34*** (*sr* = .31***) | .44*** | .43*** | .31*** | | | | | | |
| 9. BMI | 171 | 24.13 | 6.29 | -.01 | .07 | .24** | .05 (*sr* = .05) | .17* | -.10 | .06 | .10 | | | | | |
| 10. MAT | 171 | 3.12 | 0.75 | -.06 | -.03 | -.28*** | -.05 (*sr* = -.05) | -.19** | -.08 | -.21** | -.04 | -.04 | | | | |
| 11. REI- WC | 171 | 4.71 | 1.30 | .21** | .31*** | .30*** | .22** (*sr* = .26***) | .30*** | .24** | .17* | .21** | .09 | -.12 | | | |
| 12. REI- A | 171 | 4.49 | 1.49 | .39*** | .53*** | .51*** | .46** (*sr* = .42***) | .55*** | .46*** | .39*** | .27*** | .02 | -.25*** | .44*** | | |
| 13. REI- T | 171 | 4.83 | 1.29 | .29*** | .45*** | .39*** | .34** (*sr* =.31**) | .41*** | .46*** | .3*** | .32*** | .07 | -.23** | .51*** | .62*** | |

*Note.* SOQ= Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale-Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-Objectification Beliefs and Behaviors Scale Total Score; MBSRQ-AO= Appearance Orientation Subscale of the Multidimensional Body-Self Relations Questionnaire; CSWS-AS = Appearance Subscale of Contingencies of Self- Worth Scale; SATAQ3-IG= Internalisation General Subscale of The Sociocultural Attitudes Towards Appearance Scale-3; MAT = Mind Attribution Task; BMI = Body Mass Index; REI-WC = Reason for Exercise Inventory-Exercise for Weight Control; REI-A = Reason for Exercise Inventory-Exercise for Attractiveness; Reason for Exercise Inventory-T = Reason for Exercise Inventory-Exercise for Tone.

*$p$< .05, one-tailed. **$p$ < .01, one-tailed. ***$p$< .001, one-tailed.

**Table 2**

*Study 1 Descriptive Statistics and Partial Correlations (Controlling for Age) and Semi-Partial Correlations (sr) among Variables in Men*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. SOQ | 163 | -8.08 | 12.60 | | | | | | | | | | | | | |
| 2. OBC-Surv | 163 | 3.65 | 1.18 | .45*** (*sr* =.41***) | | | | | | | | | | | | |
| 3. SOBBS Factor 1 | 163 | 2.91 | 0.95 | .39*** (*sr* = .36***) | .74*** | | | | | | | | | | | |
| 4. SOBBS Factor 2 | 163 | 2.02 | 0.73 | .48*** (*sr* = .47***) | .62*** | .62*** | | | | | | | | | | |
| 5. SOBBS Total | 163 | 2.47 | 0.76 | .48*** (*sr* = .45***) | .76*** | .92*** | .88*** | | | | | | | | | |
| 6. MBSRQ-AO | 163 | 2.94 | 0.73 | .25** (*sr* = 24***) | .74*** | .60*** | .48*** | .60*** | | | | | | | | |
| 7. CSWS-AS | 163 | 4.37 | 1.23 | .45*** (*sr* =.42***) | .67*** | .64*** | .49*** | .64*** | .52*** | | | | | | | |
| 8. SATAQ3-IG | 163 | 2.32 | 0.92 | .35*** (*sr* = .33***) | .45*** | .54*** | .45*** | .56*** | .34*** | .36*** | | | | | | |
| 9. BMI | 163 | 25.88 | 6.23 | .01 (*sr* = .01) | .13 | .15* | .09 | .14* | .06 | .08 | .08 | | | | | |
| 10. MAT | 163 | 3.42 | 0.73 | -.13 (*sr* = -.13) | .00 | -.07 | .03 | -.03 | -.01 | -.02 | .04 | -.06 | | | | |
| 11. REI-WC | 163 | 4.26 | 1.36 | .26*** (*sr* = .22) | .23** | .22** | .26*** | .27*** | .17* | .23** | .18** | .19** | -.04 | | | |
| 12. REI-A | 163 | 4.45 | 1.46 | .44*** (*sr* = .44***) | .46*** | .51*** | .43*** | .52*** | .40*** | .49*** | .54*** | .09 | -.10 | .44*** | | |
| 13. REI-T | 163 | 4.37 | 1.31 | .31*** (*sr* = .32*) | .40*** | .38*** | .34*** | .40*** | .35*** | .32*** | .36*** | .15* | -.09 | .51*** | .61*** | |

*Note.* SOQ= Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale-Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-Objectification Beliefs and Behaviors Scale Total Score; MBSRQ-AO= Appearance Orientation Subscale of the Multidimensional Body-Self Relations Questionnaire; CSWS-AS = Appearance Subscale of Contingencies of Self-Worth Scale; SATAQ3-IG= Internalisation General Subscale of The Sociocultural Attitudes Towards Appearance Scale-3; MAT = Mind Attribution Task; BMI= Body Mass Index; REI- WC= Reason for Exercise Inventory-Exercise for Weight Control; REI- A= Reason for Exercise Inventory-Exercise for Attractiveness; Reason for Exercise Inventory-T= Reason for Exercise Inventory- Exercise for Tone.

*$p$< .05, one-tailed. **$p$ < .01, one-tailed. ***$p$< .001, one-tailed.

### *Convergent Validity*

SOQ scores in women and men were moderately and positively correlated with appearance-contingent self-worth and internalisation of sociocultural standards of beauty (see Tables 1 and 2). SOQ scores were moderately and positively correlated with appearance orientation in women while weakly correlated in men. OBC-Surv and SOBBS scores in women and men showed moderate-to-strong positive correlations with the above three variables. In line with Hypotheses 2, 3, and 4, the convergent validity of the SOQ, OBC-Surv and SOBBS in women and men were therefore supported, with the exception of SOQ with appearance orientation in men.

### *Discriminant validity*

**BMI.** SOQ, OBC-Surv, and SOBBS Factor 2 scores were not significantly correlated with BMI in women and men (see Tables 1 and 2). SOBBS Factor 1 and SOBBS Total scores were weakly and positively correlated with BMI in women and men. In line with Hypothesis 5, discriminant validity was supported for the SOQ and OBC-Surv in women and men. At odds with Hypothesis 5, discriminant validity was not supported for the SOBBS.

**Self-dehumanisation.** In women, SOQ, OBC-Surv, and SOBBS Factor 2 scores were not significantly correlated with self-dehumanisation (see Table 1). SOBBS Factor 1 and Total scores were weakly and negatively correlated with self-dehumanisation. In men, SOQ, OBC-Surv, and SOBBS scores were not significantly correlated with self-dehumanisation (see Table 2). In line with Hypothesis 6, the discriminant validity of the SOQ and OBC-Surv and SOBBS from self-dehumanisation in women and men was supported, with the exception of the SOBBS in women.

***Differentiation by Known Groups***

Independent t-tests were performed to assess differences in SOQ, OBC-Surv, and SOBBS scores as a function of gender. Compared with men, women scored significantly higher on the SOQ, $t$ (341) = 4.59, $p < .001$, $d = .24$ OBC-Surv, $t$ (330) = 10.02, $p < .001$, $d = .48$; SOBBS Total, $t$ (329) = 5.34, $p < .001$, $d = .28$; and SOBBS Factor 1, $t$ *(341*) = 8.16, $p < .001$, $d = .40$. No significant difference between women and men was found in SOBBS Factor 2 scores, $t$ (339) = .70, $p = .485$, $d = .04$.

Given the mean age of men at Time 1 was significantly older than women ($t$ (304) = 5.66, $p < .001$, $d = .71$), a forced entry multiple regression (instead of the t-test mentioned in pre-registration) was conducted to examine whether the reported difference in self-objectification measure scores between women and men was predicted by gender, age, or both. The average variance inflation factor (*VIF* =1.097) suggested no collinearity between age and gender, thus meeting the assumption of regression. SOQ, OBC-Surv, SOBBS Total and Factor 1 scores were all significantly predicted by age and gender, while SOBBS Factor 2 was predicted only by age (see Table 3). In line with Hypothesis 7, differentiation by gender was supported for the SOQ and OBC-Surv, while not supported for the SOBBS.

**Table 3**

*Study 1 Multiple Regression Analysis predicting SOQ, OBC-Surv and SOBBS Scores from Age and Gender*

| Variable | *B* | *SE B* | *ß* | *t* |
|---|---|---|---|---|
| SOQ | | | | |
| Constant | 3.43 | 1.76 | | 1.94 |
| Age | -0.18 | 0.06 | -0.18 | -3.31* |
| Gender | -5.19 | 1.49 | -0.19 | -3.48* |
| OBC-Surv | | | | |
| Constant | 5.90 | 0.14 | | 43.17** |
| Age | -0.04 | 0.00 | -0.41 | -9.04** |
| Gender | -0.91 | 0.12 | -0.36 | -7.89** |
| SOBBS Factor 1 | | | | |
| Constant | 4.37 | 0.11 | | 38.92** |
| Age | -0.03 | 0.00 | -0.35 | -7.29** |
| Gender | -0.58 | 0.10 | -0.30 | -6.08** |
| SOBBS Factor 2 | | | | |
| Constant | 2.30 | 0.10 | | 23.38** |
| Age | -0.01 | 0.00 | -0.16 | -2.83* |
| Gender | 0.02 | 0.08 | 0.02 | 0.28 |
| SOBBS Total | | | | |
| Constant | 3.34 | 0.09 | | 35.61** |
| Age | -0.02 | 0.00 | -0.31 | -5.86** |
| Gender | -0.28 | 0.08 | -0.18 | -3.49* |

*Note. N* = 340. Gender was coded as a dichotomous variable, with female participants being coded as the variable “0” and male participants being coded as the variable “1”. SOQ= Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale- Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-Objectification Beliefs and Behaviors Scale Total Score. *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

*$p$< .01, **$p$ < .001.

***Predictive Validity***

Separate single regressions were performed in women and men, with appearance-related exercise (i.e., exercise for weight control, attractiveness and tone) as outcome variables and self-objectification measures (i.e., SOQ, OBC-Surv, and SOBBS Total) as predictor variables. In both women and men, all self-objectification measures significantly and positively predicted exercise for weight control, attractiveness, and tone, with the expectation that OBC-Surv did not significantly predict exercise for weight control in men (see Tables 4) In line with Hypothesis 8, the predictive validity of the SOQ, OBC-Surv and SOBBS for appearance-related exercise in women and men was supported, with the exception of the OBC-Surv in predicting exercise for weight control in men.

**Table 4**

*Study 1 Simple Regression Analysis for Predictive Validity of the SOQ, OBC-Surv and SOBBS Total Scores in Predicting Appearance-Related Exercise in Women and Men*

| Variable | Women[a] | | | | | Men[b] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *B* | *SE B* | *ß* | *t* | $R^2$ *Adjusted* | *B* | *SE B* | *ß* | *t* | $R^2$ *Adjusted* |
| REI-WC | | | | | | | | | | |
| Constant | 4.75 | 0.10 | | 49.82*** | | 4.46 | 0.12 | | 36.27*** | |
| SOQ | 0.02 | 0.01 | 0.24 | 3.20** | .05 | 0.03 | 0.01 | 0.24 | 3.11** | .05 |
| Constant | 2.69 | 0.43 | | 6.33*** | | 3.70 | 0.35 | | 10.71*** | |
| OBC-Surv | 0.41 | 0.09 | 0.35 | 4.88*** | .12 | 0.15 | 0.09 | 0.13 | 1.70 | .01 |
| Constant | 3.00 | 0.39 | | 7.60*** | | 3.41 | 0.35 | | 9.64*** | |
| SOBBS Total | 0.60 | 0.13 | 0.32 | 4.49*** | .10 | 0.34 | 0.14 | 0.19 | 2.49* | .03 |
| REI-A | | | | | | | | | | |
| Constant | 4.58 | 0.10 | | 44.97*** | | 4.87 | 0.12 | | 40.14*** | |
| SOQ | 0.05 | 0.01 | 0.43 | 6.30*** | .18 | 0.05 | 0.01 | 0.45 | 6.46*** | .20 |
| Constant | 0.54 | 0.42 | | 1.29 | | 2.04 | 0.32 | | 6.43*** | |
| OBC-Surv | 0.81 | 0.08 | 0.59 | 9.66*** | .35 | 0.66 | 0.08 | 0.53 | 8.00*** | .28 |
| Constant | 0.93 | 0.39 | | 2.40* | | 1.72 | 0.32 | | 5.44*** | |
| SOBBS Total | 1.24 | 0.13 | 0.58 | 9.45*** | .34 | 1.10 | 0.12 | 0.58 | 9.01*** | .33 |
| REI-T | | | | | | | | | | |
| Constant | 4.88 | 0.09 | | 53.47*** | | 4.65 | 0.12 | | 40.13*** | |
| SOQ | 0.03 | 0.01 | 0.35 | 4.97*** | .12 | 0.03 | 0.01 | 0.32 | 4.34*** | .10 |
| Constant | 1.77 | 0.38 | | 4.63*** | | 2.64 | 0.30 | | 8.68*** | |
| OBC-Surv | 0.63 | 0.08 | 0.53 | 8.17*** | .27 | 0.47 | 0.08 | 0.43 | 5.99*** | .18 |
| Constant | 2.43 | 0.37 | | 6.58*** | | 2.54 | 0.31 | | 8.09*** | |

| Variable | Women[a] | | | | | Men[b] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *B* | *SE B* | *ß* | *t* | $R^2$ *Adjusted* | *B* | *SE B* | *ß* | *t* | $R^2$ *Adjusted* |
| SOBBS Total | 0.84 | 0.12 | 0.45 | 6.71*** | .20 | 0.74 | 0.12 | 0.43 | 6.10*** | .18 |

*Note.* SOQ= Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale- Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-Objectification Beliefs and Behaviors Scale Total Score. *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

[a]*n* = 175. [b]*n* = 163.

*$p$ < .05, **$p$ < .01, ***$p$< .001.

***Incremental Validity***

Hierarchical multiple regressions were conducted to examine the incremental validity of the SOBBS in predicting appearance-related exercise in women and men, with appearance-related exercise as outcome variables and self-objectification measures as predictor variables. SOQ scores were entered into the model in Step 1, followed by OBS-Surv scores in Step 2, and SOBBS-Total scores in Step 3.

In women, the SOQ predicted all three reasons for exercise in Step 1, and only predicted exercise for attractiveness when the OBC-Surv was entered in Step 2 (see Table 5). The OBC-Surv predicted all three reasons in Step 2. Adding the SOBBS Total in Step 3 resulted in a significant $R^2$ change only for exercising for men, the SOQ predicted three reasons for exercise in Step 1 and Step 2 (see Table 5). The OBC-Surv only predicted exercise for attractiveness and tone when entered in Step 2. In Step 3, adding the SOBBS Total resulted in a significant $R^2$ change only for exercising for attractiveness. The SOQ remained a significant predictor of exercise for weight control and attractiveness in Step 3 and OBC-Surv was not a significant predictor of any reason for exercise.

**Table 5**

*Study 1 Hierarchical Regression Analysis for Incremental Validity of the SOBBS Total Scores Relative to The SOQ and OBC-Surv in Predicting Appearance- Related Exercise in Women and Men*

| Variable | Women[a] | | | | | | Men[b] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* |
| REI-WC | | | | | | | | | | | | |
| Model 1 | .06 | 10.23** | | | | | .06 | 9.68** | | | | |
| SOQ | | | 0.02 | 0.01 | 0.24 | 3.20** | | | 0.03 | 0.01 | 0.24 | 3.11** |
| Model 2 | .07 | 13.72*** | | | | | .00 | 0.13 | | | | |
| SOQ | | | 0.01 | 0.01 | 0.08 | 0.97 | | | 0.02 | 0.01 | 0.22 | 2.6* |
| OBC-Surv | | | 0.37 | 0.10 | 0.31 | 3.70*** | | | 0.04 | 0.10 | 0.03 | 0.36 |
| Model 3 | .01 | 1.78 | | | | | .01 | 1.76 | | | | |
| SOQ | | | 0.00 | 0.01 | 0.05 | 0.61 | | | 0.02 | 0.01 | 0.20 | 2.25* |
| OBC-Surv | | | 0.27 | 0.12 | 0.22 | 2.14* | | | -.11 | 0.15 | -0.09 | -0.74 |
| SOBBS | | | 0.26 | 0.19 | 0.14 | 1.34 | | | 0.31 | 0.23 | 0.17 | 1.33 |
| REI-A | | | | | | | | | | | | |
| Model 1 | .19 | 39.67*** | | | | | .21 | 41.72*** | | | | |
| SOQ | | | 0.05 | 0.01 | 0.43 | 6.30*** | | | 0.05 | 0.01 | 0.45 | 6.46*** |
| Model 2 | .19 | 51.39*** | | | | | .14 | 32.75*** | | | | |
| SOQ | | | 0.02 | 0.01 | 0.18 | 2.53* | | | 0.03 | 0.01 | 0.27 | 3.70*** |
| OBC-Surv | | | 0.69 | 0.10 | 0.50 | 7.17*** | | | 0.51 | 0.09 | 0.41 | 5.72*** |
| Model 3 | .04 | 11.78** | | | | | .04 | 11.13** | | | | |
| SOQ | | | 0.01 | 0.01 | 0.12 | 1.66 | | | 0.03 | 0.01 | 0.21 | 2.98** |
| OBC-Surv | | | 0.45 | 0.12 | 0.32 | 3.80*** | | | 0.19 | 0.13 | 0.16 | 1.50 |
| SOBBS | | | 0.62 | 0.18 | 0.29 | 3.43** | | | 0.67 | 0.20 | 0.35 | 3.34** |

| Variable | Women[a] | | | | | | Men[b] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* |
| REI-T | | | | | | | | | | | | |
| Model 1 | .13 | 24.73*** | | | | | .11 | 18.79*** | | | | |
| SOQ | | | 0.03 | 0.01 | 0.35 | 4.97*** | | | 0.03 | 0.01 | 0.32 | 4.34*** |
| Model 2 | .16 | 39.47*** | | | | | .10 | 19.84*** | | | | |
| SOQ | | | 0.01 | 0.01 | 0.12 | 1.55 | | | 0.02 | 0.01 | 0.16 | 2.06* |
| OBC-Surv | | | 0.56 | 0.09 | 0.47 | 6.28*** | | | 0.39 | 0.09 | 0.35 | 4.46*** |
| Model 3 | .01 | 2.07 | | | | | .02 | 3.21 | | | | |
| SOQ | | | 0.01 | 0.01 | 0.09 | 1.14 | | | 0.01 | 0.01 | 0.13 | 1.63 |
| OBC-Surv | | | 0.46 | 0.11 | 0.39 | 4.14*** | | | 0.22 | 0.13 | 0.20 | 1.69 |
| SOBBS | | | 0.25 | 0.17 | 0.14 | 1.44 | | | 0.37 | 0.20 | 0.21 | 1.79 |

*Note*. Degrees of freedom for comparisons in women: Model 1 (1, 173); Model 2 (2, 172); Model 3 (3, 171). Degrees of freedom for comparisons in men: Model 1 (1, 161); Model 2 (2, 160); Model 3 (3, 159). SOQ = Self-Objectification Questionnaire; OBC-Surv= Objectified Body Consciousness Body Surveillance Scale; SOBBS = Self-Objectification Beliefs and Behaviors Scale Total Score; REI-WC= Reason for Exercise Inventory - Exercise for Weight Control; REI-A= Reason for Exercise Inventory-Exercise for Attractiveness; REI-T= Reason for Exercise Inventory-Exercise for Tone. $\Delta R^2$ = R squared change made by adding new predictors to the model; A significant $\Delta R^2(F)$ indicates the difference made by adding new predictors to the model is significant; $\Delta R^2(F)$ = F change of R squared change; *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

[a] $n$ = 175. [b] $n$ = 163.

*$p$ < .05, **$p$ < .01, ***$p$< .001.

Therefore, Hypothesis 9 was partially supported. While the incremental validity of the SOBBS in predicting exercise for attractiveness in women and men was supported, incremental validity for predicting exercise for weight control and tone was not supported.

***Test-retest Reliability***

The correlations between the SOQ, OBC-Surv and SOBBS in women and men across the Time 1 and 2 surveys, were excellent, with all ICC values exceeding .64 (see Table 6). In line with Hypothesis 11, the 2-week interval test-retest reliability of the SOQ, OBC-Surv and SOBBS in women and men were supported.

**Table 6**

*Study 1 Intraclass Correlation Coefficients of the SOQ, OBC-Surv and SOBBS in Women and Men*

| Variable | Women[a] | | Men[b] | |
|---|---|---|---|---|
| | ICC | 95% CI | ICC | 95% CI |
| SOQ | .73 | [.62, .81] | .64 | [.52, .73] |
| OBC-Surv | .82 | [.76, .87] | .88 | [.83, .91] |
| SOBBS Factor 1 | .83 | [.77, .88] | .82 | [.76, .87] |
| SOBBS Factor 2 | .83 | [.77, .88] | .86 | [.81, .90] |
| SOBBS Total | .88 | [.83, 91] | .87 | [.82, .90] |

*Note.* ICC estimates and their 95% confidence intervals based on single measure, absolute agreement, 2-way mixed effects model; SOQ= Self-Objectification Questionnaire; OBC-Surv= Objectified Body Consciousness Body Surveillance Scale; SOBBS = Self-Objectification Beliefs and Behaviors Scale Total Score. 95% CI = 95% confidence interval

[a] $n$ = 133. [b] $n$ = 136.

## Discussion

The aim of Study 1 was to evaluate the psychometric properties of the SOQ, the OBC-Surv, and the SOBBS in cisgender women and men. The SOQ, OBC-Surv and SOBBS displayed excellent internal consistency, test-retest reliability and concurrent validity in cisgender heterosexual women and men. There were some instances where convergent validity, discriminant validity, predictive validity, incremental validity and differentiation by known groups were suboptimal either in specific questionnaires or specific participant samples. Explanations and next steps are outlined below.

The SOQ, OBC-Surv and SOBBS largely showed good convergent validity in women and men. However, the SOQ did not have adequate convergent validity with appearance orientation in men. It is unclear why this is the case. The variables used to test the convergent validity of the measures of self-objectification all largely appear gender neutral. As such, the appearance orientation scale does not seem differentially applicable to women versus men. The findings also do not seem to be due to differential conceptual alignment between the variables and measures of self-objectification (e.g., appearance-contingent self-worth was related to the SOQ in men, which similarly reflects concerns about one's physical appearance). Perhaps the measure of appearance orientation (i.e., MBSRQ-AO; Cash, 2018) also assesses the engagement in appearance-enhancing behaviours, and men who cognitively value their physical appearance over physical competence (measured by the SOQ) may not necessarily engage in appearance-enhancing behaviours. To evaluate this explanation, the relationship between self-objectification and appearance-enhancing behaviours (e.g., muscular body change behaviours; Kling et al., 2016) should be further examined.

The SOQ and OBC-Surv showed good discriminant validity with BMI in women and men. However, having a higher BMI was associated with higher SOBBS Factor 1 and Total scores. This finding is inconsistent with the tenets of Objectification Theory, which argues that self-objectification affects all individuals regardless of body weight (Fredrickson & Roberts, 1997). The divergence from the SOQ and OBC-Surv results further complicates the interpretations. Therefore, the relationship between BMI and self-objectification needs to be replicated before fully interpreting the findings.

The SOQ, OBC-Surv and SOBBS largely showed good discriminant validity with self-dehumanisation in women and men. However, higher scores on SOBBS Factor 1 and Total in women were associated with lower self-dehumanisation. One possible explanation is that the MAT may not adequately measure self-dehumanisation- others have argued that the MAT is not a well-validated measure of mind activities (Loughnan et al., 2013). Alternatively, there may be a stronger link between self-objectification and self-dehumanisation than predicted. In both cases, however, it is unclear why these patterns would be specific to the SOBBS. To evaluate above explanations, more research is needed to examine the association between self-objectification and self-dehumanisation using alternative measures of self-dehumanisation.

The SOQ, OBC-Surv and SOBBS largely showed good predictive validity in the prediction of women's and men’s appearance-related exercise (i.e., exercise for weight control, attractiveness and tone), except the OBC-Surv in predicting men’s exercise for weight control. As cultural expectations for weight control and thinness are linked more with women instead of men (Daniel et al., 2014), in hindsight, this is not entirely unexpected- though it is less clear why this is specific to the OBC-

Surv. However, it is also worth noting that the reason for exercise scales was administered at the same time as the self-objectification measures being validated, and as such, it is possible that these findings better reflect convergent than predictive validity. Future research should replicate the findings of predictive validity by collecting data of self-objectification measures and predicted appearance-related exercise reason outcomes at two different times.

The SOBBS showed good incremental validity in predicting exercise for overall physical attractiveness (i.e., to improve appearance, popularity and sexuality) in women and men, above and beyond the SOQ and OBC-Surv. In contrast, the SOBBS did not display incremental validity in predicting exercise for weight control and body tone in women and men. The OBC-Surv best predicted the impact of self-objectification in exercise for weight control and tone in women, and the SOQ best predicted the impact of self-objectification in exercise for weight control in men. Combined with the findings regarding predictive validity, this suggests that while all three measures predict individuals' exercise for attractiveness, the SOBBS allows a substantial improvement in the prediction of exercise for physical attractiveness in women and men.

Differentiation by known groups was demonstrated via significantly higher scores in women versus men on the SOQ, OBC-Surv, SOBBS Factor 1 and SOBBS Total. However, this was not the case for SOBBS Factor 2, which was not differentiated by gender. The reason for this needs further exploration. Current thinking attributes gender differences in self-objectification to equivalent gender differences in sexual objectification experiences. Specifically, sexual objectification experiences are theoretically proposed and empirically examined as the primary precursor of self-objectification in women and men (Kozee et al., 2007;

Vandenbosch & Eggermont, 2013), and as women experience higher levels of sexual objectification experiences (Swim et al., 2001), they should therefore engage in more self-objectification than men (Grabe et al., 2005; Hebl et al., 2004). Accordingly, examining differentiation by sexual objectification experiences rather than gender may provide a sterner and more direct test to help replicate or resolve this discrepancy. In addition, an examination of the relationship between self-objectification and sexual objectification experiences would provide an additional test of convergent validity. It is also possible that gender differences in self-objectification are at least partially driven by measurement bias and that the SOBBS Factor 2 is simply a more gender-neutral measure of self-objectification. It is, therefore, worth exploring whether gender accounts for variance in the SOQ, OBC-Surv and SOBBS after taking sexual objectification experiences into account.

## Study 2

Given the arguments above, it is clear that while the internal consistency, test-retest reliability, and concurrent validity of SOQ, OBC-Surv and SOBBS are satisfactory, the convergent validity, discriminant validity, and differentiation by known groups are less consistently supported across each measure and gender group, and thus needs to be replicated and further explored using alternative measures. Additionally, the relationship between sexual objectification experiences and self-objectification needs to be examined, both with respect to further exploring convergent validity and differentiation by known groups for each measure of self-objectification, but also to evaluate potential gender bias in the degree to which current measures of self-objectification capture the experiences of both cisgender women and men. Together, these form the aims of Study 2. In Study 2, we also recruit age-representative samples of cisgender heterosexual women and men in

order to avoid having to control age in analyses as per Study 1. Hypotheses are outlined below, and the thresholds for psychometric properties are the same as in Study 1, unless explicitly stated.

As in Study 1, Hypothesis 1 predicts satisfactory concurrent validity of all three measures in women and men.

Convergent validity is examined through two different measures to Study 1: drive for muscularity and sexual objectification experiences. Study 1 suggested the SOQ scores in men were less associated with appearance-enhancing behaviour. Study 2 further examines convergent validity in men through the Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000), which measures muscle-oriented attitudes and behaviours. Research suggests that the drive for muscularity is a major body image concern in men (Daniel et al., 2014) and is strongly predicted by the internalisation of media ideals (Daniel & Bridges, 2010), and as such, is likely to be positively related to self-objectification in men. Convergent validity with sexual objectification experiences is also examined. Sexually objectifying experiences are considered as the primary predictor of self-objectification (Kozee et al., 2007; Vandenbosch & Eggermont, 2013). The Interpersonal Sexual Objectification Scale (ISOS; Kozee et al., 2007) and items adapted from Holland et al.'s (2017) Sexually Objectifying Events Checklist are included in Study 2, for capturing individuals' sexually objectification directly experienced and witnessed in-person and via the media. Accordingly, Hypotheses 2 and 3 predict satisfactory convergent validity of all three measures with the drive for muscularity in men and sexual objectification experiences in women and men.

Discriminant validity is examined using the measures included in Study 1 (BMI; MAT; Loughnan et al., 2013). Given the lack of consistent support for discriminant validity using these measures, Study 2 seeks to extend the evaluation of discriminant validity using an alternative measure of self-dehumanisation better supports discriminant validity than the MAT; Ruttan and Lucas's (2018) Self De-humanisation Scale adapted from Bastian & Haslam (2010) is thus included in Study 2. To account for the possibility that there is a stronger relationship between self-objectification and self-dehumanisation than predicted, we also include two additional outcome measures not related to self-dehumanisation- narcissism measured by The Narcissistic Personality Inventory-16 (NPI-16; Ames et al., 2006), and the Drive for Muscularity Scale discussed above. In their original validation of the SOBBS, Lindner & Tantleff-Dunn (2017) found no relationship between self-objectification and the personality trait of narcissism in young women, and the same pattern is expected to be replicated in men. Hypotheses 4, 5 and 6 predict satisfactory discriminant validity of all three measures with BMI, self-dehumanisation and narcissism in women and men. Previous research indicates that drive for muscularity is uniquely associated with men's body image, not women's (Smolak & Murnen, 2008). Accordingly, Hypothesis 7 predicts satisfactory discriminant validity of all three measures with drive for muscularity in women.

Differentiation by known groups is evaluated using gender and sexual objectification experiences. In Study 1, all self-objectification measures were differentiated by gender with the exception of SOBBS Factor 2. Study 2 aims to examine whether these findings replicate. In line with the results of Study 1, Hypothesis 8 predicts higher scores on the SOQ, OBC-Surv, SOBBS Factor 1 and

SOBBS Total in women relative to men and no gender difference in the SOBBS Factor 2.

As discussed earlier, sexual objectification experiences, rather than gender, may provide a more robust test of differentiation by known groups. Study 2, therefore, aims to examine the differentiation of self-objectification measures by sexual objectification experiences. Two alternative hypotheses are given (instead of one hypothesis mentioned in pre-registration). Hypothesis 9 predicts that sexual objectification experiences will best differentiate individuals' SOQ, OBC-Surv and SOBBS scores, and gender and age will not significantly improve the variance accounted for in all self-objectification measure scores after controlling for sexual objectification experiences. Alternatively, Hypothesis 10 predicts that sexual objectification experiences are not the only differentiator of the SOQ, OBC-Surv and SOBBS scores and that gender and age will significantly improve the variance in any self-objectification measure scores accounted for after controlling for sexual objectification experiences.

## Method

### *Participants*

Data from 137 cisgender heterosexual women ($M_{age}$ = 45.36, $SD_{age}$ = 15.61; $M_{BMI}$ = 27.94, $SD_{BMI}$ = 6.44) and 138 cisgender heterosexual men ($M_{age}$ = 45.62, $SD_{age}$ = 15.95; $M_{BMI}$ = 25.93, $SD_{BMI}$ = 5.24) were included. Most women (92%) and men (88.4%) identified as White (see Appendix A for a full breakdown of the participant sample by gender and ethnicity). Age-representative women and men samples were recruited via Prolific, and the same inclusion and exclusion as Study 1 applied. Participants who completed the survey received £2.50 via Prolific. Power

calculations were identical to Study 1, indicating that 138 participants were needed for each group.

***Measures***

In line with Study 1, women and men completed the SOQ, OBC-Surv and SOBBS as measures of self-objectification, BMI (computed using self-reported height and weight), the MAT, and two attention checks. They also completed the following measures.

**Drive for Muscularity.** The Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000) has 15 items. Participants rated each item (e.g., "I wish that I were more muscular") using a 6-point scale ranging from "never" (1) to "always" (6). Cronbach's $\alpha$ in the current samples of women ($\alpha$ = .87) and men ($\alpha$ = .93) were excellent.

**Self-dehumanisation.** The Self-dehumanisation Scale (SDS; Ruttan & Lucas, 2018), adapted from the Dehumanisation Scale used by Bastian and Haslam (2010), has 11 items and taps into human nature (e.g., "I feel like I'm emotional like I am responsive and warm") and human uniqueness (e.g., I feel like I am refined and cultured). Participants rated their agreement that each statement described how they have felt over the past year using a 7-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (7). Cronbach's $\alpha$ in the current samples of women ($\alpha$ = .79) and men ($\alpha$ = .78) were generally good.

**Narcissism**. The Narcissistic Personality Inventory-16 (NPI-16; Ames et al., 2006) has 16 forced-choice pairs of contradictory items (e.g., "I really like to be the center of attention" v.s., "It makes me uncomfortable to be the center of attention"). Participants selected the item that most closely describes their feelings and beliefs about themselves. The inventory is scored by computing the proportion of responses

consistent with narcissism, ranging from 0 to 1, such that higher scores indicate greater levels of narcissism. Cronbach's $\alpha$ in the current samples of women ($\alpha$ = .67) and men ($\alpha$ = .73) were low to acceptable.

**Sexual Objectification Experiences.** The Interpersonal Sexual Objectification Scale (ISOS; Kozee et al., 2007) has 15 items and measures sexual objectification directed at oneself. Participants reported the frequency of each experience (e.g., "How often have you been whistled at while walking down a street?") within the past year using 5-point Likert scales ranging from "never" (1) to "almost always" (5). For men, one item is modified to capture the sexual objectification experiences as per Davidson et al. (2013; the term "breast" was changed to "chest" in the item "How often have you noticed someone staring at your breasts when you are talking to them?"). Cronbach's $\alpha$ in the current samples of women ($\alpha$ = .96) and men ($\alpha$ = .92) were excellent.

Holland et al.'s (2017) used a Sexually Objectifying Events Checklist (adapted from the ISOS; Kozee et al., 2017) in their ecological momentary assessment to track the witnessing sexual objectification of others. We adapted the items of the checklist (e.g., "catcalling, whistling, or car honking") and scale format of the ISOS (e.g., instruction and rating scale) for better capturing the sexual objectification experiences witnessed in-person and via the media within the past year. Cronbach's $\alpha$ of the witnessing sexual objectification in-person (In Person SO) in the current samples of women ($\alpha$ = .93) and men ($\alpha$ = .88), and Cronbach's $\alpha$ of the witnessing sexual objectification in media (Media SO) in the current samples of women ($\alpha$ = .93) and men ($\alpha$ = .88) were excellent.

### *Procedures*

Data from a single cross-sectional survey was collected on the 1st of April 2021 (when the COVID-19 quarantine was eased in the UK), via the Qualtrics online survey platform. Ethical approval was obtained from the Psychology Ethics Subcommittee at a University in the North of England.

Participants were asked to report the same demographic information as Study 1. Participants then completed the key measures, which were presented in random order for each participant.

## Results

### *Data Screening*

A total of 285 participants completed the online survey. As per Study 1, participants were excluded from all analyses if they were missing more than 20% of survey items (*n* = 10, 3.51%). No participants missed more than 5 items on a single scale, failed attention checks, or completed the questionnaire more than once. Of the final 275 participants, one participant (0.35%) with missing data that did not meet the above criteria was retained but excluded from any analyses containing the variable with missing data. Data from measured variables were normally distributed.

### *Concurrent Validity*

In women, there were moderate-to-strong positive correlations among the SOQ, OBC-Surv and SOBBS scores (see Table 7). In men, there were strong positive correlations between the OBC-Surv and SOBBS scores, and correlations between the OBC-Surv and SOBBS with SOQ were extremely close to the threshold value for concurrent validity (*r* = .4; see Table 8). In line with Hypothesis 1, the concurrent validity of the SOQ, OBC-Surv and SOBBS in women and men was supported.

**Table 7**

*Study 2 Descriptive Statistics and Bivariate Correlations among Variables in Women*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. SOQ | 137 | -6.80 | 13.77 | | | | | | | | | | | | | | |
| 2. OBC-Surv | 137 | 4.31 | 1.29 | .53*** | | | | | | | | | | | | | |
| 3. SOBBS Factor 1 | 137 | 3.30 | 0.95 | .48*** | .76*** | | | | | | | | | | | | |
| 4. SOBBS Factor 2 | 137 | 2.11 | 0.80 | .55*** | .60*** | .65*** | | | | | | | | | | | |
| 5. SOBBS Total | 137 | 2.70 | 0.80 | .56*** | .75*** | .92*** | .89*** | | | | | | | | | | |
| 6. BMI | 137 | 27.80 | 6.79 | .01 | -.03 | .06 | -.05 | .01 | | | | | | | | | |
| 7. MAT | 137 | 3.41 | 0.84 | -.04 | -.31*** | -.38*** | -.08 | -.26** | .02 | | | | | | | | |
| 8. SDS | 137 | 2.96 | 0.76 | .12 | .21** | .19* | .25** | .24** | .10 | .12 | | | | | | | |
| 9. NPI | 137 | 0.14 | 0.14 | .12 | -.09 | .03 | .01 | .02 | .04 | -.10 | -.32*** | | | | | | |
| 10. DMS | 137 | 1.52 | 0.52 | .08 | .24** | .27** | .14 | .23** | -.04 | -.19* | .05 | .06 | | | | | |
| 11. ISOS | 137 | 2.02 | 0.72 | .06 | .39*** | .42*** | .25** | .38*** | -.03 | -.34*** | .04 | .14 | .30*** | | | | |
| 12. In-Person SO | 137 | 1.91 | 0.86 | .05 | .28*** | .27** | .21** | .26** | .01 | -.22** | .05 | .08 | .14 | .71*** | | | |
| 13. Media SO | 136 | 2.78 | 0.94 | .09 | .24** | .28** | .12 | .23** | .09 | -.21** | -.03 | .09 | .06 | .42*** | .55*** | | |
| 14. Age | 137 | 45.36 | 15.61 | -.24** | -.38*** | -.41*** | -.30*** | -.39*** | .00 | .26** | -.21** | -.01 | -.27** | -.50*** | -.48*** | -.28*** | |

*Note*. SOQ= Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale-Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-objectification Beliefs and Behaviors Scale Total Score; BMI= Body

Mass Index; MAT = Mind Attribution Task; SDS = Self-Dehumanisation Scale; NPI = Narcissistic Personality Inventory-16; DMS = The Drive for Muscularity Scale; ISOS = The Interpersonal Sexual Objectification Scale; In-Person SO = Witnessed Sexual Objectification in person; Media SO = Witnessed Sexual Objectification via the media.

*$p$< .05, one- tailed. **$p$ < .01, one-tailed. ***$p$< .001, one- tailed.

**Table 8**

*Study 2 Descriptive Statistics and Bivariate Correlations among Variables in Men*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. SOQ | 138 | -11.42 | 11.68 | | | | | | | | | | | | | | |
| 2. OBC-Surv | 138 | 3.51 | 1.30 | .39*** | | | | | | | | | | | | | |
| 3. SOBBS Factor 1 | 138 | 2.77 | 0.99 | .39*** | .77*** | | | | | | | | | | | | |
| 4. SOBBS Factor 2 | 138 | 1.94 | 0.7 | .36*** | .68*** | .70*** | | | | | | | | | | | |
| 5. SOBBS Total | 138 | 2.35 | 0.78 | .41*** | .79*** | .95*** | .89*** | | | | | | | | | | |
| 6. BMI | 138 | 26.11 | 5.10 | -.03 | -.04 | .02 | .06 | .04 | | | | | | | | | |
| 7. MAT | 138 | 3.55 | 0.92 | -.01 | -.24** | -.19* | -.22** | -.22** | .15 | | | | | | | | |
| 8. SDS | 138 | 2.98 | 0.73 | .06 | .18* | .19* | .15* | .19* | .13 | .22** | | | | | | | |
| 9. NPI | 138 | 0.16 | 0.16 | .19* | .06 | .12 | .29*** | .20** | .10 | -.21** | -.11 | | | | | | |
| 10. DMS | 138 | 2.18 | 0.91 | .15* | .52*** | .51*** | .45*** | .53*** | -.14 | -.32*** | .01 | .20* | | | | | |
| 11. ISOS | 138 | 1.42 | 0.43 | .14* | .30*** | .29*** | .41*** | .37*** | -.07 | -.33*** | -.02 | .27** | .45*** | | | | |
| 12. In-Person SO | 138 | 1.46 | 0.59 | .06 | .16* | .19* | .24** | .23** | -.06 | -.17* | .03 | .27** | .39*** | .57*** | | | |
| 13. Media SO | 138 | 1.98 | 0.82 | .05 | .25** | .26** | .25** | .28*** | -.02 | -.31*** | .06 | .20** | .23** | .47*** | .51*** | | |
| 14. Age | 138 | 45.62 | 15.95 | -.09 | -.35*** | -.33*** | -.17* | -.29*** | .30*** | .23** | -.11 | -.03 | -.55*** | -.34*** | -.29*** | -.27** | |

*Note*. SOQ= Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale-Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-objectification Beliefs and Behaviors Scale Total Score; BMI= Body

Mass Index; MAT = Mind Attribution Task; SDS = Self-Dehumanisation Scale; NPI = Narcissistic Personality Inventory-16; DMS = The Drive for Muscularity Scale; ISOS = The Interpersonal Sexual Objectification Scale; In-Person SO = Witnessed Sexual Objectification in person; Media SO = Witnessed Sexual Objectification via the media.

*$p$< .05, one-tailed. **$p$ < .01, one-tailed. ***$p$< .001, one-tailed.

### *Convergent Validity*

**Drive for Muscularity in Men**. The OBC-Surv and SOBBS scores in men showed moderate-to-strong positive correlations with drive for muscularity, while the SOQ scores were weakly and positively correlated with drive for muscularity (see Table 8). In line with Hypothesis 2, the convergent validity of the OBC-Surv and SOBBS in men was supported. At odds with Hypothesis 2, the convergent validity of the SOQ in men was not supported.

**Sexual Objectification Experiences.** In women and men, the OBC-Surv and SOBBS Total scores were moderately and positively related to interpersonal sexual objectification experiences (see Tables 7 and 8). The SOBBS Factor 1 scores in women and SOBBS Factor 2 scores in men were moderately and positively correlated with Interpersonal sexual objectification experiences. SOQ scores in men were weakly and positively related to interpersonal sexual objectification experiences, while the SOQ scores in women were not significantly related to interpersonal sexual objectification experiences.

In women and men, the OBC-Surv, SOBBS Total and Factors scores were weakly and positively correlated with witnessed sexual objectification, except for the SOBBS Factor 2 in women, which was not correlated with sexual objectification witnessed in media. The SOQ scores in women and men were not significantly related to witnessed sexual objectification.

In line with Hypothesis 3, the convergent validity of the OBC-Surv and SOBBS Total with interpersonal sexual objectification experiences in women and men was supported. At odds with Hypothesis 3, for both groups, the convergent validity of the SOQ with interpersonal sexual objectification experiences and the convergent

validity of SOQ, OBC-Surv and SOBBS with witnessed sexual objectification was not supported.

### *Discriminant Validity*

**BMI.** The SOQ, OBC-Surv and SOBBS scores were not significantly correlated with BMI in women and men (see Tables 7 and 8). In line with Hypothesis 4, the discriminant validity of the SOQ, OBC-Surv, and SOBBS in women and men was supported.

**Self-dehumanisation.** SOQ scores in women and men were not significantly correlated with self-dehumanisation measured by both the MAT and SDS (see Tables 7 and 8). The OBC-Surv and SOBBS scores in women and men were weakly and positively correlated with SDS scores and showed weak-to-moderate negative correlations with MAT scores, except for SOBBS Factor 2, which was not correlated with. In line with Hypothesis 5, the discriminant validity of SOQ in women and men was supported. At odds with Hypothesis 5, the discriminant validity of OBC-Surv and SOBBS was not supported in women and men.

**Narcissism.** In women, the SOQ, OBC-Surv and SOBBS scores were not significantly correlated with narcissism (see Table 7). In men, the OBC-Surv and SOBBS Factor 1 scores were not significantly correlated with narcissism, while SOQ, SOBBS Factor 2 and Total scores were weakly and positively correlated with narcissism (see Table 8). In line with Hypothesis 6, the discriminant validity of the OBC-Surv in women and men was supported. However, the discriminant validity of the SOQ and SOBBS was supported only in women, not men.

**Drive for Muscularity in Women.** In women, the SOQ and SOBBS Factor 2 scores were not significantly correlated with drive for muscularity (see Table 7). However, the OBC-Surv, SOBBS Factor 1, and SOBBS Total scores were weakly

and positively correlated with drive for muscularity. In line with Hypothesis 7, the discriminant validity of SOQ in women was supported. At odds with Hypothesis 7, the discriminant validity of OBC-Surv and SOBBS were not supported.

***Differentiation by Gender***

Independent t-tests were performed to examine differences in the SOQ, OBC-Surv, and SOBBS scores as a function of gender. Compared with men, women scored significantly higher on the SOQ (t (265) = 3.67 $p < .001$, $d = .45$), OBC-Surv ($t$ (273) = 5.08, $p < .001$, $d = .61$), SOBBS Factor 1 ($t$ (273) = 4.56, $p < .001$, $d = .27$) and SOBBS Total ($t$ (273) = 3.67, $p < .001$, $d = .45$). No significant difference between women and men was found in the SOBBS Factor 2 score, $t$ (273) = 1.81, $p = .072$, $d = .23$. In line with Hypothesis 8, differentiation by gender was supported for the SOQ, OBC-Surv, SOBBS Factor 1 and SOBBS Total. Differentiation by gender in SOBBS Factor 2 was not supported.

***Differentiation by Sexual Objectification Experiences***

Hierarchical multiple regressions were conducted with self-objectification measures as outcome variables, and sexual objectification experiences, gender and age as predictor variables. The three subscales of the sexual objectification experiences were entered into the model in Step 1, followed by age in Step 2, and gender in Step 3. The *VIF* (ranging from 1.2 to 2.5) suggested no large degree of collinearity among predictor variables, thus meeting the assumption of regression.

The SOQ, OBC-Surv, SOBBS Factors and Total scores were significantly predicted by sexual objectification experiences in Step 1 (see Table 9). Controlling for sexual objectification experiences in Step 2, all self-objectification measures were significantly predicted by age. Adding age resulted in a significant $R^2$ change from Step 1 to Step 2. Controlling for sexual objectification experiences and age in Step 3,

gender significantly predicted SOQ and OBC-Surv scores, but not the SOBBS Factors and Total scores. Adding gender resulted in a significant $R^2$ change in predicting the SOQ and OBC-Surv scores from Step 2 to Step 3. By contrast, adding gender did not result in a significant $R^2$ change in predicting any SOBBS scores from Step 2 to Step 3. Accordingly, in line with Hypothesis 10, sexual objectification experiences were not the only differentiator of SOQ, OBC-Surv and SOBBS scores. After controlling for sexual objectification experiences, age and gender significantly improved the variance accounted for in the SOQ and OBS-Surv, and age significantly improved the variance accounted for in SOBBS scores.

**Table 9**

*Study 2 Hierarchical Regression Analysis Predicting SOQ, OBC-Surv and SOBBS Scores from Sexual Objectification Experience, Gender and Age*

| Variable | $\Delta R^2$ | $\Delta R^2$ (F) | *B* | *SE B* | *β* | *t* |
|---|---|---|---|---|---|---|
| SOQ | | | | | | |
| Model 1 | .03 | 2.82* | | | | |
| ISOS | | | 2.80 | 1.68 | 0.14 | 1.67 |
| In-Person SO | | | -0.98 | 1.51 | -0.06 | -0.65 |
| Media SO | | | 1.32 | 1.01 | 0.10 | 1.30 |
| Model 2 | .02 | 4.47* | | | | |
| ISOS | | | 2.19 | 1.69 | 0.11 | 1.30 |
| In-Person SO | | | -1.52 | 1.53 | -0.09 | -1.00 |
| Media SO | | | 1.32 | 1.01 | 0.10 | 1.31 |
| Age | | | -0.11 | 0.05 | -0.14 | -2.11* |
| Model 3 | .02 | 4.81* | | | | |
| ISOS | | | 0.78 | 1.80 | 0.04 | 0.43 |
| In-Person SO | | | -1.15 | 1.52 | -0.07 | -0.76 |
| Media SO | | | 0.70 | 1.04 | 0.05 | 0.68 |
| Age | | | -0.14 | 0.05 | -0.17 | -2.53* |
| Gender | | | -3.99 | 1.82 | -0.15 | -2.19* |
| OBC-Surv | | | | | | |
| Model 1 | .20 | 22.27*** | | | | |
| ISOS | | | 0.81 | 0.16 | 0.39 | 5.05*** |
| In-Person SO | | | -0.16 | 0.14 | -0.09 | -1.10 |
| Media SO | | | 0.24 | 0.10 | 0.17 | 2.51* |
| Model 2 | .04 | 15.64*** | | | | |
| ISOS | | | 0.70 | 0.16 | 0.34 | 4.44*** |
| In-Person SO | | | -0.25 | 0.14 | -0.14 | -1.78 |
| Media SO | | | 0.24 | 0.09 | 0.17 | 2.57* |
| Age | | | -0.02 | 0.01 | -0.23 | -3.95*** |
| Model 3 | .01 | 5.27* | | | | |
| ISOS | | | 0.56 | 0.17 | 0.27 | 3.35** |

| Variable | $\Delta R^2$ | $\Delta R^2$ (*F*) | *B* | *SE B* | *β* | *t* |
|---|---|---|---|---|---|---|
| In-Person SO | | | -0.22 | 0.14 | -0.12 | -1.52 |
| Media SO | | | 0.18 | 0.10 | 0.13 | 1.88 |
| Age | | | -0.02 | 0.01 | -0.26 | -4.37*** |
| Gender | | | -0.39 | 0.17 | -0.14 | -2.30* |
| SOBBS Factor 1 | | | | | | |
| Model 1 | .20 | 23.01*** | | | | |
| ISOS | | | 0.59 | 0.12 | 0.39 | 5.02*** |
| In-Person SO | | | -0.14 | 0.11 | -0.11 | -1.33 |
| Media SO | | | 0.21 | 0.07 | 0.20 | 2.92** |
| Model 2 | .05 | 17.64*** | | | | |
| ISOS | | | 0.51 | 0.12 | 0.34 | 4.38*** |
| In-Person SO | | | -0.21 | 0.10 | -0.16 | -2.05* |
| Media SO | | | 0.21 | 0.07 | 0.20 | 3.00** |
| Age | | | -0.02 | 0.00 | -0.24 | -4.20*** |
| Model 3 | .01 | 2.57 | | | | |
| ISOS | | | 0.44 | 0.12 | 0.29 | 3.53*** |
| In-Person SO | | | -0.20 | 0.10 | -0.15 | -1.86 |
| Media SO | | | 0.18 | 0.07 | 0.17 | 2.47* |
| Age | | | -0.02 | 0.00 | -0.26 | -4.45*** |
| Gender | | | -0.20 | 0.13 | -0.10 | -1.60 |
| SOBBS Factor 2 | | | | | | |
| Model 1 | .10 | 10.26*** | | | | |
| ISOS | | | 0.32 | 0.09 | 0.28 | 3.42** |
| In-Person SO | | | 0.02 | 0.08 | 0.02 | 0.22 |
| Media SO | | | 0.03 | 0.06 | 0.04 | 0.56 |
| Model 2 | .02 | 4.73* | | | | |
| ISOS | | | 0.29 | 0.09 | 0.25 | 3.03** |
| In-Person SO | | | -0.01 | 0.09 | -0.01 | -0.14 |
| Media SO | | | 0.03 | 0.06 | 0.04 | 0.56 |
| Age | | | -0.01 | 0.00 | -0.14 | -2.17* |

| Variable | $\Delta R^2$ | $\Delta R^2$ *(F)* | *B* | *SE B* | *β* | *t* |
|---|---|---|---|---|---|---|
| Model 3 | .00 | 0.20 | | | | |
| ISOS | | | 0.30 | 0.10 | 0.27 | 2.98** |
| In-Person SO | | | -0.02 | 0.09 | -0.02 | -0.19 |
| Media SO | | | 0.04 | 0.06 | 0.05 | 0.66 |
| Age | | | -0.01 | 0.00 | -0.13 | -2.03* |
| Gender | | | 0.05 | 0.10 | 0.03 | 0.45 |
| SOBBS Total | | | | | | |
| Model 1 | .18 | 20.04*** | | | | |
| ISOS | | | 0.46 | 0.10 | 0.37 | 4.76*** |
| In-Person SO | | | -0.06 | 0.09 | -0.06 | -0.70 |
| Media SO | | | 0.12 | 0.06 | 0.14 | 2.07* |
| Model 2 | .04 | 13.27*** | | | | |
| ISOS | | | 0.40 | 0.10 | 0.33 | 4.18*** |
| In-Person SO | | | -0.11 | 0.09 | -0.11 | -1.32 |
| Media SO | | | 0.12 | 0.06 | 0.14 | 2.11* |
| Age | | | -0.01 | 0.00 | -0.22 | -3.64*** |
| Model 3 | .00 | 0.56 | | | | |
| ISOS | | | 0.37 | 0.10 | 0.30 | 3.63*** |
| In-Person SO | | | -0.11 | 0.09 | -0.10 | -1.23 |
| Media SO | | | 0.11 | 0.06 | 0.13 | 1.83 |
| Age | | | -0.01 | 0.00 | -0.23 | -3.72*** |
| Gender | | | -0.08 | 0.10 | .005 | -0.75 |

*Note*. *N* = 274. Gender was coded as a dichotomous variable, with female participants being coded as the variable “0” and male participants being coded as the variable “1”. Degree of freedom for comparison: Model 1 (3, 270); Model 2 (4, 269); Model 3 (5, 268). SOQ= Self-Objectification Questionnaire; OBC-Surv= Objectified Body Consciousness Body Surveillance Scale. SOBBS Factor 1 = Self-Objectification Beliefs and Behaviors Scale- Observer's Perspective; SOBBS Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; SOBBS Total = Self-Objectification Beliefs and Behaviors Scale Total Score. ISOS = The Interpersonal Sexual Objectification Scale; In-Person SO = Witnessed Sexual Objectification in-person; Media-SOS = Witnessed Sexual Objectification via the media. $\Delta R^2$= R squared change made by adding new predictors to the model; A significant $\Delta R^2(F)$ indicates the difference made by adding new predictors to the model is significant; $\Delta R^2(F)$ = F change of R squared change; *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; ß = standardised regression weight

*$p$< .05, **$p$ < .01, ***$p$< .001.

## Discussion

The aim of Study 2 was to replicate and extend the validation of self-objectification measures in Study 1.

Replicating the results of Study 1, the SOQ, OBC-Surv and SOBBS displayed excellent concurrent validity in the current age-representative samples of women and men.

The OBC-Surv and SOBBS in men showed good convergent validity with drive for muscularity, and the SOQ in women showed good discriminant validity with drive for muscularity. Higher scores of the OBC-Surv in women and men, SOBBS in men, and SOBBS Factor 1 in women are related to stronger levels of drive for muscularity. Results may reflect recent changes in female body ideals from thin to toned (Rodgers et al., 2018), such that body monitoring (measured by OBC-Surv and SOBBS Factor 1) is associated with monitoring the body's muscular appearance. As the SOQ does not focus on body monitoring, this may explain the weak correlation between drive for muscularity in men and the absence of a correlation in women. Additionally, the weak correlation between SOQ and drive for muscularity in men supports the findings of Study 1, suggesting that men's appearance-enhancing behaviours are less related to valuing physical appearance over physical competence.

OBC-Surv and SOBBS Total showed good convergent validity with interpersonal sexual objectification experiences for both women and men, while the SOQ did not display adequate convergent validity in either sample. The OBC-Surv and SOBBS do seem to have greater conceptual overlap with the construct measured by the ISOS (i.e., one's body being evaluated by others). Interestingly, none of the measures of self-objectification displayed adequate convergent validity

with witnessed sexual objectification in either women or men. This failure possibly reflects the weaker effect of witnessed sexual objectification on individuals' self-objectification than directly experienced sexual objectification. For example, Koval et al. (2019) found that directly experienced sexual objectification had a more negative effect on women's state self-objectification than witnessing sexual objectification of others; the state self-objectification may accumulate over time and lead to increased habitual self-objectification. However, this explanation has not been empirically tested in men, and the current study suggests that similar patterns may be found in men.

The picture concerning discriminant validity is complex. While the SOQ, OBC-Surv and SOBBS displayed adequate discriminant validity with BMI in women and men, the patterns for narcissism and self-dehumanisation were more complex. The SOQ, OBC-Surv and SOBBS showed excellent discriminant validity with narcissism in women, but results were inconsistent in men. Specifically, while the OBC-Surv and SOBBS Factor 1 displayed excellent discriminant validity in men, the SOQ, SOBBS Total and Factor 2 did not- exhibiting significant positive correlations with narcissism. Both the SOQ and SOBBS Factor 2 involve placing importance on one's physical appearance, and narcissists may value their physical appearance (Davis et al., 2001). Accordingly, this may account for the positive correlation between these constructs- however, it is unclear why the positive correlation occurs only in men, not women.

The SOQ showed excellent discriminant validity with self-dehumanisation measured by MAT and SDS in women and men. However, women and men with the higher OBC-Surv, SOBBS Factor 1 and SOBBS Total scores reported lower self-dehumanisation on the MAT, such that greater self-objectification is associated with

less engagement in humanizing mind activities. The OBC-Surv, SOBBS Factor 1 and MAT all measure individual's body-mind-related activities, to a certain extent, which could account for an association between self-objectification and self-dehumanisation on these measures. Importantly, and in contrast, when measuring self-dehumanisation using the SDS, women and men with higher OBC-Surv, SOBBS Factor 1 and Total scores were more likely to self-dehumanise, in terms of perceiving themselves as lacking human nature and human uniqueness measured by SDS. As both self-objectification and self-dehumanisation refer to the reduction of individuals' personhood (Loughnan et al., 2017), in hindsight, this is not entirely unexpected- though it is less clear why these associations were not found for the SOQ.

Replicating Study 1, Study 2 found differentiation by gender for the SOQ, OBC-Surv, SOBBS Factor 1 and Total, but not SOBBS Factor 2. The analyses examining differentiation by sexual objectification experiences demonstrated that while gender did not differentiate self-objectification measured by the SOBBS after sexual objectification experiences and age were considered, gender did explain additional variance in self-objectification measured by the SOQ and OBC-Surv. This suggests that while gender differences in the experiences of sexual objectification (Aubrey, 2006a; Grabe et al., 2005) drive the gender differences in SOBBS Factor 1 and SOBBS Total scores in Study 1 and 2, gender has a unique role in differentiating the SOQ and OBC-Surv scores. As such, it is possible that gender differences in scores on the SOQ (Fredrickson et al., 1998) and OBC-Surv (Choma et al., 2010; Smolak & Murnen, 2011) are instead due to measurement error. As argued earlier, the absence of an association between the SOQ and drive for muscularity in men suggests that the SOQ may be less sensitive in capturing self-objectification in men.

It is less clear how gender uniquely contributes to OBC-Surv scores, as the items on this scale appear gender-neutral.

## General Discussion

Two studies were conducted to evaluate the psychometric properties of three self-objectification measures (i.e., the SOQ. OBC-Surv and SOBBS) in cisgender heterosexual women and men. All measures generally displayed satisfactory convergent validity, predictive validity, concurrent validity, test-retest reliability, and internal consistency in women and men, while discriminant validity was less clear-cut in women and men (see Appendix B for a summary of the psychometric properties of the SOQ, OBC-Surv and SOBBS across Studies 1 and 2).

The SOQ, OBC-Surv and SOBBS generally displayed satisfactory psychometric properties in women. All three self-objectification measures showed good convergent validity with appearance orientation, appearance-contingent self-worth, internalisation of sociocultural ideals of appearance, predictive validity for appearance-related exercise, and good discriminant validity from BMI (Study 2 only) and narcissism. The SOQ showed better discriminant validity with self-dehumanisation (Studies 1 and 2) and drive for muscularity than the OBC-Surv and SOBBS, while the OBC-Surv and SOBBS had better convergent validity with interpersonal sexual objectification experiences than the SOQ. Although all three measures did not demonstrate adequate convergent validity with witnessed sexual objectification experiences, in general, the SOQ, OBC-Surv and SOBBS all appear psychometrically sound for measuring self-objectification in women.

For men, both the OBC-Surv and SOBBS generally displayed satisfactory psychometric properties. OBC-Surv and SOBBS showed good convergent validity with appearance-contingent self-worth, internalisation of sociocultural ideals of

appearance, drive for muscularity, discriminant validity from BMI (Study 2 only) and self-dehumanisation measured by the MAT (Study 1 only), and predictive validity for exercise for attractiveness and tone. However, neither the OBC-Surv nor SOBBS showed adequate convergent validity with witnessing sexual objectification of others and discriminant validity from self-dehumanisation measured by the MAT (Study 2) and SDS. Compared with the OBC-Surv and SOBBS, the SOQ displayed poorer psychometric properties in men. Although the SOQ displayed better discriminant validity from self-dehumanisation measured by the MAT and SDS, it did not show sufficient convergent validity with appearance orientation, drive for muscularity, and the sexual objectification experiences directly experienced and witnessed. These findings suggest that the SOQ may not fully capture self-objectification in men and thus is not recommended for measuring self-objectification in men.

The Objectification Theory posits that the sexually objectifying culture socializes individuals to view themselves as objects to be evaluated by others (Fredrickson & Roberts, 1997). Gender differences in self-objectification are thought to arise from differential experiences of sexual objectification in women and men. Consistent with this argument, SOBBS scores were no longer differentiated by gender when controlling for sexual objectification experiences and age in Study 2. However, gender continued to differentiate the SOQ and OBC-Surv scores when controlling for sexual objectification experiences and age. Although the OBC-Surv has been widely applied in men (Martins et al., 2007; Tiggemann & Kuring, 2004), the difference in scores between women and men on the OBC-Surv suggest caution until explanations for this difference are identified. One possibility is that the current measures of sexual objectification experiences do not adequately capture the experiences of men. Although measures of sexual objectification experiences were

modified for use in men, those measures were initially designed for women, in much the same way as measures of self-objectification largely were. Alternatively, the OBC-Surv may not adequately capture the nature of self-objectification in men, as it focuses on habitual body monitoring and does not capture any cognitive component of self-objectification, such as valuing physical attractiveness above personhood or inner being. Until these questions are resolved, the SOBBS appears a more robust measure of self-objectification when researchers need to compare self-objectification in men and women.

**Limitations and Future Directions**

Although the current study contributes to the understanding of optimal measurement of self-objectification of cisgender heterosexual women and men, some limitations are acknowledged. First, only cisgender and heterosexual adults were sampled in the current study, and participants predominantly identified as White. Given the effects of gender identity, sexual orientation and ethnic background on individuals' self-objectification (Hebl et al., 2004; Kahumoku et al., 2011), the findings of the current study may not generalise to samples with other gender identities, sexual orientations and ethnic backgrounds. Further research should therefore investigate whether self-objectification measures yield valid and reliable scores in samples with another gender, ethnic and racial identities.

In the current research, the psychometric properties of the OBC-Surv and SOBBS were largely supported in men. However, both measures were initially developed based specifically on women's behaviours and attitudes (Lindner & Tantleff-Dunn, 2017; McKinley & Hyde, 1996). It is, therefore, possible that some aspects of body surveillance or self-objectification that are uniquely or more commonly experienced by men are not adequately captured in the OBC-Surv and

SOBBS. Further examination of the factor structure of the OBC-Surv and SOBBS in men is needed. Additionally, given the association between the OBC-Surv and SOBBS and drive for muscularity, it would be useful to investigate both measures' association with muscularity-driven consequences such as steroid use and muscle dysmorphia (Daniel & Bridges, 2010; Grieve & Helmick, 2008), in order to better understand the validity of the OBC-Surv and SOBBS in men.

The current research did not fully explore what other gender-related or other factors may account for gender differences in self-objectification beyond the role of sexual objectification experiences. These factors may include, for example, differences stemming from biological sex and the perception of the importance of physical appearance in their identity (Crocker et al., 2003). Additionally, the potential gender differences in pathways from sexual objectification experiences to self-objectification (Engeln-Maddox et al., 2011; Morry & Staska, 2001), and emotional and behavioural responses toward sexual objectification and self-objectification (Fredrickson et al., 1998; Shepherd, 2019) may also be fruitful avenues for further research.

An alternative explanation for gender differences in the SOQ and OBC-Surv scores is grounded in the limitations of the measures of sexual objectification experiences used in the current research. According to the Objectification Theory, interpersonal sexually objectifying encounters and exposure to sexually objectifying media content are two major sources of sexual objectification experiences (Fredrickson & Roberts, 1997). Sexually objectifying media content ranges from visual media depicting interpersonal and social encounters, the text emphasizing the importance of physical appearance, to sexualised images or videos underscoring individuals' sexuality and bodies (Aubrey, 2010). The current research was

conducted during the COVID-19 pandemic, which has implications for the nature and sources of sexual objectification. During the pandemic, individuals in the UK were recommended to stay at home and avoid face-to-face contact to reduce the spread of infections (Bird et al., 2021). Given the change in lifestyles, individuals are accordingly spending much more time interacting with media (Dutta et al., 2022) and may, therefore, more frequently experience sexual objectification via the media. It is possible that the current witnessing sexual objectification via the media has poor predictive validity, and measures of sexual objectification experiences used in the current study do not sufficiently capture the full breadth of sexual objectification experienced by participants. The witnessing sexual objectification experiences via the media in the current research focuses on interpersonal sexual objectification in visual media specifically, and accordingly, does not capture the experiences of other media (e.g., sexualised images appearing on social networking sites; APA, 2007). If exposure to sexually objectifying media could be more fully captured, the variance in self-objectification explained by the sexual objectification experiences may be increased. Further research is needed further to explore gender differences in self-objectification and sexual objectification experiences.

**Conclusion**

The current research examined the psychometric properties of the SOQ, OBC-Surv and SOBBS in cisgender heterosexual women and men. SOQ displayed satisfactory psychometric properties in women but was less robust for capturing self-objectification in men. Both the OBC-Surv and SOBBS were more psychometrically sound for measuring self-objectification in women and men. However, until questions about the role of gender in predicting the OBC-Surv scores are answered, the SOBBS is recommended when research aims to measure self-objectification in

women and men. As the OBC-Surv and SOBBS remain suffering limitations in psychometric properties, particularly the discriminant validity and convergent validity with witnessing sexual objectification experiences, future research is needed to validate the OBC-Surv and SOBBS.

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# Chapter 3

# Development and Psychometric Validation of the Women-Sexually Objectifying Media Scale (Women-SOMS) and Men-Sexually Objectifying Media Scale (Men-SOMS)

## Abstract

Living in the digital era, individuals are constantly exposed to sexually objectifying media, and the experiences of sexual objectification in the media negatively affect individuals' body image. Existing measures of sexual objectification experience do not fully capture experiences of sexual objectification in the media. The purpose of the Studies 3a, 3b,4 and 5 was to develop and evaluate the Women-Sexually Objectifying Media Scale (Women-SOMS) and Men-Sexually Objectifying Media Scale (Men-SOMS), to measure experiences of sexual objectification in the media. In Study 3, drawing from existing literature and two online surveys (women = 80, men = 76, age representative samples), items for the Women-SOMS and Men-SOMS were developed. In Study 4, exploratory factor analysis (women = 340, men = 100) suggested an underlying structure of three correlated factors for the Women-SOMS and a single factor for the M-SOMS. In Study 5, confirmatory factor analysis (women = 331, men = 328) supported a higher-order model for the Women-SOMS (15 items and three subscales: Importance of Physical Appearance, Sexualised Body Representation and Body Evaluation) and a single factor model for the Men-SOMS (4 items and measures sexualised body representation). The Women-SOMS and Men-SOMS displayed satisfactory internal consistency, test-retest reliability, predictive validity, and differentiation by known groups but did not adequately display convergent, discriminant and increment validity. Future research should further examine the psychometric properties of the Women-SOMS and the Men-SOMS.

*Keywords*: self-objectification, sexual objectification, media, scale development, psychometric validation

# Development and Psychometric Validation of the Women-Sexually Objectifying Media Scale (Women-SOMS) and Men-Sexually Objectifying Media Scale (Men-SOMS)

Sexual objectification is defined as the experience of being treated as a body existing for the use and pleasure of others (Fredrickson & Roberts, 1997). According to objectification theory (Fredrickson & Roberts, 1997), sexual objectification may lead to self-objectification (the internalisation of the third person's perspective on one's body: Fredrickson & Roberts, 1997) and body surveillance (seeing one's physical appearance as others see them: McKinley & Hyde, 1996). The adverse outcomes of sexual objectification on women are supported by a large body of research: For instance, greater sexual objectification is associated with a great risk of internalisation of sociocultural ideals of appearance (Vandenbosche & Eggermont, 2012), self-objectification (Vandenbosche et al., 2015), body surveillance (Aubery, 2007) and other psychological well-being and health-related effects including increasing women's body dissatisfaction (Strahan et al., 2008) and sexual self-perception (Aubrey, 2007).

Women experience sexual objectification mainly through interpersonal interaction (Kozee et al., 2007), and via the media. The media sexually objectifies women in multiple ways. Since the 1980s, women's bodies have been frequently shown in fragments (i.e., only a body part) in magazine advertisements (Winship, 1987). Visual media depicts interpersonal sexual objectification by showing women being commented on (Montemurro, 2003), degraded (Martino et al., 2006), gazed at and subject to unwanted touching by others (Aubrey & Frisby, 2011). Visual media also portrays women in a sexual manner, with women wearing revealing clothing in

television programs (Eaton, 1997), advertising (Lindner, 2004) and music videos (Aubrey & Frisby, 2011). The media sexually objectifies women through thematic messages and stories (Fouts & Vaughan, 2002). Examples include magazine articles referring to the importance of women's bodies for sexual desirability and advising readers on how to enhance their physical attractiveness (Aubrey & Hahn, 2016). Moreover, in the current digital era, where social media and online games have increased in popularity over the last decade (Pew Research Center, 2015), interpersonal sexual objectification can also occur when women interact with other users in online contexts. In these contexts, women's bodies and sexuality are commented on by others and women are targeted by inappropriate sexually explicit messages (Barak, 2005; Guizzo et al., 2021). In sum, the evidence indicates that women experience sexual objectification in a diverse range of media in a diverse range of ways.

Critically, research indicates that women's body image is negatively affected by habitual exposure to sexually objectifying media content (Aubrey, 2006b; Aubrey, 2007; Grabe & Hyde, 2009; Vandenbosch et al., 2015). Vandenbosch and Eggermont (2012) found daily exposure to sexually objectifying fashion magazines, music videos and social networks was associated with greater internalization of sociocultural ideals of appearance, self-objectification, and body surveillance in adolescent girls. Similarly, Fardouly et al. (2015) found daily use of sexualised social network sites and magazines was positively associated with self-objectification in women. Aubrey (2007) found that the total exposure to everyday sexually objectifying television programs and magazines was associated with greater body surveillance, body shame, appearance anxiety and sexual self-perception in young women. Finally, A 2-year longitudinal study conducted by Aubery (2006b) further

demonstrated that daily exposure to sexually objectifying TV programs predicted an increase in self-objectification one year later in undergraduate women.

Early research on magazine advertisements in the 1970s indicated that men frequently considered women primarily as sexual objects (Courtney & Lockeretz, 1971). However, over the past 50 years, men have also been depicted as objects of sexual desire and sexually objectified in contemporary media (Rohlinger, 2002). In visual media such as television programs, men's bodies and sexuality are sexually evaluated by depicting young, attractive women gazing at young, toned, muscular, and bare-chested men (Gill, 2009). Men's bodies are sexually portrayed by featuring their half-naked bodies or engaging in sexually suggestive acts (Hatton & Trautner, 2011), and men's body parts are highlighted when displaying products (Rohlinger, 2002). The importance of physical attractiveness in men's lives is also frequently mentioned. Magazines, for example, advise men how to modify their appearance and fitness to be more sexually attractive to women and increase their sexual success (Ricciardelli et al., 2010). Similar to women, men also receive sexually suggestive images or messages on social media (Gordon-Messer et al., 2013). Although men are not sexually objectified to the same extent as women (Aubrey & Frisby, 2011; Hatton & Trautner, 2011), differences exist in portrayals of women versus men in the media (e.g., women are more often shown in subordinate positions and men are more often shown in superior positions in sexualised advertisements; Mager & Helgeson, 2011), it is apparent that men also experience sexual objectification in the current media environment.

Consistent with patterns in women, frequent exposure to sexually objectifying media content negatively affects men's body image and is associated with decreased body- esteem, self- esteem and body satisfaction (Barlett et al., 2008).

Greater exposure to sexualising pornographic websites and television programmes is associated with greater internalisation of muscular ideals, self-objectification and body surveillance in adolescent boys (Vandenbosch & Eggermont, 2013) and men (Dakanalis et al., 2012). Similarly, longitudinal research has demonstrated that daily exposure to sexually objectifying media content predicts self-objectification and body surveillance after one year in undergraduate men (Aubrey, 2006a).

**Measuring Sexually Objectifying Media Experiences**

Given the negative effects of the experiences of sexually objectifying media on individuals' body image concerns, it is important to have an effective measure to capture the experiences of sexual objectification in women and men. However, some critical issues exist in the current sexually objectifying media experience measures that are used. In addition, in today's media landscape, measuring individuals' experiences with a single medium (e.g., television programs) is not sufficient to capture individuals' experiences of sexually objectifying media and thus limits understanding of the effects of sexually objectifying media on individuals' body image concerns.

One commonly- used measure in media research (e.g., Barzoki et al. 2017; Fardouly et al. 2015; Wright & Tokunaga, 2015) assesses individuals' sexually objectifying media experience by measuring participants' frequency of media use (e.g., "how long do you spend watching television on a typical day?"). However, individuals' exposure to self-objectification may differ as a function of the media content within that media that they are exposed to, such as the exposure to the non-appearance focused TV programs (e.g., information-based shows, documentaries and news) were found to be negatively associated with self-objectification (Andrew et

al., 2006). Other measures involve time-consuming rating procedures (e.g., Aubrey, 2006a; Aubrey, 2006b; Brown et al., 2006; Dakanalis et al., 2012), where participants first report the frequency of exposure to popular media content (e.g., “How often do you watch Dismissed/The Big Bang Theory?”), and trained judges then rate the content according to how sexually objectifying they consider them to be. The final score is calculated as a composite of the two scores. However, rapid changes in media content and the labour demands of the rating procedure (Den Hamer et al., 2014) increase the difficulty of using this measure. This measure could not specify which specific form of sexual objectification negatively affects one’s body image concerns (Aubrey, 2006b). More importantly, this measure is restricted to capturing sexually objectifying experiences in a limited number of media types (e.g., magazine advertisements, TV programmes: Aubrey, 2006a; music videos: Vandenbosch & Eggermont, 2012) and is less well-suited to capturing experiences in the broader media environment including social media and online content.

In the objectification literature, the Interpersonal Sexual Objectification Scale (ISOS; Kozee et al., 2007), the Cultural Sexual Objectification Scale (Hill & Fischer, 2008), and Everyday Sexism Experience (Swim et al., 2001) are commonly used to measure experiences of sexual objectification in interpersonal interactions, but may also help identify sexual objectification in media content. For example, the ISOS (Kozee et al., 2007) was originally designed to measure women’s sexual objectification experiences, focusing on body evaluation and unwanted explicit sexual advances. Given the evidence that media depicts women's and men’s bodies being evaluated or harassed by others (Montemurro, 2003; Gill, 2009), items on the ISOS could be selected and amended to capture witnessed body evaluation and unwanted explicit sexual advances in the media context. Indeed, Holland et al.

(2017) used a checklist adapted from Kozee et al. (2007) to measure the prevalence of sexual objectification events witnessed in daily interpersonal interactions and media. Meanwhile, as individuals directly experience sexual objectification in the online environment (Gordon-Messer et al., 2013; Guizzo et al., 2021), the ISOS can also be amended to capture the directly experienced sexual objectification in digital media communication. For example, the Online Interpersonal Sexual Objectification Scale (Luo et al.,2019) was developed to assess Chinese women's experience of being evaluated or sexually harassed in the online environment by integrating items from the ISOS with features of the Chinese online environment. However, research (Aubrey & Frisby, 2011; Eaton, 1997; Fouts & Vaughan, 2002) indicates that some sexual objectification does not occur in interpersonal interactions. Accordingly, scales based on the ISOS may only capture part of the experience of sexual objectification in the media, neglecting other forms of sexual objectification, including sexualised depictions of women and men (Rohlinger, 2002; Stankiewicz & Rosselli, 2008) and sexually objectifying thematic messages (Fouts & Vaughan, 2002; Ricciardelli et al., 2010).

**The Current Research**

To date, no existing standardised measures assess the experiences of sexual objectification across all forms of contemporary media encountered by women and men. This limits the ability to understand the effect of sexually objectifying media experience on individuals' body image concerns. As the media portrays women and men differently in both frequency and intensity of sexual objectification (Hatton & Trautner, 2011) and women and men have different sexual objectification experiences on the Internet (Barak, 2005), the current research aims to develop and test the psychometric properties of a Sexually Objectifying Media Experience Scale

designed for women (Women-SOMS) and Men (Men-SOMS). Given potential differences in sexual objectification as a function of sexual orientation and gender identity (Tebbe et al., 2021), the current research samples only cisgender heterosexual women and cisgender heterosexual men. While validation would ideally be carried out in all samples, resources were limited, and thus the focus on cisgender heterosexual samples was a pragmatic choice. Age representative samples are recruited to maximally capture experiences of sexually objectifying media across the lifespan. Specifically, Studies 3a and 3b aim to generate the initial pool of potential items for the Women-SOMS and Men-SOMS pools and obtain participants' feedback on items by conducting a literature review and two online surveys. Study 4 aims to assess the initial factor structure for the Women-SOMS and Men-SOMS via exploratory factor analysis (EFA). Study 5 aims to verify the factor structure for the Women-SOMS and the Men-SOMS by conducting confirmatory factor analysis (CFA) and also examines the construct validity (including convergent, discriminant validity, differentiation by known groups), criterion validity (including predictive and incremental validity), and reliability (including internal consistency and 2-week test-retest reliability). All studies were pre-registered, and all study materials, data, codebook, and data scripts can be found at the Open Science Framework (Studies 1 (a) and (b): https://osf.io/q65hn/?view_only=7d3b16ebcd204de89b1c61392a16e424; https://osf.io/nv7by/?view_only=4a349e9cd654403882ef8257a3b7fae0; Study 2: https://osf.io/eqk4f/?view_only=ef67316e67ed4ab6b94b285cbec571ff;Study 3: https://osf.io/vpqk4/?view_only=7365ac7c8ca34d7086a6a7bfdf86a772). The predictive validity and incremental validity of The Women-SOMS subscales in body

image concerns were not mentioned in pre-registration. Any deviations from the pre-registration are made clear in the manuscript.

## Study 3

As recommended by Boateng et al. (2018), Study 3 involved three scale development steps, including domain generation, item generation, and content validity examination. In Study 3a, a literature review was conducted to generate relevant domains and items. Participants then rated how often they experienced (i.e., frequency) and how sexually objectifying (i.e., extremity) they considered each item to be, and suggested additional items for inclusion in Study 3b. In Study 3b, the same participants plus an additional sample of participants rated the frequency and extremity of the new items. Data from the two studies were then combined for analysis.

### Method

#### *Participants*

**Study 3a.** Data from 80 cisgender heterosexual women ($M_{age}$ = 36.73 years, $SD_{age}$ = 11.90), and 76 cisgender heterosexual men ($M_{age}$ = 36.63 years, $SD_{age}$ = 11.51) were included in the analysis for Study 3a. Most women and men identified as White (66.25% and 64.47%, respectively; see Appendix C for more detail on the ethnicity of samples for Study 3). A total of 270 participants originally completed the Study 3a survey. Participants were excluded from all analyses if they were missing more than 20% of survey items ($n$ = 99, 36.67%) or failed attention checks ($n$ = 15, 5.56%). Participants were recruited from the participant crowdsourcing website Prolific. Participants received £2.50 for completing Study 3a via Prolific.

A sample size of 15 - 30 individuals is suggested to identify patterns across participant-generated data (Terry & Braun, 2011), and a sample of 96 individuals is

suggested to represent a large population size for the quantitative survey, with a 95% confidence level, .5 standard deviation, and a margin of error (confidence interval) of +/- 10% (Charan & Biswas, 2013).

**Study 3b.** Data from 81 cisgender heterosexual women ($M_{age}$ = 37.21, $SD_{age}$ = 11.67) and 79 cisgender heterosexual men ($M_{age}$ = 34.5, $SD_{age}$ = 11.71) were included in Study 3b (70% and 67.10% completion rate respectively). This included 56 women and 51 men from the same sample used in Study 3a, and an additional 25 women and 28 men (see Appendix C for more detail on the demographic characteristics of samples for Study 3). Participants were excluded from all analyses if they were missing more than 20% of survey items (*n* = 13, 7.34%) or failed attention checks (*n* = 4, 2.26%). Participants received £1.88 for completing Study 3b via Prolific.

### *Item Development*

**Study 3a.** Initial items were generated through reviewing relevant literature, including objectification theory (Fredrickson & Roberts, 1997), sexualising media reviews (e.g. *Report of the APA Task Force on the Sexualization of Girls*; APA, 2007; Ward, 2016), content analysis on sexually objectifying media (e.g., Aubrey 2010; Aubrey & Frisby, 2011; Aubrey & Hahn, 2016; Flynn et al., 2016; Gestos et al., 2018; Hatton & Trautner, 2011), and existing measures of sexual objectification (e.g., the Interpersonal Sexual Objectification Scale; Kozee et al., 2007; the Sexual Minority Women's Sexual Objectification Experience Scale; Tebbe et al., 2021). This stage aimed to generate as many items as possible (Boateng et al., 2018), and did not focus on how sexually objectifying media experience varies across demographic characteristics (e.g., gender, sexual orientation). A total of 47 items were generated that captured four broad domains: Body Evaluation (body language, comments and

behaviours that sexualize and evaluate one's body and appearance, 20 items), Sexualised Body Representation (one's body and body parts are featured in sexualised ways, 17 items), Importance of Physical Appearance (underscoring the importance of being physically attractive in one's life, 7 items) and Unwanted Explicit Sexual Advances (sexual behaviours that are unwelcome and unreciprocated by the media receivers, 3 items). The research team (consisting of a doctoral student in social psychology, a social psychologist and a health psychologist) discussed each item about whether they were sexually objectifying and revised items for clarification. Ethical approval was obtained from the Psychology Ethics Subcommittee at a University in the North of England.

In Study 3a, participants were first asked to report their demographic information, including gender, gender identity, sexual orientation, whether they have lived in the UK most of their life, age and ethnicity. Participants were provided with the definitions of sexual objectification based on the literature, i.e., " being treated like a sex object, and like your body exists for the use and pleasure of others", and "when you are sexually objectified, your worth is defined by the pleasure and benefit your body gives to others" (paraphrased from Fredrickson & Roberts, 1997,p. 174 - 175), and "your thoughts, feelings and behaviours do not matter, and what your body looks like indicates what kind of person you are" (paraphrased from Bartky,1990, p. 20). Participants were then asked to describe any online sexually objectifying interaction they have experienced on different media platforms (e.g., "Please describe any instances of sexually objectifying interaction you have experienced in video or computer games in the box below") and any instances of sexual objectification targeting other people of the same gender that they have observed on different media platforms (e.g., "Please describe any instances of sexual

objectification that you have observed in TV programs or movies in the box below"), in order to generate new items for evaluation in Study 3b. By analysing the quantitative data collected in Study 3a, a total of 13 new items were generated, which captured Sexualised Body Representation (5 items), Unwanted Explicit Sexual Advances (5 items), and Importance of Physical Appearance (3 items) and Body Evaluation (1 item). Newly generated items were reviewed by the research team.

Study 3a participants were then asked to rate how often they have experienced or observed (i.e., item's frequency), and how sexually objectifying they considered (i.e., item's extremity) each of the 47 draft items. Both frequency and extremity for each item were rated on a scale ranging from 1 (Very infrequently/Not Sexually Objectifying at all) to 100 (Very frequently/ Extremely Sexually Objectifying). Item frequency and extremity rating were used as selection criteria for further item reduction. Two attention checks (e.g., select "Very infrequently" or "Not Sexually Objectifying at all" in response to two questions, respectively) were embedded to check the quality of the online survey responses. Participants who failed at least one of the attention checks were excluded from all analyses.

**Study 3b.** Following the procedures detailed above for Study 3a, Study 3b participants were provided with definitions of sexual objectification and then rated how often they have experienced or observed (i.e., item's frequency) and how sexually objectifying they considered (i.e., item's extremity) each of the 13 new items. One attention check (i.e., select the "Very infrequently" in response to one question) was embedded to check the quality of the online survey responses. Participants who failed the attention checks were excluded from all analyses.

***Item Reduction***

For item reduction, data for the 47 items evaluated in Study 3a and 13 items evaluated in Study 3b were aggregated, and then analysed separately for male and female participants. Specifically, the mean score and standard deviation of frequency and extremity of each item were first calculated for both women and men (see Appendix D for more detail on the frequency and extremity scores of items). Following the sexually objectifying media experience rating procedure (Aubrey, 2006a), the mean score for extremity was multiplied by the mean score for frequency, such that the final cross-product score reflected both participants' frequency of viewing/experiencing the item and the extent to which the item was considered sexually objectifying.

For women and men, the frequency, extremity and cross-products of all items were normally distributed. Items were removed from the item pool if: (1) the extremity score was lower than 60 (out of 100), indicating participants did not consider the item as relatively definite sexually objecting; or (2) the extremity of the item had a large standard deviation (i.e., the standard deviation of the extremity score for the item was higher than one standard deviation above the mean of the standard deviation of all items' extremity scores), indicating disagreement on the extent to which participants considered the item to be sexually objectifying; or (3) the cross-product score for the item was lower than the mean cross-product of the total pool of items, indicating items reflect less extent of the sexually objectifying media experiences.

In women, all items' mean extremity scores were higher than 60 ($M_{extremity}$ = 75.66, $SD_{extremity}$= 5.87), suggesting that women considered all items as moderately sexually objectifying. In order to reduce the item pool, the criterion was therefore modified, and items were removed if the mean extremity for an item was lower than one standard deviation below the mean extremity score of the total pool of items (*n* =

10), the standard deviation for extremity was large (*n* =12), or the cross-product score for the item was lower than mean cross-product of the total pool of items (*n* = 24). Two items were additionally removed due to conceptual redundancy, resulting in a final set of 34 items for the Women-SOM, representing Body Evaluation (13 items), Sexualised Body Representation (14 items) and Importance of Physical Appearance (7 items; see Appendix E for more detail on the initial item pool of the Women-SOMS).

In men, items were removed if the extremity scores fell below 60 (*n* = 48), the extremity scores had a large standard deviation (*n* =7), or the cross-product scores were lower than the mean score of cross-product of total items (*n* = 32). Items were additionally removed due to conceptual redundancy (*n* =2), resulting in a total of 10 items for Men-SOMS development. The item involved Sexualised Body Representation (7 items) and the Importance of Physical Appearance (3 items; see Appendix F for more detail on the initial item pool of the Men-SOMS).

**Discussion**

Study 3 developed the initial item pools for the Women-SOMS (34 items) and Men-SOMS (10 items). The Women-SOMS included items representing Body Evaluation, Sexualised Body Representation and Importance of Physical Appearance. The Men-SOMS included items representing Sexualised Body Representation and the Importance of Physical Appearance. The same items and latent factors in the Women-SOMS and the Men-SOMS are aligned with past literature, indicating that both women and men are portrayed in a sexual way (Aubrey & Frisby, 2011), and their physical appearance is highlighted in media content (Aubrey & Hahn, 2016; Ricciardelli et al., 2010). The different items and latent factors in the Women-SOMS versus the Men-SOMS supports previous content

analysis, indicating that women and men have different experiences with sexually objectifying media (Hatton & Trautner, 2011).

At odd with previous research (Gordon-Messer et al., 2013; Guizzo et al., 2021), neither the Women-SOMS nor Men-SOMS included items representing unwanted explicit sexual advances. All items in the Women-SOMS and the Men-SOMS represent the experiences of sexual objectification witnessed in media, rather than directly experienced. One explanation is that the initial item pools were generated using samples with age ranging from 18 to 59 years old. Younger generation may experience more unwanted explicit sexual advances and sexual harassment on Internet, with the assistance or use of new technologies (Henry & Powell, 2014).

## Study 4

Study 4 involved exploratory factor analysis (EFA) to explore the factor structure of the 34-item Women-SOMS and the 10-item Men-SOMS and identify the optimal items for the final Women-SOMS and Men-SOMS. It was expected that Women-SOMS would capture three domains reflecting the initial item pools: Body Evaluation, Sexualised Body Representation and Importance of Physical Appearance; and Men-SOMS would capture two domains: Sexualised Body Representation and Importance of Physical Appearance.

### Method

#### *Participants*

Data from 340 cisgender heterosexual women ($M_{age}$ = 38.32 years, $SD_{age}$ = 11.52), and 100 cisgender heterosexual men ($M_{age}$ = 38.33 years, $SD_{age}$ = 11.85) were included in the analysis for Study 4. Most women and men identified as White

(89.7% and 85%, respectively; see Appendix G for more details on demographic characteristics of samples for Study 4).

A total of 350 women and 105 men completed Study 4. Participants were excluded from all analysis if they were missing more than 20% of survey items (Women *n* = 7, 1.37%; Men *n* = 5, 4.76% ), failed attention checks (Women *n* = 2, .57%; Men *n* = 0) or unclear Prolific system error (Women *n* = 1, .29%; Men *n* =0 ).

Participants were recruited from the participant crowdsourcing website Prolific, and those who completed the survey received £1.25 via prolific.

Sample sizes followed the guidance that a minimum of 10 participants per item is recommended for conducting EFA (Guadagnoli & Velicer, 1988).

### *Measures*

**SOMS.** The Interpersonal Sexual Objectification Scale (Kozee et al., 2007) was used as the basis for the response scale for the Women-SOMS and the Men-SOMS. As such, participants needed to report how often they experienced each sexually objectifying act within the past year on a five-point Likert- scale (i.e., 1 = never, 2 = rarely, 3 = occasionally, 4 = frequently, 5 = almost always). A mean score for all items is obtained, and the higher mean scores indicate more frequent experiences with sexually objectifying media. Women completed the 34 Women-SOMS items (see Appendix E for item description of the Women-SOMS), and men completed the 10 Men-SOMS items generated in Study 3 (see Appendix F for item description of the Men-SOMS)

**Attention Check.** To check the quality of the online survey responses, two attention checks (i.e., select the “Never” or “Rarely” option to two questions, respectively) were embedded in the Women-SOMS, and one in the Men-SOMS.

Participants who failed at least one of the attention checks were excluded from all analyses.

### *Procedure*

Questionnaires were administered via the Qualtrics online survey platform. Data was collected in January 2021. Ethical approval was obtained from the Psychology Ethics Subcommittee at a University in the North of England. In the study advertisement, participants were recruited to participate in a study about sexualised representations of male/ female bodies in the media.

Participants were asked to report their demographic information, including gender, gender identity, sexual orientation, whether they have lived in the UK most of their life, age and ethnicity. Women were then asked to complete the 34-item Women-SOMS, and men were asked to complete the 10-item Men-SOMS. Items were presented in random order for each participant.

## Results

### *Women-SOMS*

**Data Screening.** For the final 340 participants, scores on all 34 items were normally distributed (Kline, 2011). The Kaiser-Mayer Olkin measure of sampling adequacy was .96, and Bartlett's Test of Sphericity was statistically significant, $\chi^2$ (561) = 8298.18, $p < .001$, indicating data were appropriate for conducting factor analysis (Tabachnick et al., 2007).

**EFA.** EFA was conducted using IBM SPSS Statistics 26. Principal axis factoring method was used for factor extraction as this method can provide a factor solution uncontaminated by error variance and unique variance (Tabachnick et al., 2007). Oblique rotation was employed because factors were expected to be correlated, and Promax was chosen as it resulted in a simpler structure and fewer

cross-loading variables (i.e., values with loadings of .30 or higher on more than one factor) than direct oblimin in the current dataset (Brown, 2009). Parallel analysis (Horn, 1965) was used in conjunction with Kaiser's eigenvalue criterion to determine the factors to retain. The Kaiser's eigenvalue criterion suggested retaining up to five factors. Based on 500 random data sets and 95% percentile, the parallel analysis (using principal axis/common factor analysis) found the first five factors of the actual data had eigenvalues (15.48, 2.57, 1.81, 1.49, 1.23) greater than the eigenvalues generated from the random data (.84, .74, .66, .60, .55). Therefore, five factors were extracted, accounting for 66.42% of the variance. However, it should be noted that the parallel analysis using principal axis factoring trends indicates more factors that warranted (Buja & Eyuboglu, 1992).

Pattern matrix loading was examined to make item retention decisions. For a sample size of 300, a pattern factor loading value of .298 is considered significant (Stevens, 2009). Items were retained if they had pattern loading values over .40 on the primary factor and values less than .3 on other factors to maximise confidence in the factors derived from the solution. Of the initial 34 items, 31 items met the criteria (with 8 items on Factor 1, 7 items on Factor 2, 8 items on Factor 3, 6 items on Factor 4, and 2 items on Factor 5). The 5-factor solution revealed by the first round of EFA did not display a clear and interpretable pattern. The 31 items were further screened for conceptual and statistical redundancy (i.e., those items with an inter-item correlation above .70). In the item clusters with high inter-item correlations, only the item with the highest factor loading value on its factor was retained. A cluster of 8 items on Factor 1 had similar conceptual meaning and inter-item correlations greater than .67. The item with the highest factor loading value on Factor 1 was retained (i.e., Item 12), resulting in the deletion of 7 items. Similarly, items on Factor 2 ($n$ = 1),

Factor 3 (*n* = 2) and Factor 5 (*n* = 3) were deleted due to high inter-item correlations with other items and lower factor loading value. Overall, 21 items were retained (with 2 items on Factor 1, 6 items on Factors 2, 3, 4 respectively, and 1 item on Factor 5).

The 21 items were entered into the second EFA, and 4 factors were extracted, accounting for 63.90% of the variance. Item communalities and factor loadings were then examined to seek a more parsimonious solution that accounts for more variance. Items were deleted if their communalities were below .4 (i.e., Item 23) or cross-loaded into two factors (i.e., Item 25).

The remaining 19 items were entered into the third EFA, and 3 factors were extracted, accounting for 61.30% variance. One item (i.e., Item 6) was deleted as the communality was approximately .4 and had the lowest factor loading value (.49) on its factor.

The remaining 18 items were entered into the fourth EFA, and 3 factors were extracted, accounting for 62.35% variance. One item (i.e., Item 5) was deleted because of the low communality (.42) and lowest factor loading value (.50) on its factor.

The remaining 17 items were entered into the fifth EFA, and 3 factors were extracted, accounting for 63.52% variance. Two items with the lowest factor loading values on Factor 1 (i.e., Item 31) and Factor 2 (i.e., Item 7) were deleted, as achieving an equal number of items for each factor likely makes calculation and interpretation of the scale score simpler for users.

Given sufficient items loaded on each factor, and clear interpretable patterns (Williams et al., 2010), the retained 15 items were entered into the final EFA, and 3 factors for extraction were specified. The three factors solution accounted for 64.94% variance; Factor 1 accounted for 46.47% of variance; Factor 2 accounted for 10.79%

of variance, and Factor 3 accounted for 7.78% of variance. Table 1 displays the Women-SOMS, along with the factor loadings, for each item. Based on the items associated with each factor, Factor 1 was named as ‘Importance of Physical Appearance’, Factor 2 as ‘Sexualised Body Representation’, and Factor 3 as ‘Body Evaluation’.

**Table 1**

*Study 3 Exploratory Factor Pattern Matrix Loading and Cross Loading for Women-SOMS items*

| Women-SOMS Items | Factor loading | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Factor 1: Importance of Physical Appearance | | | |
| 34. How often have you noticed in Print/online articles and online comments, women are encouraged to attract romantic partners by improving their physical attractiveness? | **.79** | -.02 | .07 |
| 32. How often have you noticed in Print/online articles and online comments, people are only interested in women if they are physically attractive? | **.77** | .01 | -.01 |
| 29. How often have you noticed in Print/online articles and online comments, women are encouraged to do something to look more physically attractive (e.g., exercising, dieting, or wearing certain clothing)? | **.75** | .02 | -.08 |
| 28. How often have you noticed in Print/online articles and online comments, people talk about the importance of physical appearance in women's desirability? | **.75** | -.03 | .09 |
| 33. How often have you noticed in Print/online articles and online comments, people talk about women's main concern should be their appearance? | **.74** | .09 | -.01 |
| Factor 2: Sexualised Body Representation | | | |
| 22. How often have you seen in advertisements, female models' bodies or sexuality are highlighted (e.g., body exposure, revealing clothes), while the product itself is less focused on? | -.02 | **.77** | -.01 |
| 19. How often have you noticed in magazines and advertisements, female models pose in a sexually suggestive way? | .06 | **.73** | .01 |
| 18. How often have you noticed in magazines and advertisements, female models wear revealing clothes, or expose their bodies? | .12 | **.70** | -.06 |
| 21. How often have you noticed in advertisements, female models are represented as decorations, and their body or sexuality are used to sell the products? | -.04 | **.67** | .11 |
| 20. How often have you noticed in magazines and advertisements, female models are featured with sexually suggestive facial expressions (e.g., flirtatious winking, licking lips)? | -.03 | **.61** | .11 |
| Factor 3: Body Evaluation | | | |
| 8. How often have you noticed in music videos, female models or music artists are looked at in a sexual way by others (e.g., staring, leering, gazing, ogling)? | -.07 | .08 | **.77** |
| 4. How often have you noticed in TV programs and movies, female characters' physical appearance is evaluated by other characters? | .10 | -.06 | **.75** |

| Women-SOMS Items | Factor loading | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| 1. How often have you noticed in TV programs and movies, female characters' bodies are looked at in a sexual way by other characters (e.g., staring, leering, gazing, ogling)? | -.03 | .07 | **.70** |
| 12. How often have you heard the music lyrics mentioning the sexualised body or body parts of women? | -.06 | .08 | **.68** |
| 27. How often have you seen on social media, people make inappropriate sexual comments about women's bodies or their sexuality? | .19 | -.04 | **.58** |

*Note*. *N* = 340. The extraction method was principal axis factoring with an oblique (Promax) rotation. Factor loadings above .40 are in bold.

The Women-SOMS Total and subscales were moderately to strongly correlated, with *r* ranging from .54 to .86 (see Table 2). The internal consistency of the Women-SOMS Total and three subscales were good, with all Cronbach's alpha (*α*) values exceeding .8, and the intercorrelations of EFA factors ranged from .59 to .69.

**Table 2**

*Study 3 Scale Correlations, Descriptive Statistics, Internal Consistency and Factor Intercorrelations for Women-SOMS*

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Women-SOMS Total | | | | |
| 2. Women-SOMS Importance of Physical Appearance | .84* | | (.59) | (.61) |
| 3. Women-SOMS Sexualised Body Representation | .84* | .54* | | (.69) |
| 4. Women-SOMS Body Evaluation | .86* | .57* | .64** | |
| Cronbach's *α* | .88 | .85 | .85 | .92 |
| *M* | 3.71 | 3.79 | 3.71 | 3.63 |
| *SD* | 0.58 | 0.75 | 0.62 | 0.68 |
| Scale range | 1-5 | 1-5 | 1-5 | 1-5 |

*Note. N* = 340. Correlations in parentheses above the diagonal reflect EFA factor intercorrelations. Women-SOMS Total = Women-Sexually Objectifying Media Experience Total Score; Women-SOMS Importance of Physical Appearance = Women-Sexually Objectifying Media Experience Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Women-Sexually Objectifying Media Experience Sexualised Body Representation subscale; Women-SOMS Body Evaluation = Women-Sexually Objectifying Media Experience Body Evaluation subscale.

* $p < .01$. ** $p < .001$.

***Men-SOMS***

**Data Screening.** Of the final 100 participants, data of all 10 items were normally distributed (Kline, 2011). The Kaiser-Mayer Olkin measure of sampling adequacy was .88, and Bartlett's Test of Sphericity was statistically significant, $\chi^2$ (45) = 421.49, $p < .001$, indicating data were appropriate for conducting factor analysis (Tabachnick et al., 2007).

**EFA.** Principal axis factoring method with Promax was used for factor extraction and rotation. The Kaiser's eigenvalue criterion suggested retaining up to two factors. Based on 500 random data sets and 95% percentile, the parallel analysis (using principal axis/common factor analysis) found, the first two factors of the actual data had eigenvalues (4.94, 1.06) greater than the eigenvalues generated from the random data (.82, .58). Therefore, two factors were extracted, accounting for 60.01% of variance. Factor 1 represented Sexualised Body Representation, and Factor 2 represented the Importance of Physical Appearance.

For a sample of 100, the factor loading of .512 is considered significant (Stevens, 2012). Item communality (.4 or lower) is also examined for item deletion. Of the initial 10 items, two items (i.e., Item 8 and Item 9) were deleted because their factor loading values were approximately .4. Those resulted in 8 items retained (with 7 items in Factor 1 and 1 item in Factor 2).

The 8 items were entered into the second EFA. One factor was extracted, accounting for 54.62% variance. One item (i.e., Item 10) was deleted as its communality was below .4 and the factor loading value was .4. Those resulted in 7 items retained on a single factor.

The 7 items were entered into the third EFA. One factor was extracted, accounting for 59.63% variance. One item (i.e., Item 1) was deleted as its communality was approximately .4, resulting in 6 items on a single factor.

The remaining 6 items were entered into the final EFA, and one factor for extraction was specified. The single factor structure accounted for 61.73% variance. All items represented men's sexually objectifying media experience of the body being sexually represented. Table 3 displays the Men-SOMS, along with factor loading for each item. The internal consistency of Men-SOMS was excellent, with Cronbach's $\alpha$ equalling .87 and inter-item correlation ranging from .42 to .66.

**Table 3**

*Study 4 Exploratory Factor Pattern Matrix Loading for Men-SOMS items*

| Men-SOMS Items | Factor Loading |
|---|---|
| 6. How often have you noticed in advertisements, male models are represented as decorations, and their body or sexuality are used to sell the products? | .80 |
| 7. How often have you noticed in advertisements, male models' bodies or sexuality are highlighted (e.g., body exposure, revealing clothes), while the product itself is less focused on? | .76 |
| 5. How often have you noticed in magazines and advertisements, male models pose in a sexually suggestive way? | .74 |
| 4. How often have you noticed in magazines and advertisements, male models wear revealing clothes, or expose their bodies? | .73 |
| 2. How often have you noticed in music videos, male models or music artists wear revealing clothing, or expose their bodies? | .72 |
| 3. How often have you noticed in music videos, male models are represented as decorations, and their bodies and sexuality are used to attract audiences? | .66 |

*Note*. $N$ = 100. The extraction method was principal axis factoring with an oblique (Promax) rotation.

## Discussion

Study 4 explored the factor structure of the Women-SOMS and the Men-SOMS. A 15-item three-factor structure was obtained for the Women-SOMS. Items clustered on the same factor suggest that Factor 1 represents the Importance of Physical Appearance, Factor 2 represents Sexualised Body Representation, and Factor 3 represents Body Evaluation. At odds with the assumed two-factor structure, a 6-item single-factor structure was obtained for the Men-SOMS, with all items representing Sexualised Body Representation. Male participants in Study 3 perceived that underscoring the importance of physical appearance in men's life was sexually objectifying. However, given the small number of items ($n$ = 3) representing the Importance of Physical Appearance in the initial Men-SOMS item pool, and the small eigenvalue ($\lambda$ = 1.057) of the Factor in the first round of EFA, it is possible that the latent factor of the Importance of Physical Appearance does not represent a meaningful form of sexual objectification in men's media experience.

# Study 5

In Study 5, a confirmatory factor analysis (CFA) was conducted to verify the three-factor structure of the Women-SOMS and the single-factor structure of the Men-SOMS obtained with EFA. The construct validity (including convergent, discriminant validity, differentiation by known groups), criterion validity (including predictive and incremental validity), and reliability (including internal consistency and 2-week test-retest reliability) of the final version of the Women-SOMS and Men-SOMS were also examined.

## Hypotheses

### *Confirmatory Factor Analysis*

Following the results of the EFA, Hypothesis 1 predicted that a three-factor structure of the Women-SOMS and a single-factor structure of the Men-SOMS would provide an acceptable fit to data from samples of women and men, respectively. For the Women-SOMS, the fit of a higher-order model with three first-order factors loaded into one second-order factor and a unidimensional model were also explored.

***Convergent Validity***

The internalisation of cultural standards of appearance (the extent to which individuals consider the societal norms of size and appearance to be appropriate standards for their own size and appearance; Thompson & Stice, 2001), body shame (feeling of shame when individuals' bodies do not conform to the internalised appearance; McKinley & Hyde, 1996), self-objectification (the internalisation of a third person's perspective on one's body; Fredrickson & Roberts, 1997) and body surveillance (habitually monitoring one's body; McKinley & Hyde, 1996) are associated with more frequent experiences of sexually objectifying media in women (Aubrey 2006a; Aubrey, 2007; Vandenbosch & Eggermont, 2012 ) and men (Aubrey 2006a; Vandenbosch & Eggermont, 2013). As previously discussed, the Interpersonal Sexual Objectification Scale (ISOS; Kozee et al., 2007) can also be amended to capture individuals' experiences of witnessing interpersonal sexual objectification in media contexts. Accordingly, Hypothesis 2, 3, 4, 5 and 6 predicted satisfactory convergent validity of the Women-SOMS and the Men-SOMS with the internalisation of cultural standards of appearance, body shame, self-objectification and body surveillance, and the interpersonal sexual objectification witnessed in media, operationalised as correlations exceeding $r = .3$, recommended by Cohen (1992).

### *Discriminant Validity*

The Women-SOMS Body Evaluation subscale and the interpersonal sexual objectification witnessed in media capture a theoretically similar construct, i.e., body evaluation witnessed in media. In contrast, the other two Women-SOMS subscales capture different forms of sexual objectification. Accordingly, Hypothesis 7 predicts discriminant validity of the Women-SOMS, with the interpersonal sexual objectification witnessed in media being more strongly correlated with the Women-SOMS Body Evaluation subscale than the other two Women-SOMS subscales. This was operationalised as significant differences between each subscale and interpersonal sexual objectification witnessed in the media, using Fisher's *z.*

While the Women-SOMS/Men-SOMS and measures of exposure to antisocial media content (den Hamer et al., 2017) both focus on the individuals' media experience, they differ in their focus on sexually objectifying content versus more broadly antisocial content. Similarly, while the Women-SOMS/Men-SOMS and Interpersonal Sexual Objectification focus on the sexual objectification experience, they capture different aspects of objectification. Accordingly, Hypotheses 8 and 9 predict discriminant validity of the Women-SOMS and the Men-SOMS with antisocial media content exposure and interpersonal sexual objectification experience, operationalised as correlations below $r = .2$. recommended by Cohen (1992)**.**

### *Differentiation by Known Groups*

Sexual objectification can be found in almost every medium (Ward, 2016), and it is likely that individuals who spend more time on media (i.e., heavy media users) will experience more sexual objectification than those spending less time on media (i.e., light media users). Accordingly, Hypothesis 10 predicts significantly

greater Women-SOMS and Men-SOMS scores in higher media users than lower media users.

### *Predictive Validity*

In line with the Objectification Theory (Fredrickson & Roberts, 1997), research indicates that sexual objectification predicts body image concerns (i.e., internalisation of sociocultural standards of appearance, self-objectification and body surveillance) in women (Aubrey, 2006a; Aubrey, 2007; Vandenbosch & Eggermont, 2012) and men (Aubrey, 2006a; Vandenbosch & Eggermont, 2013). Accordingly, Hypotheses 11, 12, and 13 predict the predictive validity of the Women-SOMS and the Men-SOMS, such that scores on each scale will significantly predict the internalisation of sociocultural standards of appearance, self-objectification and body surveillance.

### *Incremental Validity*

The Women-SOMS and Men-SOMS were expected to capture more facets of sexually objectifying media experiences than the interpersonal sexual objectification witnessed in media. Accordingly, Hypotheses 14, 15 and 16 predict the incremental validity of Women-SOMS and Men-SOMS in predicting the internalisation of sociocultural standards of appearance, self-objectification and body surveillance above and beyond the interpersonal sexual objectification witnessed in media after controlling for the interpersonal sexual objectification experiences occurred in real-life.

### *Internal Consistency*

Hypothesis 14 predicts acceptable internal consistency of the Women-SOMS and the Men-SOMS, operationalised as Cronbach's $\alpha$ exceeding .70, recommended by Cronbach (1951).

### *Test-retest Reliability*

Hypothesis 15 predicts acceptable test-retest reliability of the Women-SOMS and the Men-SOMS over a 2-week test-retest interval, operationalised as the Intraclass Correlation Coefficient (*ICC*) exceeding .6, recommended by (Cicchetti, 1994).

## Method

### *Participants*

Data from 331 cisgender heterosexual women ($M_{age}$ = 38.24 years, $SD_{age}$ = 11.24), and 328 cisgender heterosexual men ($M_{age}$ = 38.09, $SD_{age}$ = 11.75) were included at Time 1. Most women and men participants identified as White (93.4% and 89.6%, respectively). Participants' education and household income were also reported (see Appendix H for more detail on demographic characteristics of samples for Study 5). Participants were recruited from the participant crowdsourcing website Prolific. A total of 697 participants completed the Time 1 survey. Participants were excluded from all analyses if they were missing more than 20% of survey items (*n* = 33, 5.01%), missing more than 5 items on a single scale (*n* = 0), or failed attention checks (*n* = 0). If participants completed the survey more than once (*n* = 5, .72%), only the first completion was included in the analysis.

Data from 288 cisgender heterosexual women ($M_{age}$ = 39.04 years, $SD_{age}$ = 11.16), and 299 cisgender heterosexual men ($M_{age}$ = 38.66, $SD_{age}$ = 11.83) were included at Time 2 (87.01% and 91.16% completion rate respectively). Most women

and men identified as White (94.1% and 91.3%, respectively). A total of 641 participants completed Time 2. Participants were excluded from all analyses if they were missing more than 20% of survey items (*n* = 16, 2.50%), failed attention check (*n* = 10, 1.56%), or completed the survey more than once (*n* = 23, 3.59%). A self-generated ID entered in both surveys was used to match participants' data across time points. Time 2 data from 5 participants (0.84%) could not be matched with Time 1 data and was also excluded, yielding a final sample of 587 participants for conducting test-retest reliability analysis.

Participants who completed both surveys received £3.31, and those who completed the Time 1 survey only received £0.44 via Prolific.

According to the percentage of heavy media users (21%) and light media users (17%) reported by Rideout et al. (2010), heavy media users (the upper 20% of participants with the highest media use time) and low media users (the lowest 20% of participants with the lowest media use time) were categorised. The medium effect size (*d* = .5) in the SOMS score difference between two groups of media users was used to calculate the required sample size. G*Power (version 3.1; Heinrich Heine University Dusseldorf, Germany) analysis showed a minimum requirement of 64 participants per group to detect *d* = .5, with 80% power and $\alpha$ = .05, in an independent t-test. An overall minimum sample of *n* = 320 per gender group was required. This sample size met the minimum required sample of 200 for CFA (Barrett, 2007) and relevant correlation and regression analyses.

***Measures***

For the following measures, higher mean scores indicate greater levels of the measured construct unless explicitly stated.

**The Women-Sexually Objectifying Media Scale.** The Women-Sexually Objectifying Media Scale (Women-SOMS) is a 15-item measure of women's sexually objectifying media experience composed of three subscales: Body Evaluation, Sexualised Body Representation and Importance of Physical Appearance. Participants reported the frequency of each experience (e.g., "How often have you noticed in Print/Online articles and online comments, women are encouraged to attract romantic partners by improving their physical attractiveness?") within the past year using 5-point Likert scales ranging from "never" (1) to "almost always" (5).

**The Men-Sexually Objectifying Media Scale.** The Men-Sexually Objecting Media Scale (Men-SOMS) is a 6-item measure of men's sexually objectifying media experience. Participants reported the frequency of each experience (e.g., "How often have you noticed in advertisements, male models are represented as decorations, and their body or sexuality are used to sell the products?") within the past year using 5-point Likert scales ranging from "never" (1) to "almost always" (5).

**The Internalisation of Sociocultural Standards of Appearance.** The Internalisation- General subscale of The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ3- IG; Thompson et al., 2004) has 9 items. Participants rated their levels of agreement with each statement (e.g., "I would like my body to look like the people who are on TV") on a 5-point Likert-type scale ranging from "totally disagree" (1) to "totally agree" (5). Cronbach's $\alpha$ in the current samples of women ($\alpha$ = .96) and men ($\alpha$ = .95) were excellent.

**Body Shame.** The Objectified Body Consciousness Body Shame Scale (OBC-Body Shame; McKinley & Hyde, 1996) is an 8-item measure of body shame. Participants rated their level of agreement with each item (e.g., "I never worry that something is wrong with me when I am not exercising as much as I should") using a

7-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7). Cronbach’s *α* in the current samples of women (*α* = .88*)* and men (*α* = *.86)* were good.

**Self-Objectification.** The Self-Objectification Beliefs and Behaviours Scale (SOBBS; Lindner & Tantleff-Dunn, 2017) has 14-item and measures the internalisation of an observer’s perspective on the body and treating the body as if it is capable of representing the self. Participants rated their level of agreement with each item (e.g., “I try to imagine what my body looks like to others”) using a 5-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (5). Cronbach’s *α* in the current samples of women (*α* = .92) and men (*α* = .92) were excellent.

**Body Surveillance.** The Objectified Body Consciousness Body Surveillance Scale (OBC-Body Surveillance; McKinley & Hyde, 1996) is a 9-item measure of body surveillance. Participants rated their level of agreement with each item (e.g., “I rarely think about how I look”) using a 7-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7). Cronbach’s *α* in the current samples of women (*α* = .87*)* and men (*α* = .89) were excellent.

**Interpersonal Sexual Objectification Experience.** The Interpersonal Sexual Objectification Scale (ISOS; Kozee et al., 2007) has 15 items and measures the interpersonal sexual objectification directed at oneself. Participants reported the frequency of each experience (e.g., “How often have you been whistled at while walking down a street?”) within the past year using 5-point Likert scales ranging from “never” (1) to “almost always” (5). For men, one item was modified to better capture the gendered sexual objectification experience (the term “breast” was changed to “chest” in the item “How often have you noticed someone staring at your breasts

when you are talking to them?"; Davidson et al., 2013). Cronbach's *α* in the current samples of women (*α* = .96) and men (*α* = .89) were excellent.

**Interpersonal Sexual Objectification Witnessed in Media.** The current research integrated the scale format of the ISOS (e.g., instruction and rating scale) and items of the Sexually Objectifying Behaviours Checklist (e.g., "catcalling, wolf-whistling or car honking" and "sexual remark made about body"; Holland et al., 2007) for measuring the frequency of interpersonal sexual objectification witnessed in media. There are 6 items, and participants reported the frequency of each behaviour within the past year. Cronbach's *α* in the current samples of women (*α* = .90*)* and men (*α* =.90) were excellent.

**Antisocial Media Content Exposure.** The Antisocial subscale of Content-based Media Exposure Scale 2 (C-ME2-AS; Den Hamer et al.,2017) has 12 items and measures an individual's exposure to antisocial media content. Participants reported the frequency of each item (e.g., "How often do you watch on the Internet/TV/games/mobile phone/DVD, people who fight?") using a 5-point Likert scale ranging from "never" (1) to "very often" (5). Cronbach's *α* in the current samples of women (*α* = .93*)* and men (*α = 92)* were excellent.

**Daily Media Usage Hours.** The Daily Media Usage Hours were measured following Rosen et al. (2013). Participants reported the amount of time they spent on a typical day using different media and technology (e.g., going online) on a scale (not at all, 1-30 mins, 31mins to 1h, 1-2 h, 3h, 4-5h, 6-8h, more than 8 h). Responses were coded into hours of use, including not at all (0), 1-30 mins (.25), 31 min to 1 h (.75), 1-2h (1.5), 3h (3), 4-5h (4.5), 6-8h (7), more than 8h (9). A higher total amount of hours indicates greater levels of daily media usage.

**Attention Check.** To check the quality of the online survey responses, two attention checks (i.e., select the “Rarely” or “Not at all” option to two questions, respectively) were embedded in Time 1, and one in Time 2. Participants who failed at least one of the attention checks were excluded from all analyses.

### *Procedures*

Data were collected at two-time points, 2 weeks apart, via the Qualtrics online survey platform. Data collection started in March 2022 and ended in April 2022. Ethical approval was obtained from the Psychology Ethics Subcommittee at a University in the North of England.

In the Time 1 survey, participants were asked to report their demographic information, including gender, gender identity, sexual orientation, whether they have lived in the UK most of their life, age, ethnicity, education and annual household income. They were then asked to complete the SOMS first, followed by the other questionnaires outlined in the measures section, in random order for each participant. Items of all questionnaires were also presented in random order for each participant. Participants were invited to complete the Time 2 survey 2 weeks after the Time 1 survey was completed. In Time 2, respondents completed the SOMS only.

## Results

### *Data Screening*

Data from each Women-SOMS item and Men-SOM item were normally distributed, meeting the assumptions of univariate normality for CFA. Mardia’s (1970) normalised multivariate kurtosis estimate of 44.14 and 8.53 indicates that neither the Women-SOMS nor Men-SOMS data showed multivariate normality; thus, a Maximum likelihood (ML) estimation was used (Muthen & Kaplan, 1992). Data from

other measured outcome variables were mostly normally distributed, with values of skewness ranging from -2 to 2 and values of kurtosis ranging from - 1 to 3.5.

***Confirmatory Factor Analysis***

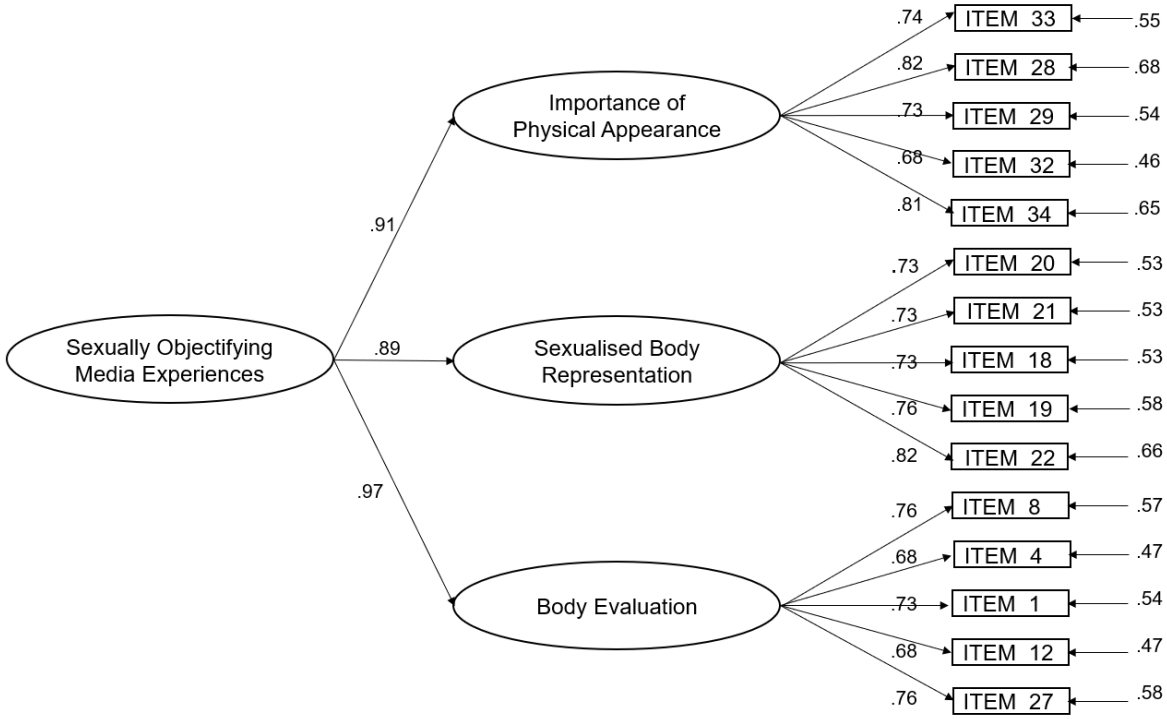
IBM SPSS AMOS 27 was used to conduct the CFA. The model fit was evaluated using the Chi-square test of exact fit ($\chi^2$), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Residual (SRMR). A CFI and TLI exceeding .95 (Hu & Bentler, 1999) and RMSEA and SRMR below .08 (Browne & Cudeck, 1992; Hu & Bentler, 1999) indicate an acceptable fit. The Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) were used to compare non-nested models, with lower AIC and BIC indicating better model fit.

**Women-SOMS.** The fit of the three-factor correlational model based on the EFA was first tested. This three-factor correlational model yielded a close fit: $\chi^2$ (87, $N$ = 331) = 137.63, $p$ <.001, CFI = .981, TLI = .977, RMSEA = .042 (90% CI: .028, .055), SRMR = .032, AIC = 203.630, BIC = 329.100. Though the $\chi^2$ test was significant, $\chi^2$ statistics is affected by sample size, such that large samples may yield statistically significant results even with well-fitting models (Hair, 2014). The item content, factor loadings, and modification indices were screened for potential model improvement. Although the largest modification index observed in the model suggested the covariance of error terms of Item 4 and Item 27, no change was made, as the correlation of error terms could affect the understanding of the phenomenon in question (Hair, 2014). Factor intercorrelations in the model were as follows: .81 (Importance of Physical Appearance with Sexualised Body Representation), .89 (Importance of Physical Appearance with Body Evaluation), and .86 (Sexualised Body Representation with Body Evaluation).

A higher-order model was then explored in which the three first-order factors were loaded onto a second-order factor (i.e., general sexually objectifying media experience). The fit for higher-order model was identical to that of the previous three-factor correlational model.: $\chi^2$ (87, $N$ = 331) = 137.63, $p$ <.001, CFI = .981, TLI = .977, RMSEA = .042 (90% CI: .028, .055), SRMR = .032, AIC = 203.630, BIC = 329.100. All three first-order factors loaded significantly on the second-order factor. Data in the model explained a large variance in the specific factors: 83% of the Importance of Physical Appearance, 79% of Sexualised Body Representation, and 94% of Body Evaluation. Factor loading for the three-factor correlational model and the higher-order model for the Women-SOMS were identical and are reported in Figure 1.

**Figure 1**

*Study 5 Confirmatory Factor Analysis Parameters for the Higher Order Model for the Women-SOMS*




*Note. N* = 331. Factor loadings depicted here were identical to those in the three-factor correlated model. Correlation among the latent factors in the three-factor correlation model were as follows: .81 Importance of Physical Appearance with Sexualised Body Representation, .89 Importance of Physical Appearance with Body Evaluation, and .86 Sexualised Body Representation with Body Evaluation.

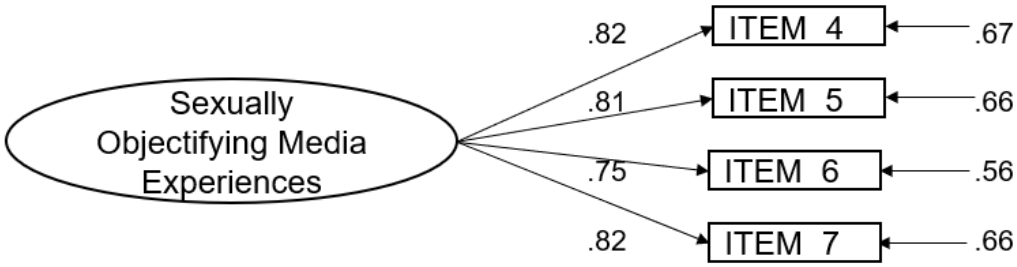
The unidimensional model was finally explored with all 15 Women-SOMS items loading on a general sexually objectifying media experience factor. This unidimensional model yielded poor fit: $\chi^2$ (90, $N$ = 331) = 219.756, $p$ <. 001, CFI = .925, TLI = .913, RMSEA = .082 (90% CI: .072, .093), SRMR = .047, AIC =351.756, BIC =465.820.

In line with Hypothesis 1, the three-factor correlational model of Women-SOMS was supported and demonstrated an acceptable fit to data. The 15-item higher-order model with three first-order factors and one second-order model was retained. This higher-order model supported the use of the 15 Women-SOMS items to compute three subscale scores, and the use of three subscale scores to compute women's general sexually objectifying media experience.

**Men-SOMS.** The fit of the 6-item single-factor model was first tested. This model yielded a relatively poor fit: $\chi^2$ (9, $N$ = 328) = 51.75, $p$ <.001, CFI = .962, TLI = .937, RMSEA = .121 (90% CI: .090, .153), SRMR = .032, AIC =75.75, BIC = 121.27. The item content, item factor loadings and modification indices were screened and identified two areas for potential model improvement. Item 2 (see Appendix F) was first deleted as it had the lowest loading on the factor and shared a lower proportion of common variance with the latent factor. Both Item 3 and Item 6 had the same loadings on the factor. As Item 6 was also included in Women-SOMS, and there may be benefits in having some overlap between the Women-SOMS and the Men-SOMS, Item 3 was deleted, and Item 6 was retained. The 4- item single factor model yielded an acceptable fit: $\chi^2$ (2, $N$ = 328) = 6.430, $p$ <.001, CFI = .993, TLI = .980, RMSEA = .082 (90% CI: .015, .157), SRMR = .016, AIC =22.430, BIC = 52.774. The factor loading of the 4-item single factor model for Men-SOMS is reported in Figure 2.

**Figure 2**

*Study 5 Confirmatory Factor Analysis Parameters for the Single Factor Model for the Men-SOMS*




*Note. N* = 328.

In line with Hypothesis 1, the single factor model of the Men-SOMS was supported; however, 2 items were deleted for model improvement. This 4-item single factor model supported the use of 4 Men-SOMS items to compute men's sexually objectifying media experience.

### *Psychometric Validity and Reliability*

#### Women-SOMS.

***Convergent Validity*.** Scores on the Women-SOMS Total and subscales were moderately-to-strongly and positively correlated with interpersonal sexual objectification witnessed in media, but weakly correlated with the internalisation of sociocultural ideals of appearance, body shame, self-objectification and body surveillance (see Table 4). In line with Hypothesis 6, convergent validity with interpersonal sexual objectification witnessed in media was supported. At odds with Hypotheses 2, 3, 4 and 5, the convergent validity with the other constructs was not supported.

**Table 4**

*Study 5 Descriptive Statistics and Bivariate Correlations among Variables in Cisgender Women*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Women-SOMS Total | 331 | 3.78 | 0.62 | | | | | | | | | | | |
| 2. Women-SOMS Importance of Physical Appearance | 331 | 3.80 | 0.71 | .91*** | | | | | | | | | | |
| 3. Women-SOMS Sexualised Body Representation | 331 | 3.80 | 0.66 | .89*** | .71*** | | | | | | | | | |
| 4. Women-SOMS Body Evaluation | 331 | 3.75 | 0.68 | .92*** | .76*** | .74*** | | | | | | | | |
| 5. SATAQ3-IG | 331 | 3.10 | 1.12 | .29*** | .27*** | .22*** | .31*** | | | | | | | |
| 6. SOBBS | 331 | 2.82 | 0.79 | .26*** | .23*** | .20*** | .29*** | .73*** | | | | | | |
| 7. OBC-Body Shame | 331 | 4.00 | 1.38 | .22*** | .20*** | .17** | .22*** | .65*** | .73*** | | | | | |
| 8. OBC-Body Surveillance | 331 | 4.45 | 1.19 | .24*** | .20*** | .16** | .28*** | .70*** | .76*** | .64*** | | | | |
| 9. ISOS | 331 | 2.18 | 0.73 | .52*** | .43*** | .44*** | .56*** | .28*** | .30*** | .25*** | .29*** | | | |
| 10. Interpersonal sexual objectification witnessed in media | 331 | 3.05 | 0.83 | .66*** | .58*** | .55*** | .68*** | .30*** | .28*** | .24*** | .25*** | .56*** | | |
| 11. CME-2-AS | 331 | 2.44 | 0.77 | .25*** | .18** | .21*** | .31*** | .14** | .13* | .100 | .11* | .23*** | .31*** | |
| 12. Daily Media Usage Hour | 331 | 14.09 | 8.41 | .26*** | .23*** | .19*** | .28*** | .19** | .24*** | .20*** | .21*** | .27*** | .31*** | .30*** |

*Note*. Women-SOMS Total = Women-Sexually Objectifying Media Experience Total Score; Women-SOMS Importance of Physical Appearance = Women-Sexually Objectifying Media Experience Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Women-Sexually Objectifying Media Experience Sexualised Body Representation subscale; Women-SOMS Body Evaluation = Women-Sexually Objectifying Media Experience Body Evaluation subscale; SATAQ3-IG= Internalisation General Subscale of The Sociocultural Attitudes

Towards Appearance Scale-3; SOBBS = Self-Objectification Beliefs and Behaviors Scale; OBC-Body Shame= Objectified Body Consciousness Body Shame Scale; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; ISOS = Interpersonal Sexual Objectification Scale; CME-2-AS= The Antisocial Subscale of Content-based Media Exposure Scale 2.

*$p$< .05. **$p$ < .01. ***$p$< .001.

***Discriminant Validity.*** Fisher's *z* tests were performed to assess differences in correlations between interpersonal sexual objectification witnessed in media and the Women-SOMS subscales. Interpersonal sexual objectification witnessed in media had a significantly stronger correlation with the Body Evaluation subscale than the Importance of Physical Appearance subscale ($z = 3.53$, $p < .001$), and Sexualised Body Representation subscale ($z = 4.35$, $p < .001$). In line with Hypothesis 7, the discriminant validity of the Women-SOMS subscales was therefore supported.

Scores on the Women-SOMS Total and subscales were weakly-to-moderately and positively correlated with anti-social media content exposure, and moderately and positively correlated with interpersonal sexual objectification experience (see Table 4). At odds with Hypotheses 8 and 9, the discriminant validity was not supported.

***Differentiation by Known Groups.*** Independent t-tests were performed to assess differences in the Women-SOMS scores as a function of heavy versus light daily media usage. Heavy media users reported significantly higher scores on the Women-SOMS Total and three subscales than light media users (see Table 5). In line with Hypothesis 10, the differentiation by media usage time was therefore supported.

**Table 5**

*Study 5 Independent T-tests of differences in scores of the Women-SOMS and Men-SOMS between heavy media users and light media users*

| Variable | Heavy media user | | | Light media user | | | *df* | *t* | *p* | Cohen's *d* |
|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | *M* | *SD* | *n* | *M* | *SD* | | | | |
| Women-SOMS Total | 70 | 3.99 | 0.61 | 67 | 3.55 | 0.67 | 135 | 4.05 | *<.001* | .66 |
| Women-SOMS Importance of Physical Appearance | 70 | 4.03 | 0.67 | 67 | 3.54 | 0.79 | 135 | 3.93 | <.001 | .62 |
| Women-SOMS Sexualised Body Representation | 70 | 3.93 | 0.67 | 67 | 3.63 | 0.73 | 135 | 2.53 | .013 | .41 |
| Women-SOMS Body Evaluation | 70 | 4.02 | 0.68 | 67 | 3.47 | 0.68 | 135 | 4.65 | .<.001 | .79 |
| Men-SOMS | 68 | 3.15 | 0.88 | 69 | 2.85 | 0.81 | 135 | 2.08 | .040 | .37 |

*Note*. Women-SOMS Total = Women-Sexually Objectifying Media Experience Total Score; Women-SOMS Importance of Physical Appearance = Women-Sexually Objectifying Media Experience Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Women-Sexually Objectifying Media Experience Sexualised Body Representation subscale; Men-SOMS = Men-Sexually Objectifying Media Experience Scale.

***Predictive Validity.*** Simple regressions were performed with body image constructs (internalisation of sociocultural ideals of appearance, self-objectification and body surveillance) as outcome variables and the Women-SOMS Total as the predictor variable. The Women-SOMS Total scores significantly and positively predicted all three body image concerns (see Table 6). In line with Hypotheses 11, 12, and 13, the predictive validity of Women-SOMS Total was supported.

**Table 6**

*Study 5 Simple Regression Analysis for Predictive Validity of The Women-SOMS Total in Predicting Body Image Concerns in Women*

| Variable | *B* | *SE B* | ß | t | $R^2$ *Adjusted* |
|---|---|---|---|---|---|
| Internalisation of sociocultural ideals of appearance | | | | | |
| Constant | 1.10 | 0.36 | | 3.01* | |
| Women-SOMS Total | 0.53 | 0.10 | 0.29 | 5.55** | .08 |
| Self-objectification | | | | | |
| Constant | 1.54 | 0.26 | | 5.89** | |
| Women-SOMS Total | 0.34 | 0.07 | 0.26 | 4.96** | .07 |
| Body surveillance | | | | | |
| Constant | 2.73 | 0.39 | | 6.93** | |
| Women-SOMS Total | 0.46 | 0.10 | 0.24 | 4.44** | .06 |

*Note. N* = 331. Women-SOMS Total = Women-Sexually Objectifying Media Experience Total Score. *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

*$p < .01$. **$p < .001$.

Exploratory multiple regressions were further performed with the body image concerns as outcome variables, and the three Women-SOMS subscales (Importance of Physical Appearance subscale, Sexualised Body Representation subscale and Body Evaluation subscale) as predictor variables. Among the three subscales, only the Body Evaluation subscale significantly and positively predicted the internalisation of sociocultural ideals of appearance, self-objectification and body surveillance (see Table 7).

**Table 7**

*Study 5 Multiple Regression Analysis for Predictive Validity of The Women-SOMS subscales in Predicting Body Image Concerns in Women*

| Variable | *B* | *SE B* | *ß* | *t* | $R^2$ *Adjusted* |
|---|---|---|---|---|---|
| Internalisation of sociocultural ideals of appearance | | | | | .10 |
| Constant | 1.16 | 0.37 | | 3.17* | |
| Women-SOMS Importance of Physical Appearance | 0.14 | 0.14 | 0.09 | 1.02 | |
| Women-SOMS Sexualised Body Representation | -0.07 | 0.14 | -0.04 | -0.49 | |
| Women-SOMS Body Evaluation | 0.45 | 0.15 | 0.27 | 3.02* | |
| Self-objectification | | | | | .07 |
| Constant | 1.58 | 0.26 | | 6.03** | |
| Women-SOMS Importance of Physical Appearance | 0.07 | 0.10 | 0.06 | 0.69 | |
| Women-SOMS Sexualised Body Representation | -0.06 | 0.10 | -0.05 | -0.60 | |
| Women-SOMS Body Evaluation | 0.32 | 0.11 | 0.28 | 3.05* | |
| Body surveillance | | | | | .07 |
| Constant | 2.81 | 0.39 | | 7.16** | |
| Women-SOMS Importance of Physical Appearance | 0.01 | 0.15 | 0.01 | 0.05 | |
| Women-SOMS Sexualised Body Representation | -0.18 | 0.15 | -0.10 | -1.20 | |
| Women-SOMS Body Evaluation | 0.62 | 0.16 | 0.35 | 3.88** | |

*Note. N* = 331. Women-SOMS Importance of Physical Appearance = Women-Sexually Objectifying Media Experience Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Women-Sexually Objectifying Media Experience Sexualised Body Representation subscale; Women-SOMS Body Evaluation = Women-Sexually Objectifying Media Experience Body Evaluation subscale. *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

*$p < .01$. **$p < .001$.

***Incremental Validity.*** Hierarchical multiple regressions were conducted to examine the incremental validity of the Women-SOMS Total in predicting body image concerns, with body image concerns as outcome variables, and sexual objectification measures as predictor variables. Scores on the ISOS were entered in Step 1, followed by the interpersonal sexual objectification witnessed in media in Step 2, and the Women-SOMS Total in Step 3. Multicollinearity was assessed, and the *VIF* values of each predictor in the model were below or approximately 2, confirming that collinearity was not an issue (Bowerman & O'Connell, 1990). The ISOS predicted all three body image concerns measures in Step1 and Step 2. Adding the interpersonal sexual objectification witnessed in media in Step 2 resulted in a significant $R^2$ change in predicting the internalisation of sociocultural ideals of appearance and self-objectification, but not body surveillance. Adding the Women-SOMS Total in Step 3 did not result in a significant $R^2$ change in any of the three body image concerns. The ISOS was the only significant predictor of three body image concerns in Step 3 (see Table 8). At odds with Hypotheses 14, 15, and 16, the incremental validity of the Women-SOMS Total in predicting the internalisation of sociocultural ideals of appearance, self-objectification and body surveillance was not supported.

**Table 8**

*Study 5 Hierarchical Regression Analysis for Incremental Validity of the Women-SOMS Total Scores relative to the Interpersonal Sexual Objectification Witnessed in Media*

| Variable | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* |
|---|---|---|---|---|---|---|
| Internalisation of sociocultural ideals of appearance | | | | | | |
| Model 1 | .08 | 28.15*** | | | | |
| ISOS | | | 0.43 | 0.08 | 0.28 | 5.31*** |
| Model 2 | .03 | 10.60** | | | | |
| ISOS | | | 0.25 | 0.10 | 0.17 | 2.61* |
| Interpersonal sexual objectification witnessed in media | | | 0.28 | 0.09 | 0.21 | 3.26** |
| Model 3 | .01 | 3.43 | | | | |
| ISOS | | | 0.21 | 0.10 | 0.14 | 2.09* |
| Interpersonal sexual objectification witnessed in media | | | 0.18 | 0.10 | 0.13 | 1.81 |
| Women-SOMS Total | | | 0.24 | 0.13 | 0.13 | 1.85 |
| Self-objectification | | | | | | |
| Model 1 | .09 | 31.58*** | | | | |
| ISOS | | | 0.32 | 0.06 | 0.30 | 5.62*** |
| Model 2 | .02 | 6.45* | | | | |
| ISOS | | | 0.22 | 0.07 | 0.21 | 3.25** |
| Interpersonal sexual objectification witnessed in media | | | 0.15 | 0.06 | 0.16 | 2.54* |
| Model 3 | .01 | 1.18 | | | | |
| ISOS | | | 0.20 | 0.07 | 0.19 | 2.84** |
| Interpersonal sexual objectification witnessed in media | | | 0.11 | 0.07 | 0.11 | 1.48 |
| Women-SOMS Total | | | 0.12 | 0.09 | 0.09 | 1.30 |
| Body surveillance | | | | | | |
| Model 1 | .09 | 31.1*** | | | | |
| ISOS | | | 0.48 | 0.09 | 0.29 | 5.58*** |
| Model 2 | .01 | 3.44 | | | | |
| ISOS | | | 0.37 | 0.10 | 0.23 | 3.58*** |
| Interpersonal sexual objectification witnessed in media | | | 0.17 | 0.09 | 0.12 | 1.85 |

| Variable | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* |
|---|---|---|---|---|---|---|
| Model 3 | .00 | 1.12 | | | | |
| ISOS | | | 0.34 | 0.11 | 0.21 | 3.22** |
| Interpersonal sexual objectification witnessed in media | | | 0.11 | 0.11 | 0.08 | 1.02 |
| Women-SOMS Total | | | 0.15 | 0.14 | 0.08 | 1.06 |

*Note*. *N* = 331. Degrees of freedom for comparisons: Model 1 (1, 329); Model 2 (2, 328); Model 3 (3, 327). ISOS = Interpersonal Sexual Objectification Scale; Women-SOMS Total= Women-Sexually Objectifying Media Experience Total Score. $\Delta R^2$ = R squared change made by adding new predictors to the model; A significant $\Delta R^2(F)$ indicates the difference made by adding new predictors to the model is significant; $\Delta R^2(F)$ = F change of R squared change; *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; ß = standardised regression weight.

*$p$ < .05. **$p$ < .01. ***$p$< .001.

Exploratory hierarchical multiple regressions were conducted to further explore the incremental validity of Women-SOMS subscales in predicting body image concerns. Scores on the ISOS were entered in Step 1, followed by the interpersonal sexual objectification witnessed in media in Step 2, and scores on the three subscales of the Women-SOMS in Step 3. Consistent with the findings for the Women-SOMS Total, adding the three subscales of the Women-SOMS in Step 3 did not result in a significant $R^2$ change in any body image concerns (see Table 9). However, neither the ISOS, the interpersonal sexual objectification witnessed in media, nor the three Women-SOMS subscales significantly predicted the internalisation of sociocultural ideals of appearance in Step 3. Both the ISOS and Body Evaluation subscales significantly predicted body surveillance in Step 3.

**Table 9**

*Study 5 Hierarchical Regression Analysis for Incremental Validity of the Women-SOMS subscale scores relative to the Interpersonal Sexual Objectification Witnessed in Media*

| Variable | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | t |
|---|---|---|---|---|---|---|
| Internalisation of sociocultural ideals of appearance | | | | | | |
| Model 1 | .08 | 28.15*** | | | | |
| ISOS | | | 0.43 | 0.08 | 0.28 | 5.31*** |
| Model 2 | .03 | 10.60** | | | | |
| ISOS | | | 0.25 | 0.10 | 0.17 | 2.61* |
| Interpersonal sexual objectification witnessed in media | | | 0.28 | 0.09 | 0.21 | 3.26** |
| Model 3 | .01 | 1.77 | | | | |
| ISOS | | | 0.20 | 0.10 | 0.13 | 1.95 |
| Interpersonal sexual objectification witnessed in media | | | 0.16 | 0.10 | 0.12 | 1.57 |
| Women-SOMS Importance of Physical Appearance | | | 0.12 | 0.14 | 0.08 | 0.89 |
| Women-SOMS Sexualised Body Representation | | | -0.10 | 0.14 | -0.06 | -.69 |
| Women-SOMS Body Evaluation | | | 0.23 | 0.17 | 0.14 | 1.40 |
| Self-objectification | | | | | | |
| Model 1 | .09 | 31.58*** | | | | |
| ISOS | | | 0.32 | 0.06 | 0.30 | 5.62*** |
| Model 2 | .02 | 6.45* | | | | |
| ISOS | | | 0.22 | 0.07 | 0.21 | 3.25** |
| Interpersonal sexual objectification witnessed in media | | | 0.15 | 0.06 | 0.16 | 2.54* |
| Model 3 | .01 | 1.82 | | | | |
| ISOS | | | 0.19 | 0.07 | 0.18 | 2.67** |
| Interpersonal sexual objectification witnessed in media | | | 0.09 | 0.07 | 0.09 | 1.24 |
| Women-SOMS Importance of Physical Appearance | | | 0.06 | 0.10 | 0.05 | 0.60 |
| Women-SOMS Sexualised Body Representation | | | -0.08 | 0.10 | -0.07 | -0.81 |
| Women-SOMS Body Evaluation | | | 0.16 | 0.12 | 0.13 | 1.33 |
| Body surveillance | | | | | | |
| Model 1 | .09 | 31.1*** | | | | |

| Variable | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | t |
|---|---|---|---|---|---|---|
| ISOS | | | 0.48 | 0.09 | 0.29 | 5.58*** |
| Model 2 | .01 | 3.44 | | | | |
| ISOS | | | 0.37 | 0.10 | 0.23 | 3.58*** |
| Interpersonal sexual objectification witnessed in media | | | 0.17 | 0.09 | 0.12 | 1.85 |
| Model 3 | .02 | 2.08 | | | | |
| ISOS | | | 0.31 | 0.11 | 0.19 | 2.88** |
| Interpersonal sexual objectification witnessed in media | | | 0.07 | 0.11 | 0.05 | 0.61 |
| Women-SOMS Importance of Physical Appearance | | | 0.00 | 0.14 | 0.00 | 0.03 |
| Women-SOMS Sexualised Body Representation | | | -0.21 | 0.15 | -0.12 | -1.40 |
| Women-SOMS Body Evaluation | | | 0.40 | 0.18 | 0.23 | 2.26* |

*Note*. *N* = 331. Degrees of freedom for comparisons: Model 1 (1, 329); Model 2 (2, 328); Model 3 (5, 325). ISOS = Interpersonal Sexual Objectification Scale; Women-SOMS Importance of Physical Appearance = Women-Sexually Objectifying Media Experience Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Women-Sexually Objectifying Media Experience Sexualised Body Representation subscale; Women-SOMS Body Evaluation = Women-Sexually Objectifying Media Experience Body Evaluation subscale. $\Delta R^2$ = R squared change made by adding new predictors to the model; A significant $\Delta R^2(F)$ indicates the difference made by adding new predictors to the model is significant; $\Delta R^2(F)$ = F change of R squared change; *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

*$p$ < .05. **$p$ < .01. ***$p$< .001.

***Internal Consistency.*** The Cronbach's *α* of the Women-SOMS Total and subscales were excellent, with all the Cronbach's *α* values exceeding .84 (see Table 10). In line with Hypothesis 17, the internal consistency was thus supported.

**Table 10**

*Study 5 Internal Consistency and Intraclass Correlation Coefficients of the Women-SOMS and the Men-SOMS*

| Measure | Time 1 | | Time 2 | | | |
|---|---|---|---|---|---|---|
| | *N* | Cronbach's *α* | *N* | Cronbach's *α* | ICC | 95% CI |
| Women-SOMS Total | 331 | .94 | 288 | .94 | .78 | [.71, .83] |
| Women-SOMS Importance of Physical Appearance | 331 | .87 | 288 | .86 | .70 | [.63, .76] |
| Women-SOMS Sexualised Body Representation | 331 | .86 | 288 | .86 | .72 | [.65, .78] |
| Women-SOMS Body Evaluation | 331 | .84 | 288 | .85 | .74 | [.66, .80] |
| Men-SOMS | 328 | .87 | 299 | .91 | .69 | [.62, .74] |

*Note.* ICC estimates and their 95% confidence intervals were based on single measure, absolute agreement, 2-way mixed effects model. Women-SOMS Total = Women-Sexually Objectifying Media Experience Total Score; Women-SOMS Importance of Physical Appearance = Women-Sexually Objectifying Media Experience Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Women-Sexually Objectifying Media Experience Sexualised Body Representation subscale; Women-SOMS Body Evaluation = Women-Sexually Objectifying Media Experience Body Evaluation subscale; Men-SOMS = Men-Sexually Objectifying Media Experience Scale. 95% CI = 95% confidence interval.

***Test-retest Reliability.*** The ICC of the Women-SOMS Total and subscales were excellent, with all ICC exceeding .69 (see Table 10). In line with Hypothesis 18, the 2-week interval test-retest reliability was thus supported.

**Men-SOMS.**

Unless otherwise stated, the statistical analyses applied to the Men-SOMS below were the same as those reported above for the Women-SOMS.

***Convergent Validity.*** Scores on the Men-SOMS were moderately and positively correlated with the interpersonal sexual objectification witnessed in media, but weakly correlated with the internalisation of sociocultural ideals of appearance, body shame, self-objectification, and body surveillance (see Table 11). In line with Hypothesis 6, convergent validity with the interpersonal sexual objectification witnessed in media was supported. At odds with Hypotheses 2, 3, 4 and 5, the convergent validity was not supported.

**Table 11**

*Study 5 Descriptive Statistic and Bivariate Correlations among Variables in Men*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Men-SOMS | 328 | 2.90 | 0.80 | | | | | | | | | |
| 2. SATAQ3-IG | 328 | 2.58 | 1.01 | .26*** | | | | | | | | |
| 3. SOBBS | 328 | 2.46 | 0.79 | .28*** | .61*** | | | | | | | |
| 4. OBC-Body Shame | 328 | 3.31 | 1.25 | .22*** | .52*** | .71*** | | | | | | |
| 5. OBC-Body Surveillance | 328 | 3.68 | 1.29 | .21*** | .57*** | .78*** | .65*** | | | | | |
| 6. ISOS | 328 | 1.39 | 0.39 | .34*** | .30*** | .38*** | .27*** | .26*** | | | | |
| 7. Interpersonal Sexual Objectification Witnessed in Media | 328 | 2.71 | 0.80 | .35*** | .23*** | .21*** | .22*** | .25*** | .30*** | | | |
| 8. CME-2-AS | 328 | 2.39 | 0.72 | .27*** | .30*** | .31*** | .25*** | .26*** | .29*** | .35*** | | |
| 9. Daily Media Usage Hour | 328 | 13.89 | 7.67 | .18** | .13* | .16** | .19** | .12* | .29*** | .26*** | .26*** | |

*Note*. Men-SOMS = Men-Sexually Objectifying Media Experience Scale; SATAQ3-IG= Internalisation General Subscale of The Sociocultural Attitudes Towards Appearance Scale-3; SOBBS= Self-Objectification Beliefs and Behaviors Scale; OBC-Body Shame= Objectified Body Consciousness Body Shame Scale; OBC-Surv= Objectified Body Consciousness Body Surveillance Scale; ISOS= Interpersonal Sexual Objectification Scale; CME-2-AS= The Antisocial Subscale of Content-based Media Exposure Scale 2.

*$p$< .05. **$p$< .01. ***$p$< .001.

***Discriminant Validity.*** Scores of the Men-SOMS were weakly-to-moderately and positively correlated with anti-social media content exposure, and moderately and positively correlated with interpersonal sexual objectification (see Table 11). At odds with Hypotheses 8 and 9, the discriminant validity was not supported.

***Differentiation by Known Groups.*** Heavy media users reported significantly higher Men-SOMS scores than light media users, with a medium effect size observed (see Table 5). In line with Hypothesis 10, the differentiation by daily media usage was therefore supported.

***Predictive Validity.*** The Men-SOMS significantly and positively predicted the internalisation of sociocultural ideals of appearance, self-objectification and body surveillance (see Table 12). In line with Hypotheses 11, 12, and 13, the predictive validity was therefore supported.

**Table 12**

*Study 5 Simple Regression Analysis for Predictive Validity of the Men-SOMS in Predicting Body Image Concerns in men*

| Variable | *B* | *SE B* | *ß* | *t* | $R^2$ *Adjusted* |
|---|---|---|---|---|---|
| Internalisation of sociocultural ideals of appearance | | | | | |
| Constant | 1.62 | 0.20 | | 7.95* | |
| Men-SOMS | 0.33 | 0.07 | 0.26 | 4.90* | .07 |
| Self-objectification | | | | | |
| Constant | 1.66 | 0.16 | | 10.50* | |
| Men-SOMS | 0.27 | 0.05 | 0.28 | 5.19* | .07 |
| Body surveillance | | | | | |
| Constant | 2.68 | 0.26 | | 10.26* | |
| Men-SOMS | 0.34 | 0.09 | 0.21 | 3.96* | .04 |

*Note. N* = 328. Men-SOMS = Men-Sexually Objectifying Media Experience Scale. *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

*$p < .001$.

***Incremental Validity.*** Scores of the ISOS significantly predicted the internalisation of sociocultural ideals of appearance, self-objectification and body surveillance in Step1 and Step 2 (see Table 13). Adding the interpersonal sexual objectification witnessed in media in Step 2 resulted in a significant $R^2$ change in predicting all three body image constructs. Adding the Men-SOMS in Step 3 resulted in a significant $R^2$ change in predicting the internalisation of sociocultural ideals of appearance and self-objectification, but not body surveillance. The ISOS remained a significant predictor of all three body image concerns in Step 3, and the interpersonal sexual objectification witnessed in media remained a significant predictor of internalisation of sociocultural ideals of appearance and body surveillance in Step 3. In line with Hypotheses 14 and 15, the incremental validity of the Men-SOMS in predicting the internalisation of sociocultural standards of appearance and self-objectification was supported. At odds with Hypothesis 16, the incremental validity of the Men-SOMS in predicting body surveillance was not supported.

**Table 13**

*Study 5 Hierarchical Regression Analysis for Incremental* Validity *of the Men-SOMS relative* to *the Interpersonal Sexual Objectification Witnessed in Media*

| Variable | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* |
|---|---|---|---|---|---|---|
| Internalisation of sociocultural ideals of appearance | | | | | | |
| Model 1 | .09 | 33.04*** | | | | |
| ISOS | | | 0.79 | 0.14 | 0.30 | 5.75*** |
| Model 2 | .02 | 8.29** | | | | |
| ISOS | | | 0.66 | 0.14 | 0.26 | 4.67*** |
| Interpersonal sexual objectification witnessed in media | | | 0.20 | 0.07 | 0.16 | 2.88** |
| Model 3 | .02 | 6.61* | | | | |
| ISOS | | | 0.57 | 0.15 | 0.22 | 3.88*** |
| Interpersonal sexual objectification witnessed in media | | | 0.15 | 0.07 | 0.12 | 2.09* |
| Men-SOMS | | | 0.19 | 0.07 | 0.15 | 2.57* |
| Self-objectification | | | | | | |
| Model 1 | .14 | 54.79*** | | | | |
| ISOS | | | 0.77 | 0.10 | 0.38 | 7.40*** |
| Model 2 | .01 | 3.95* | | | | |
| ISOS | | | 0.71 | 0.11 | 0.35 | 6.49*** |
| Interpersonal sexual objectification witnessed in media | | | 0.11 | 0.05 | 0.11 | 1.99* |
| Model 3 | .02 | 7.06** | | | | |
| ISOS | | | 0.63 | 0.11 | 0.31 | 5.63*** |
| Interpersonal sexual objectification witnessed in media | | | 0.07 | 0.06 | 0.07 | 1.20 |
| Men-SOMS | | | 0.15 | 0.06 | 0.15 | 2.66** |
| Body surveillance | | | | | | |
| Model 1 | .07 | 23.90*** | | | | |
| ISOS | | | 0.86 | 0.18 | 0.26 | 4.89*** |
| Model 2 | .03 | 12.14** | | | | |
| ISOS | | | 0.67 | 0.18 | 0.20 | 3.69*** |
| Interpersonal sexual objectification witnessed in media | | | 0.31 | 0.09 | 0.19 | 3.48** |

| Variable | $\Delta R^2$ | $\Delta R^2(F)$ | *B* | *SE B* | ß | *t* |
|---|---|---|---|---|---|---|
| Model 3 | .01 | 2.71 | | | | |
| ISOS | | | 0.59 | 0.19 | 0.18 | 3.14** |
| Interpersonal sexual objectification witnessed in media | | | 0.27 | 0.09 | 0.17 | 2.91** |
| Men-SOMS | | | 0.15 | 0.09 | 0.10 | 1.65 |

*Note*. *N* = 328. Degrees of freedom for comparisons: Model 1 (1, 326); Model 2 (2, 325); Model 3 (3, 324). Men-SOMS = Men-Sexually Objectifying Media Experience Scale. $\Delta R^2$ = R squared change made by adding new predictors to the model; A significant $\Delta R^2(F)$ indicates the difference made by adding new predictors to the model is significant; $\Delta R^2(F)$ = F change of R squared change; *B* = unstandardized regression weight; *SE B* = standard error of unstandardized regression weight; *ß* = standardised regression weight.

*$p$ < .05. **$p$ < .01. ***$p$< .001.

***Internal Consistency.*** The Cronbach's *α* of the Men-SOMS was excellent (see Table 10). In line with Hypothesis 14, the internal consistency was thus supported.

***Test-retest Reliability.*** The ICC of the Men-SOMS were acceptable (see Table 10). In line with Hypothesis 15, the 2-week interval test-retest reliability was thus supported.

**Discussion**

Study 5 supported a 15-item higher-order structure for the Women-SOMS, with three subscales (Importance of Physical Appearance, Sexualised Body Representation and Body Evaluation) loading into a general sexually objectifying media experience scale and a 4-item single factor structure (Sexualised Body Representation, as it overlaps entirely with the Women-SOMS Sexualised Body Representation subscale) for the Men-SOMS. Both the Women-SOMS Total and the Men-SOMS displayed excellent internal consistency, test-retest reliability, convergent validity with the interpersonal sexual objectification witnessed in media, differentiation by daily media use hours, and predictive validity with the internalisation of sociocultural ideals of appearance, self-objectification and body surveillance. The Women-SOMS Total and Men-SOMS did not display adequate convergent validity with the internalisation of sociocultural ideals of appearance, self-objectification, body shame and body surveillance, and discriminant validity from antisocial media content exposure and interpersonal sexual objectification experience. The Women-SOMS displayed satisfactory discriminant validity among the Women-SOMS subscales. The Men-SOMS displayed good incremental validity in predicting men's body image concerns (excepting body surveillance), while the Women-SOMS Total was not.

Given the strong correlation among the subscales on the Women-SOMS (*r* = .71-.76) and large overlapping variance (50% - 58% shared variance among subscales), the distinctiveness among the three subscales is challenged. However, the higher-order model for the Women-SOMS (compared with the unidimensional model), indicates that the three-factor model is a better fit for the data than one general scale. In addition, the differential predictive validity of the Women-SOMS subscales for predicting women's body image concerns also suggests that the constructs captured by each subscale are conceptually distinctive. It is possible that the high correlations among subscales may reflect the nature of women's sexually objectifying media experiences, in which different forms of sexual objectification often co-occur. For instance, images that sexually portray women's bodies are often paired with articles thematically emphasizing the importance of physical appearance, with the aim to better underscore the visual attention of thinness (Aubrey & Hahn, 2016).

Neither the Women-SOMS nor the Men-SOMS displayed adequate convergent validity with the internalisation of cultural ideals of appearance, body shame, self-objectification and body surveillance. Notably, although the correlations between Women-SOMS/Men-SOMS scores and convergent constructs did not meet the statistical criterion (i.e., $r \geq .3$; Cohen, 1992), the small positive correlations were consistent with prior research (Aubrey, 2006b; Aubrey, 2007; Vandenbosch & Eggermont, 2012; Vandenbosch & Eggermont, 2013). As such, it is possible that the original criteria were too stringent.

Neither the Women-SOMS nor the Men-SOMS displayed adequate discriminant validity with interpersonal sexual objectification experience, such that participants with greater interpersonal sexual objectification experience also reported

higher levels of sexual objectification experience in the media environments. Selective exposure theory (Zillmann & Bryant, 2008) may explain this relationship. Research (Davids et al., 2019; Moradi et al., 2005) found individuals who experienced interpersonal sexual objectification developed negative attitudes or beliefs about their bodies. Individuals then may seek sexually objectifying media as supportive of their pre-existing self-views. In contrast, Aubrey (2006a) argues that self-objectification predicts avoidance of sexually objectifying media exposure. Discriminant validity from antisocial-media content exposure was also not supported for the Women-SOMS and the Men-SOMS, such that both SOMS scores were positively associated with antisocial media experience. In hindsight, Items in the antisocial media exposure scale (C-ME2-AS; Den Hamer et al.,2017) also capture sex-related media content (i.e., “How often do you watch on the Internet/TV/games/mobile phone/DVD…people who openly talk about sex?” and “...people who are having sex ?”), and thus the correlation may be explained by conceptual overlap.

Although the Women-SOMS better captures women’s Sexualised Body Representation and the Importance of Physical Appearance, relative to the ISOS and the interpersonal sexual objectification witnessed in media, both the Importance of Physical Appearance and Sexualised Body Representation subscales did not uniquely predict women’s body image concerns. The Women-SOMS Body Evaluation subscale displayed adequate predictive validity in women’s body image concerns, whereas the body evaluation depicted in media has conceptually overlapped with the interpersonal sexual objectification witnessed in media. This possibly explains why Women-SOMS Total did not display incremental validity in predicting women’s body image concerns.

The Men-SOMS displayed satisfactory incremental validity in predicting the internalisation of sociocultural ideals of appearance and self-objectification. However, the Men-SOMS did not have adequate incremental validity in predicting body surveillance, at odds with Aubrey's (2006b) finding that exposure to sexually objectifying magazines increases body surveillance for men. One potential reason may be due to sexually objectifying media measurements; Aubrey used a rating procedure, and this procedure could capture all possible forms of sexual objectification in magazines, while the Men-SOMS only captures the specific form of sexual objectification in media and advertisement (i.e., Sexualised Body Representation). It is possible it is other forms of sexual objectification captured by Aubrey that better predict body surveillance in men, instead of the experience of witnessing men's bodies being portrayed in a sexual way.

## General Discussion

Three studies were conducted to develop and evaluate two scales that measure experiences of sexual objectification in media environments for cisgender heterosexual women (Women-SOMS) and cisgender heterosexual men (Men-SOMS). Study 3 developed the item pools for the Women-SOMS and the Men-SOMS. Study 4 reported the EFA, identifying three conceptually meaningful factors in the Women-SOMS: Importance of Physical Appearance, Sexualised Body Representation, and Body Evaluation, and a single factor for the Men-SOMS, representing Sexualised Body Representation. Study 5 reported the CFA and supported a 15-item higher-order structure for the Women-SOMS, with three first-order specific subscales, one second-order general sexually objectifying media experience scale, and a 4-item single factor structure for the Men-SOMS, capturing Sexualised Body Representation. Both the Women-SOMS Total and the Men-SOMS

have satisfactory internal consistency, test-retest reliability, differentiation by known groups, and predictive validity, while the convergent and discriminant validity are less supported. The incremental validity in the Women-SOMS is also questionable (see Appendix I for psychometric properties of the Women-SOMS and Men-SOMS)

In line with the literature on sexualised media (Ward, 2016), the factor structure of the Women-SOMS confirmed that core experiences of sexual objectification in the media include exposure to media content that underscores the importance of physical appearance, visually represents women's bodies in a sexual way, and evaluates women's bodies. Although existing content analysis suggests men's bodies are also evaluated by others (Gill, 2009), and the importance of physical appearance is also emphasised for men (Ricciardelli et al., 2010), the factor structure of the Men-SOMS suggests these two forms of experience do not play an as large role in men's sexually objectifying media experience as the portrayal of men's bodies in a sexual way.

Both the Women-SOMS and the Men-SOMS capture sexualised representations of the body in advertising and magazines, and this possibly suggests one purpose of the women and men being sexually objectified by the media is to sell products (Conley & Ramsey, 2011). However, the current research found that sexualised body representation negatively predicted body image concerns only in men, not women. Content analysis indicated that the way in which sexualised body representations manifest is different across genders (Hatton & Trautner, 2011; Stankiewicz & Rosselli, 2008); women and their bodies in advertisements or magazines are frequently portrayed in a submissive, powerless and vulnerable position (Stankiewicz & Rosselli, 2008), and those sexualised body representations victimise women and reduce women's social power and status (Stankiewicz &

Rosselli, 2008). Conversely, when men's bodies are sexually portrayed, they remain to be confident, muscular or slightly challenge machismo (Hatton & Trautner, 2011). Those sexualised body representations may instead increase men's social status and power (Lindner, 2004). Given the power differential linked with gendered representations, it is less clear why the experience of witnessing bodies being portrayed in a sexual way negatively impacts body image for men than women.

In contrast to the Men-SOMS, the Women-SOMS also captures the experiences of sexual objectification, promoting the importance of physical appearance and witnessing women's bodies being evaluated by others. Sociocultural factors such as traditional gender norms and differential social power between women and men may explain these differences in factor structure. As there is a social expectation for women to be physically attractive (Crawford, 2022), contemporary media may serve to reinforce those cultural norms (Holbrook, 1987), communicating the message that women are valued first and foremost for their bodies and appearance. In contrast, men are less socially pressured to prioritise their physical appearance (Mahalik et al., 2003), and consistently, the media is less likely to highlight the importance of physical appearance in men's daily life. Despite men's bodies being found to be evaluated by women (Gill, 2009), given the higher social power they have, men are still more likely to engage in body evaluation as perpetrators instead of being evaluated (Aubrey & Frisby, 2011; Lampman et al., 2002). Women are still more likely to be commented on or be looked at by men in a sexual way (Grauerholz & King, 1997). The high frequency of women's bodies being evaluated in media (Martino et al., 2006; Montemurro, 2003) contributes to the Body Evaluation subscale for the Women-SOMS. Taking together, compared to the Men-SOMS, the existence of the Importance of Physical Appearance and Body

Evaluation subscales in the Women-SOMS possibly reflects the unequal power granted to women and men, as women are still consistently subordinate to men (Mager & Helgeson, 2011).

The incremental validity of the Men-SOMS in predicting body image concerns above and beyond the interpersonal sexual objectification witnessed in media was generally good, and the sexualised body representation captured by the Men-SOMS explained unique variance in internalisation of sociocultural ideals of appearance and self-objectification. There was less support for the incremental validity of the Women-SOMS. Only the Body Evaluation subscale negatively contributes to women's body image concerns. It is possible that witnessing women being evaluated by others serves as a reminder that women's bodies are on display to be visually evaluated, lead to a focus on their own physical appearance, which in turn, causes the self-objectification (Moya-Garófano & Moya, 2019). However, it is less clear why Sexualised Body Representation and Importance of Physical Appearance subscales do not explain the unique variance in women's body image concerns. One possible explanation is that magazines and advertisements usually portray models and celebrities in sexual ways. Women may perceive celebrities as irrelevant people, less compare themselves with models/celebrities, and less experience negative perceptions of one's bodies (Mussweiler et al., 2004). Alternatively, women may be aware of the commercial purposes of sexualised bodies when embedded in commercial content such as magazine advertisements, and thus less impact on their body images (Huang et al., 2021).

**Strengths, limitations and Future Directions**

Since the release of the APA Task Force Report on the sexualisation of girls in 2007 (APA, 2007), there has been a rapid increase in peer-reviewed papers with a

focus on sexually objectifying media (Ward, 2016). The development of the Women-SOMS and the Men-SOMS advances the operationalisation of objectification research by developing two standardised and easy-to-administer measures for measuring cisgender heterosexual women and men's experiences of sexual objectification in the media.

Although the incremental validity of the Women-SOMS in predicting body image concerns was less clear, both Women-SOMS and Men-SOMS have good predictive validity in predicting negative impacts on body image concerns and thus still have merit for measuring sexually objectifying media experiences and their impact. For instance, the Women-SOMS and Men-SOMS items may be used to increase participants' awareness and ability to identify sexually objectifying media content (Tebbe et al., 2018) or help participants resist self-blame when experiencing sexual objectification in media (Shepherd, 2019). These measures could also help identify at-risk individuals who experience more sexual objectification in media and provide relevant interventions to mitigate the impact on body image.

One of the strengths of the current research is age representation (age ranging from 18 to 58 years old), and samples reported relatively broad ranges of education and income. However, most participants were Generation X (birth year ranging from 1963 to 1979) and Generation Y (birth year ranging from 1980 to 1995; Fietkiewicz et al., 2016), and their media use preferences may be different from younger generations (i.e., generational shifts towards more mobile-oriented social media interaction; Fietkiewicz et al., 2018). The experience of sexual objectification in media may be accordingly different as the function of age generations. Generation Z (birth year ranging from 1996 to 2010) and Generation Alpha (birth year ranging from 2011 to 2022) may experience more unwanted explicit sexual advances, given

the trend toward digital communication displacing face-to-face social interaction (Twenge & Martin, 2020). The Women-SOMS/Men-SOMS may not adequately capture their sexual objectification experiences in the media environment and should be cautious when applied for measuring the experiences of sexual objectification in media among younger generations. Additionally, only cisgender and heterosexual adults were sampled in the current study, and participants predominantly identified as White. Given the effects of gender identity and sexual orientation on individuals' sexually objectifying experience (Tebbe et al., 2021), the current study's findings may not generalise to samples with other gender identities and sexual orientations. To address this, further research should investigate the psychometric properties of the Women-SOMS and the Men-SOMS in samples comprising other gender, ethnic and racial identities.

The initial item pools for the Men's SOMS covered a broad range of instances of sexual objectification in all forms of media. However, after participant ratings of these items and factor analysis, the final items in the Men-SOMS were restricted to experiences of sexualised body representations in magazines and advertisements. On the one hand, the items may reflect the nature of men's exposure to sexually objectifying media, in that magazines and advertisements are popular media that tend to sexually objectify men's bodies using sexualised images (Mager & Helgeson, 2011; Hatton & Trautner, 2011). Alternatively, the methods used in the current research may not have adequately captured the breadth of sexual objectification experienced by men. For example, experiences of sexual objectification in sexually explicit materials were not examined when generating item pools (Klaassen & Peter, 2015). Past research suggests that exposure to pornographic websites can negative affect adolescent boys' body images (Vandenbosch & Eggermont, 2013).

Accordingly, exposure to sexually explicit materials may be an important part of men's sexually objectifying media experiences to consider in future work.

The item development method has limitations. Most items were drafted based on the literature specifically targeting women's sexually objectifying media experiences (e.g., Ward, 2016; APA, 2007). Due to the limited literature on how men are sexually objectified in media, it is, therefore, possible that some aspects of sexually objectifying media experience that is uniquely or more commonly experienced by men were not adequately captured, explaining the small number of items of Men-SOMS. While open-ended questions were included in the initial surveys to capture additional examples of sexual objectification, this may not have been adequate. More relevant items may be generated using focus groups, allowing participants to build upon one another's responses and producing rich and more novel data than if they completed the survey separately (Braun & Clarke, 2013). Future studies could expand the initial item pools by reviewing more relevant literature on men's body image concerns and media experience.

Similar to online sexual harassment, sexually objectifying media experience is a subjectively experienced personal experience, dependent on both the objective nature of media messages and recipients' subjective attitudes, preferences and sensitivities to the messages (Barak, 2005). The current study used respondent-based evaluation methods in item reduction, and the items which were not considered sexually objectifying by participants were reduced. This method allows for understanding participants' subjective perceptions of listed experiences and ensures items are grounded in the real-life experience of cisgender heterosexual women and men (Bleakley et al., 2008). However, without training, participants may be less sensitive or fail to identify subtle sexually objectifying media messages, and

relevant items may not be represented due to failure of identification. The limited number of factors and items in the Men-SOMS may result from the failure to identify sexual objectification or low sensitivity among men. It may be beneficial for future research to incorporate a brief media literacy training session before participants rate the extent of sexually objectifying items and incorporate expert panels to assess each item according to their own knowledge and expertise better to identify relevant items (DeVellis, 2012).

Both measures, particularly the Women-SOM, did not display adequate convergent, discriminant, or incremental validity; additional research is needed to validate the two scales further. A more sophisticated statistical model can be used to understand the psychometric properties of Women-SOMS further. For instance, the internalisation of the sociocultural standard of appearance is theoretically and empirically supported as the mediator between sexual objectification experience and self-objectification for women and men (Tiggemann & Slater, 2014; Vandenbosch & Eggermont, 2013; Vandenbosch & Eggermont, 2012). It would be interesting to examine whether Women-SOMS and Men-SOM scores affect self-objectification via the mediating pathway of internalization of sociocultural ideals of appearance.

**Conclusion**

The Women-SOMS and Men-SOMS are novel and easy-to-administer measures for assessing sexual objectification experienced in contemporary media for cisgender heterosexual women and men. The Women-SOMS and Men-SOMS have strengths compared to existing sexual objectifying media experience measures. Compared with the rating procedure (Aubery, 2006a), which is restricted to measuring experience in specific media types, the Women-SOMS advances measurement techniques by capturing women’s sexually objectifying media

experiences across contemporary media, including visual media (e.g., music videos, TV programs, magazine advertisement), text media (Print/online articles, music lyrics) and digital media (e.g., Online). The Women-SOMS specifies different forms of sexual objectification experience in media, and the Men-SOMS points out the specific form of sexual objectification experience in media that negatively affects body images in men. Given the limitations, additional research is warranted to examine the factor structure and psychometric validity for both SOMS measures. Once the measures are supported with additional empirical evidence, they could be used to incorporate with other sexual objectification measures to better capture individuals' sexual objectification experience.

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# Chapter 4

## General Discussion

> The body language of women and girls remains passive, vulnerable, submissive, and very different from the body language of men and boys. Probably the best way to illustrate that is to put a man in a traditionally feminine pose: it becomes obviously trivialising and absurd.
>
> --Jean Kilbourne, 2014, 9:22

The overall aims of this PhD thesis were to examine the psychometric properties of three existing measures of self-objectification in cisgender heterosexual women and cisgender heterosexual men (Chapter 2, Studies 1 and 2) and develop and evaluate the psychometric properties of two novel sexually objectifying media experiences scales for cisgender heterosexual women and cisgender heterosexual men (Chapter 3, Studies 3a, 3b, 4 and 5).

This final chapter discusses the critical contributions that this research programme makes to existing knowledge of self-objectification and sexual objectification experiences. The first section will summarise the key findings of the six empirical studies reported in Chapters 2 and 3. The second section will discuss the key contributions and implications of the research. The third section outlines key limitations of the work and directions for future research. The fourth section presents a conclusion, arguing for the value of measuring self-objectification and sexually objectifying media experiences for addressing research gaps; and the contribution of this thesis to reduce sexual objectification and promote gender equality.

## Summary of the Conducted Studies

### *Studies 1 and 2: Measuring Self-Objectification in Cisgender Women and Men: A Psychometric Validation (Chapter 2)*

The aim of Studies 1 and 2 (Chapter 2) was to answer the following question: Do existing self-objectification measures initially designed for cisgender heterosexual women, adequately capture self-objectification in cisgender heterosexual men? In a 2-week interval online longitudinal study (Study 1; women = 180, men = 163 ) and an online cross-sectional study (Study 2; women = 137, men = 138, age-representative samples), I examined the psychometric properties of the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998), the Objectified Body Consciousness Body Surveillance Scale (OBC-Surv; McKinley & Hyde, 1996), and the Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Dunn, 2017) in cisgender heterosexual women and men.

Across Studies 1 and 2, the SOQ, OBC-Surv and the SOBBS generally displayed satisfactory psychometric properties in women: all measures had satisfactory internal consistency, 2-week test-retest reliability, concurrent validity, convergent validity with appearance orientation, appearance-contingent self-worth, internalisation of sociocultural ideals of appearance, predictive validity in appearance-related exercise (i.e., exercise for weight control, attractiveness and tone), and good discriminant validity from BMI (Study 2) and narcissism. The SOQ displayed satisfactory discriminant validity from self-dehumanization (Studies 1 and 2) and drive for muscularity. The OBC-Surv displayed adequate convergent validity with interpersonal sexual objectification experiences and discriminant validity from self-dehumanisation (Study 1). The SOBBS displayed good convergent validity with interpersonal sexual objectification experiences and incremental validity in predicting

exercise for general attractiveness above and beyond the SOQ and OBC-Surv. Although there were some areas where all three measures did not demonstrate adequate psychometric properties (e.g., convergent validity with the sexual objectification experiences witnessed in person and via media), in general, the SOQ, OBC-Surv and SOBBS all appeared psychometrically sound for measuring self-objectification in women.

For men, the SOQ, OBC-Surv and SOBBS largely displayed satisfactory internal consistency, 2-week test-retest reliability, concurrent validity, convergent validity with appearance-contingent self-worth, internalisation of sociocultural ideals of appearance, predictive validity in exercise for attractiveness and tone, and good discriminant validity from BMI and self-dehumanisation (Study 1). The SOQ showed satisfactory discriminant validity from self-dehumanisation (Study 2) and predictive validity in exercise for weight control. The OBC-Surv and SOBBS largely displayed good convergent validity with appearance-orientation, drive for muscularity, and interpersonal sexual objectification experiences. The OBC-Surv also displayed good discriminant validity from narcissism, and the SOBBS displayed predictive validity in exercise for weight control and incremental validity in exercise for general attractiveness. However, none of the three self-objectification measures demonstrated adequate convergent validity with the sexual objectification experiences witnessed in person and via media.

Although the SOQ generally displayed superior discriminant validity than the OBC-Surv and the SOBBS in men, the convergent validation (e.g., drive for muscularity and sexual objectification experiences) indicates that the SOQ may be less able to capture self-objectification in men. In addition, all the SOBBS Total and Factor scores were only differentiated by individuals' sexual objectification

experiences. By contrast, the SOQ and the OBC-Surv scores continued to be differentiated by gender after controlling for sexual objectification experiences (Study 2). In the absence of an explanation for gender difference in the OBC-Surv scores after controlling for individuals' sexual objectification experiences, the OBC-Surv was, therefore, not an appropriate measure for measuring self-objectification in men. In short, the SOBBS appeared to be the most robust and gender-neutral measure of self-objectification.

Studies 1 and 2 advance the objectification literature by first evaluating and comparing the psychometric properties of three self-objectification measures in age-representative cisgender heterosexual women and men. Findings indicate that all the SOQ, OBC-Surv and SOBBS are appropriate measures for adequately measuring self-objectification in women. By contrast, the SOBBS is the best measure to use for men.

However, data from the Studies 1 and 2 could not explain the predictive role of gender in the OBC-Surv scores after controlling for sexual objectification experiences. One possibility is that the sexual objectification experiences measures used in Study 2 cannot fully capture individuals' sexual objectification experiences and thus explain less variance in the OBC-Surv scores. The measure used for assessing individuals' sexually objectifying media experiences was modified based on an existing interpersonal sexual objectification measure (i.e., the Interpersonal Sexual Objectification Scale, ISOS; Kozee et al., 2007). It only captured the interpersonal sexual objectification witnessed in media content (e.g., witnessing catcall depicted in visual media), and neglected other forms of sexual objectification experiences in the media environment (e.g., witnessing women and men are portrayed in a sexual way in advertisements; Ward, 2016). However, the current

research was conducted during the COVID-19 pandemic, when people spent more time on media than pre-COVID (Cellini et al., 2020; Seufert et al., 2022), and measures of sexual objectification experiences via the media may explain more variance in self-objectification. As there is no standardised measure of sexually objectifying media experiences, Studies 3a, 3b, 4, and 5 (Chapter 3) developed and evaluated two measures of sexual objectification experiences in the media for cisgender heterosexual women and cisgender heterosexual men.

### *Studies 3a, 3b, 4, 5 (Chapter 3): Development and Psychometric Validation of the Women-Sexually Objectifying Media Scale (Women-SOMS) and the Men-Sexually Objectifying Media Scale (Men-SOMS)*

The aims of Studies 3a, 3b, 4 and 5 (Chapter 3) were to develop sexually objectifying media experiences scales for cisgender heterosexual women (Women-SOMS) and men (Men-SOMS) and to examine the psychometric properties of both measures. Studies 3a and 3b employed both the deductive method (e.g., reviewing relevant literature on sexually objectifying media) and the inductive method (i.e., conducting two online surveys on age-representative cisgender heterosexual women and men; women = 81, men = 79) to generate possible items and reduce irrelevant items. Study 4 conducted an exploratory factor analysis in separate samples of age-representative women and men (i.e., excluding the sample of Studies 3a and 3b via Prolific; women = 340, men = 100) and assessed the underlying factor structure of the Women-SOMS and the Men-SOMS. Study 5 conducted a confirmatory factor analysis to verify the factor structure of the Women-SOMS and the Men-SOMS, in separate samples of age-representative women and men (i.e., excluding the sample of prior studies via Prolific; women = 331; men = 328). Study 5 also examined the

validity and reliability of the Women-SOMS and the Men-SOMS using a two-week interval online longitudinal design.

A total of 60 items were initially generated in Study 3a (i.e., 47 items through literature review, and 13 items through an online survey where participants reported the sexually objectifying instances experienced and witnessed on different media platforms). In the Study 3a survey, participants also rated how often they experienced (i.e., frequency) and how sexually objectifying (i.e., extremity) they considered the items drafted from objectification literature. The Study 3b survey followed the same rating procedure, and participants rated the frequency and extremity of the items drafted from the Study 3a survey. Survey responses of Study 3a and 3b were then combinedly analysed, and items that participants considered relatively less sexually objectifying and reflected less sexually objectifying media experiences were reduced. Studies 3a and 3b identified 34 items for the Women-SOMS and 10 items for the Men-SOMS.

In Study 4, these items were entered into an exploratory factor analysis, which suggested an underlying structure of 15 items with the three-correlated factors for the Women-SOMS and a 6-item single-factor for the Men-SOMS. By doing confirmatory factor analysis and model improvement (i.e., removing two items with the lowest factor loading values in the Men-SOMS), in Study 5, confirmatory factor analysis further supported a 15-item higher-order model for the Women-SOMS, with three first-order subscales (Importance of Physical Appearance, Sexualised Body Representation and Body Evaluation) and one second-order general scale (General Sexually Objectifying Media Experience), and a 4-item single factor model for the Men-SOMS (Sexualised Body Representation).

The Women-SOMS Total and the Men-SOMS displayed satisfactory internal consistency, 2-week test-retest reliability, convergent validity with the interpersonal sexual objectification experiences witnessed in media, differentiation by known groups (i.e., daily media usage time), and predictive validity in body image concerns specified in the Objectification Theory (i.e., internalisation of sociocultural ideals of appearance, self-objectification and body surveillance; Fredrickson & Roberts, 1997; Moradi, 2010). The Women-SOMS also displayed great discriminant validity among the three subscales. The Men-SOMS displayed satisfactory incremental validity in predicting internalisation of sociocultural ideals of appearance and so above and beyond the interpersonal sexual objectification experiences witnessed in media, when controlling for interpersonal sexual objectification experiences. However, neither the Women-SOMS nor the Men-SOMS displayed adequate convergent validity with the internalisation of sociocultural ideals of appearance, self-objectification, body shame, body surveillance, and discriminant validity from interpersonal sexual objectification experiences and antisocial media content exposure. The Women-SOMS did not show incremental validity in predicting any body image concern above and beyond the interpersonal sexual objectification experiences witnessed in media, when controlling for interpersonal sexual objectification experiences.

The restrictive statistical criterion (i.e., $r \geq .3$; Cohen, 1992) possibly explained the failure of convergent validity of the Women-SOMS and the Men-SOMS. Supported by empirical evidence (Aubrey, 2006b; Aubrey, 2007; Vandenbosch & Eggermont, 2012; Vandenbosch & Eggermont, 2013), the convergent validity was therefore not concerned as a severe limitation of the Women-SOMS and Men-SOMS. Likewise, although the Women-SOMS Total did not display satisfactory

incremental validity in predicting body image concerns, it additionally captures two unique components of the women's experiences of sexual objectification in media (i.e., witnessing women's bodies being portrayed sexually and witnessing media discussing the importance of physical appearance on women's lives). Overall, the Women-SOMS and the Men-SOMS are still psychometrically sound measures for capturing individuals' sexually objectifying media experiences.

The development of the Women-SOMS and the Men-SOMS indicate that women and men may be objectified differently on different media platforms. Men's sexually objectifying media experiences mainly stemmed from magazines and advertisements that sexually portrayed men's bodies. Women's sexually objectifying media experiences were sourced from a range of media types and took various forms, from portraying women's bodies in a sexual manner and depicting women's bodies being evaluated by others, to emphasising the importance of physical appearance in women's lives. The different factor structures of the Women-SOMS and the Men-SOMS demonstrated that the nature of sexually objectifying media experiences is gendered. It is unlikely that women and men's sexually objectifying media experiences can be captured using one standardised measurement. Given two different measures for assessing sexual objectifying media experiences for women and men, the scores of the Women-SOMS and the Men-SOMS cannot be compared in parallel and draw any inferences about the difference in sexually objectifying media experiences as a function of gender.

**Contributions of the Present Programmes of Research**

This thesis contributes to the literature on objectification in four keyways. First, it builds the understanding of the measurement of self-objectification. Second, it

sheds new light on the gender difference in self-objectification. Third, it investigates the measurement of the sexually objectifying media experiences. It also extends the knowledge of the sexual objectification experience by comparing different forms of sexual objectification experiences. Additionally, it integrates media research and feminist scope and contributes to feminist literature.

### *Measurement of Self-objectification*

There is a large body of literature on self-objectification. Research has examined the role of self-objectification on life satisfaction (Mercurio & Landry, 2008) and mental health (Tiggemann & Williams, 2012; Szymanski & Henning, 2007). Empirical studies have also investigated the effect of daily behaviours on self-objectification (e.g., selfie activities, Cohen et al., 2018; media exposure, Vandenbosch & Eggermont, 2012; video chat, Pfund et al., 2020), tested the application of the Objectification Theory in different populations (Augustus-Horvath & Tylka, 2009; Moradi et al., 2005), and examined the predictors of self-objectification (e.g., gender norms, Schwartz et al., 2010; gender role conflict, Davids et al., 2019). The ability to shed light on the causes and consequences of self-objectification depends on the ability to measure self-objectification adequately. However, In the objectification literature, self-objectification measurement has been constantly criticised. For example, there is disagreement about how self-objectification should be measured and whether the constructs measured by the SOQ and the OBC-Surv are related or distinct (Calogero, 2011). Likewise, the psychometric properties of the self-objectification measures in men are unclear (Daniel & Bridges, 2010; Ward, 2016). Only the OBC-Surv was validated in men (Chen & Russo, 2010; Dakanalis et al., 2017), whereas other self-objectification measures (e.g., the SOQ and the SOBBS) were not.

Studies 1 and 2 thus addressed the limitation of the measurement of self-objectification and closed this research gap by evaluating and comparing the psychometric properties of two widely used measures (i.e., the SOQ and the OBC-Surv) and one newly developed measure (i.e., SOBBS) in both cisgender heterosexual women and cisgender heterosexual men. These studies provide evidence to inform the appropriate measurement of self-objectification in future research. Specifically, the findings indicate that the SOBBS appears to be the most robust self-objectification measure for cisgender women and men. Therefore, future research should use the SOBBS to best understand the predictors and impacts of self-objectification in cisgender women and men. These studies also shed light on the argument in objectification literature and provide convincing evidence, suggesting these three self-objectification measures capture different constructs in women and men. Valuing one's physical appearance over physical competencies (captured by the SOQ) and habitually monitoring one's body (captured by the OBC-Surv) are not the same phenomenon (Calogero, 2011). Although the habitual body monitoring (captured by the OBC-Surv) is most relevant to the construct captured by the SOBBS Factor 1 (i.e., viewing one's body from the observers' perspective), scores of both measures are differentiated by different variables (e.g., gender), indicating they are still two distinct constructs. The OBC-Surv, SOQ and SOBBS do not capture the same construct, and the three measures are thus not interchangeable.

### *Understanding Gendered Self-objectification*

The Objectification Theory (Fredrickson & Roberts, 1997) was originally grounded in women's lived experiences and was investigated predominantly in women (Moradi & Huang, 2008). However, recent studies have also examined the

self-objectification in men (Harsey & Zurbriggen, 2021; Schwartz et al., 2010; Strelan & Hargreaves, 2005) and applied the tenet of the Objectification Theory to understand men's body image concerns and their mental health (Davids et al., 2019; Parent & Moradi, 2011; Zheng & Sun, 2017). The great bodies of gendered research on self-objectification call for the need to select gender-appropriate measures to assess self-objectification for women and men. Studies 1 and 2 contribute to gendered literature by investigating the psychometric properties of existing measures of self-objectification in women and men. By Investigating the psychometrics of self-objectification measures across genders, it contributes to future gendered objectification research, including the gender comparison in self-objectification levels (Fredrickson et al., 1998), the relationship between self-objectification and other body image constructs, e.g., body shape (Oehlhof et al., 2009), and applicability of the Objectification Theory (Slater & Tiggemann, 2010).

The current research suggests that the gender difference in self-objectification cannot be solely explained by measurement error (Dakanalis et al., 2017; Sicilia et al.,2020). Specifically, while Studies 1 and 2 demonstrated that the SOBBS is a robust measure of self-objectification in both cisgender women and men, Study 5 also found greater self-objectification (measured by the SOBBS) in women versus men. However, importantly, Study 2 demonstrated that gender only predicted self-objectification measured by the SOBBS when sexual objectification experiences were not considered. This finding is aligned with the Objectification Theory, positing that sexual objectification experiences acculturate women and men to objectify themselves (Fredrickson & Roberts, 1997). As such, the current research provides convincing evidence that there are gender differences in self-objectification and that these are explained by differential experiences of sexual objectification.

The finding further indicates that it is vital to reduce individuals' sexually objectification experience in order to protect them from self-objectification. For doing that, this thesis first advocates that practitioners conduct social interventions to prevent individuals from sexually objectifying others (e.g., educating about the negative implications for individuals of receiving comments about their bodies, Kahalon et al., 2018; decreasing men's focus on women's sexual functions and appearance, Riemer et al., 2022) and encourages industries to reduce the use of sexually objectifying media content. It also alerts future research to identify any protective factor (e.g., feminist beliefs, Feltman & Szymanski, 2018; high global self-esteem, Aubrey, 2006a) that buffer against sexual objectification experiences, and develop effective training programmes (e.g., teaching individuals to recognise sexual objectification as acts of sexist discrimination and learn to actively to confront it; Sáez et al., 2019) to reduce individuals internalising sexual objectification experiences, and then reduce self-objectification. Additionally, avoiding a sexually objectiying environment (e.g., Restaurant Bleachers and Hooters, Moffitt & Szymanski, 2011; sexually objectification media, Aubrey, 2006b) can be a self-protective way.

### *Measurement of Sexually Objectifying Media Experiences*

Multiple measures have been developed for measuring individuals' experiences of sexual objectification in face-to-face interpersonal interactions (e.g., The Interpersonal Sexual Objectification Scale, Kozee et al., 2007; The Cultural Sexual Objectification Scale, Hill & Fisher, 2008). However, there is no existing standardised measure that captures individuals' experiences of sexual objectification in all types of contemporary media, including popular music, movies, television, online and social media. The development of sexually objectifying media

experiences measure was motivated partially by the COVID-19 context and the need to adequately measure the exposure to sexually objectifying media other than through face-to-face interactions. The fact that we are living in the digital world where people spend several hours consuming media each day (Coyne et al., 2013) and are constantly exposed to sexually objectifying media content (Ward, 2016), makes the development of a sexually objectifying media experiences measure important beyond the COVID-19 pandemic (as discussed in Chapter 3, there is a large body of literature demonstrating that both women and men are sexually objectified in the media).

Studies 3a, 3b, 4, and 5 addressed this gap by developing two novel sexual objectifying media experience scales for cisgender heterosexual women and men. The development of the Women-SOMS and the Men-SOMS offer helpful assessment tools for future research to assess individuals' experiences of sexual objectification in a broad media environment. By developing sexually objectiying media experiences scales, it contributes to the future examination of the role of habitual sexually objectifying media experiences on individuals' self-objectification (Aubrey, 2006a), body dissatisfaction (Barlett et al., 2008), sexual health (Aubrey, 2007), and sexual violence (Galdi & Guizzo, 2021). In addition, it helps capture individuals' total sexual objectification experiences and better explores the role of sexual objectification experiences on objectification theory (Fredrickson & Roberts, 1997), and the relationships with other relevant constructs (e.g., self-esteem, Aubrey, 2006a; self-silencing, Sáez et al., 2019).

### *Media Versus Face-to-face Sexual Objectification Experiences*

In line with the Objectification Theory and prior research (Aubrey, 2006a; Karsay et al., 2018), Study 5 supported the negative role that habitual exposure to sexually objectifying media plays in body image concerns of women and men. Studies 3 - 5 further extend our understanding of the relationship between sexually objectifying media experiences and self-objectification by revealing the specific forms of sexually objectifying media experiences that best predict body image concerns in women and men. Specifically, although women experienced multiple forms of sexual objectification experiences in the media, their body image concerns were only predicted by the experiences of witnessing women's bodies being evaluated by other people. By contrast, men's self-objectification and internalisation of sociocultural ideals of appearance were predicted by the experiences of witnessing men's bodies being portrayed in a sexual way- the only factor that formed the Men-SOMS. This finding helps future research to conduct more effective interventions aimed at disrupting the link between the sexually objectifying media experiences and body image concerns, by reducing women's experience of witnessing other women being evaluated in media and men's experience of seeing men's bodies being portrayed sexually.

This thesis also makes an important contribution by advancing our understanding of the role that different forms of sexual objectification experiences have on self-objectification in women and men. Findings in the current programme demonstrated that the face-to-face interpersonal sexual objectification experiences were the most important predictor of the internalisation of sociocultural ideals of beauty, self-objectification and body surveillance in women and men. Although the experiences of sexual objectification in the media (as found in Study 5) also negatively affected body image concerns in both groups, the links were weaker than

the face-to-face sexual objectification experience. This may be due to the larger effects of sexual objectification experiences on emotional arousal in in-person contexts relative to experiences via the media. To illustrate, research indicates that women experienced stronger shame when they were personally targeted by objectifying behaviour than witnessing objectifying events (Koval et al., 2019). Feeling shame when experiencing sexual objectification is positively related to self-blame responses (Shepherd, 2019), which in turn, increases self-objectification (Fairchild & Rudman, 2008).

Given the worse effect of face-to-face sexual objectification experiences on one's self-objectification and other body image concerns, this thesis alerts policymakers, organisations and educators to raise public awareness about interpersonal sexual objectification as early as possible and educate the harmful effect of interpersonal sexual objectification experience on body image and mental health concerns (Szymanski et al., 2020). For example, a new campaign has been launched by Transport for London to tackle sexual harassment in the transport network (Transport for London, 2021). As individuals, it is essential to not comment about one's body and sexuality, describe a person as body parts and refer to them only as sex objects instead of a human being with personality and capacity for independent action and decision making (APA, 2007). Additionally, it is crucial to stand out for others when witnessing someone being sexually objectified and confront them for equality and human rights (Kearl, 2010).

### *Understanding the Media Content from the Perspective of Feminism*

This thesis integrates the research on sexual objectification into the field of gendered media studies. It identifies a new complexity: women and men are sexually

objectified by the media in different ways. The factor analysis of the Women-SOMS and the Men-SOMS (as found in Studies 4 and 5) demonstrated that men are mainly sexually objectified by portraying them in a sexual manner whereas women are sexually objectified in multiple ways (i.e., the body being evaluated by others; the body being sexually portrayed; being told the importance of physical appearance on their lives). Although the sexual objectification of women in media could be partly explained by the acquisition of material goods in a contemporary consumer society (i.e., sexual portrayals create a desire for material possessions rather than sexual satisfaction; Reichert et al., 1999), the unique factors present in the Women-SOMS (i.e. Body Evaluation, and Importance of Physical Appearance) and not in the Men-SOMS, suggest that sexually objectifying media content is explained by more than consumerism. Body evaluation is the manifestation of unequal social power between the gazing men and the gazed women (Mulvey, 1989). The importance of physical appearance reflects the social expectation of femininity in women (Adams et al., 2017). As such, these two factors of the Women-SOMS indicate that sexually objectifying media also serves to reinforce a patriarchal power structure that oppresses and disempowers women relative to men. This is consistent with other findings regarding gendered media. For example, men are still more likely than women to be portrayed in executive roles in advertisements (Mager & Helgeson, 2011), and women are held to stricter appearance standards (Aubrey & Frisby, 2011).To create a more balanced portrayal of women and men in media, this thesis urges media specialists to continue to criticise sexually objectifying media content (e.g., Killing Us Softly 4; Media Education Foundation, 2010); encourages concerned citizens to take collective action and activist movement against sexually objectifying media content (Guizzo et al., 2017); and supports gender equality campaigns (e.g.,

"If not now, when?"; "HeForShe", United Nations", 2014, campaigns) to continue engaging in gender activities to promote gender equality in the media environment.

## Limitations and Future Research

Beyond the limitations specific to each of the six studies discussed in their respective chapters, there are limitations across studies that are important to acknowledge.

### *Weak Predictive Validity Validation*

First, there are limitations in how predictive criterion validity was established in the current studies. Predictive validity indicates the ability of the examined measure to predict subsequent performance or outcomes (Fowler, 1995). Accordingly, predictive validity validation is evaluated by a series of tests in which the predicted outcomes are collected at some point in the future. However, reason for exercise (Study 1) and body image concerns (Study 5) were administered at the same time as the measures being validated (self-objectification measures for Study 1 and sexual objectification experiences measures for Study 5). By collecting data concurrently, it is possible that rather than evaluating predictive validity, the above studies instead measure concurrent validity (the extent of the relationship between a measure and a criterion assessment made at the same time of administration; Raykov & Marcoulides, 2011). Due to various factors associated with the passage of time between two assessment occasions, predictive validity is often weaker than concurrent validity coefficients (Fives & Barnes, 2018). As a result, the reported predictive validity in both sets of studies may be inflated. To further investigate the predictive validity of measures examined in this thesis, future research should

replicate the findings by collecting data of key measures and predicted outcomes at two different times.

### *Inappropriate Construct for Measurement Validation*

The broader psychometric properties of the key measures evaluated in this thesis also depend on whether the various constructs used for examining validity are valid constructs for the construct captured by the key measurement. To illustrate, Study 2 tested the discriminant validity of self-objectification measures in women by examining their association with the drive for muscularity. Despite previous research finding no association between self-objectification measured by the OBC-Surv and drive for muscularity (Smolak & Murnen, 2008; Smolak & Murnen, 2011), other recent research suggested that current appearance ideals for women have shifted from thinness to a combination of thinness and muscularity (Campos et al., 2021), and has demonstrated that drive for muscularity is associated with body image concerns in women (Girard et al., 2018; Hoffmann & Warschburger, 2019). Given the inconsistent findings in the relationship between the drive for muscularity and self-objectification in women, it is difficult to interpret the degree to which this reflects discriminant validity. To draw more confident conclusions about the validity of measures of self-objectification, future research should use measures of constructs that have a more clear-cut relationship with self-objectification.

### *Future Construct Validity Validation*

In this thesis, the construct validity of the self-objectification measure (Studies 1 and 2) and the Women-SOMS and the Men-SOMS (Study 5) was examined via the correlation between the construct assessed by the key measures and the theoretically related constructs. The current programme did not conduct a more

sophisticated statistical analysis (e.g., structural equation model) and evaluate the Objectification Theory model using self-objectification latent construct estimated by the SOBBS scores, or sexually objectifying media experiences latent construct estimated by the Women-SOMS and Men-SOMS. For example, researchers tested the Objectification Theory in heterosexual women and found that sexual objectification experiences (measured by the ISOS) significantly predicted self-objectification (measured by the OBC-Surv), and the relationship between sexual objectification experiences and body shame was mediated by the OBC-Surv scores (Engeln-Maddox et al., 2011). Future research could use the SOBBS as an alternative measure of self-objectification and replicate the finding. If the SOBBS is the most robust self-objectification measure, the tested model should fit the data with the latent self-objectification measured by the SOBBS better than the OBC-Surv. Such findings would provide additional support to the construct validity of the SOBBS in women groups. Meanwhile, no association was found between interpersonal sexual objectification experiences and self-objectification measured by the OBC-Surv in heterosexual men, and the OBC-Surv scores were not associated with either body shame or disordered eating (Engeln-Maddox et al., 2011). It would be particularly interesting for future research to re-assess men's self-objectification using the SOBBS, compare the model fit between the OBC-Surv and SOBBS, and the pathway of significance among measured constructs. This would provide more construct validity evidence of the SOBBS in men and helps clarify whether the use of measures of self-objectification may have shaped prior inconsistent findings in the applicability of the Objectification Theory in men.

### *Gender Difference in OBC-Surv Scores*

The Women-SOMS and the Men-SOMS did not display incremental validity in predicting the OBC-Surv scores above and beyond the interpersonal sexual objectification witnessed in media when controlling for the interpersonal sexual objectification experiences (Study 5). Using the Women-SOMS and the Men-SOMS as alternative measures of sexually objectifying media experiences in women and men, therefore, may not explain more variance in predicting OBC-Surv scores, and gender remains to account for variances. Future research should investigate the role of gender on the OBC-Surv scores from other perspectives. For example, other gender-related variables may predict individuals' OBC-Surv scores. Those variables include biological sex differences, adoption of traditional muscular or feminine gender role (Jackson et al., 1988), gender difference in the perception of the importance of physical appearance in their identify (Crocker et al., 2003), the interpretation of the sexually objectifying experiences (as found in Study 3a), and emotional response and associated coping strategies when experiencing sexual objectification (Shepherd, 2019),

Beyond gender-related predictors, it is also possible that the sexual objectification experiences may not affect men's habitual body monitoring (measured by the OBC-Surv) similarly to women. The research found that interpersonal sexual objectification experiences predicted the OBC-Surv scores in women (Engeln-Maddox et al., 2011), and in contrast, interpersonal sexual objectification experiences were exhibited more in forms of increased body shame instead of body surveillance in men (Engeln-Maddox et al., 2011). The pathways between sexual objectification experiences and different body image constructs in women and men possibly explain the gender difference in OBC-Surv scores. Alternatively, the OBC-Surv may be less appropriate for use in men. Chen & Russo (2010) found that the

average factor loading of the OBC-Surv was higher for college women than for college men, indicating that the construct taped by the OBC-Surv has more relevant to women than men. Given several interpretations, we call for future research to investigate the role of gender in the OBC-Surv scores and explore the applicability of the Objectification Theory in men.

## Conclusion

Sexual objectification is a widespread societal problem; individuals of all genders experience sexual objectification in their social encounters and via the media (Moradi & Huang, 2008; Moradi, 2010). When chronically exposed to a sexual objectification environment, individuals may internalise a third person's perspective on their bodies and engage in self-objectification, which can negatively impact body image and mental health well-being.

Given the prevalence of sexual objectification and the detrimental outcomes of self-objectification, it is essential to accurately capture individuals' experiences of sexual objectification and self-objectification. Due to the possible gender differences in the manifestation of sexually objectifying media (Conley & Ramsey, 2011; Hatton & Trautner, 2011) and the nature of self-objectification (Daniel et al., 2014), using gender-appropriate measures is also crucial when examining these constructs in women and men.

The current research programme addressed two measurement gaps in objectification literature by comparing the psychometric properties of three existing self-objectification measures in cisgender heterosexual women and men and developing and validating two novel sexual objectifying media experiences scales for cisgender heterosexual women and men. This thesis also highlights the harmful

effect of sexually objectifying experiences on one's body image concerns and reveals gender inequality in the media environment.

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**Appendix A**

***Participant Demographics for Studies 1 and 2***

| Ethnicity | Study 1 | | | | | | | | Study 2 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Time 1 | | | | Time 2 | | | | | | | |
| | Women | | Men | | Women | | Men | | Women | | Men | |
| | (*n* = 180) | | (*n* = 163) | | (*n* =133) | | (*n* = 137) | | (*n* = 137) | | (*n* = 138) | |
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| White | 161 | 89.4 | 140 | 85.9 | 121 | 91 | 122 | 89.1 | 126 | 92 | 122 | 88.4 |
| Mixed or multiple ethnic groups | 5 | 2.8 | 5 | 3.1 | 3 | 2.3 | 5 | 3.6 | 3 | 2.2 | 3 | 2.2 |
| Asian or Asian British | 12 | 6.7 | 14 | 8.6 | 8 | 6 | 8 | 5.8 | 5 | 3.6 | 9 | 6.5 |
| Black, African, Caribbean, or Black British | 2 | 1.1 | 1 | 0.6 | 1 | 0.8 | 1 | 0.7 | 1 | 0.7 | 3 | 2.2 |
| Prefer not to say | | | 2 | 1.2 | | | 1 | 0.7 | | | | |
| Others | | | 1 | 0.6 | | | | | 2 | 1.5 | 1 | 0.7 |

**Appendix B**

**Comparison of Psychometric Properties of the SOQ, OBC-Surv and SOBBS in Women and Men for Studies 1 and 2**

| Psychometric Property | Women | | | | | Men | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SOQ | OBC-Surv | SOBBS | | | SOQ | OBC-Surv | SOBBS | | |
| | | | Factor 1 | Factor 2 | Total | | | Factor 1 | Factor 2 | Total |
| Internal Consistency | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Test-retest Reliability | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Construct Validity | | | | | | | | | | |
| Convergent Validity | | | | | | | | | | |
| Appearance orientation | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Appearance-contingent self-worth | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Internalisation of sociocultural ideals of appearance | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Interpersonal sexual objectification experiences | | ✓ | ✓ | | ✓ | | ✓ | | ✓ | ✓ |
| Witnessed sexual objectification in-person | | | | | | | | | | |
| Witnessed sexual- | | | | | | | | | | |

| Psychometric Property | Women | | | | | Men | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SOQ | OBC-Surv | SOBBS | | | SOQ | OBC-Surv | SOBBS | | |
| | | | Factor 1 | Factor 2 | Total | | | Factor 1 | Factor 2 | Total |
| objectification via the media | | | | | | | | | | |
| Drive for muscularity (for men) | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Discriminant Validity | | | | | | | | | | |
| BMI | ✓ | ✓ | ✓ (Study 2 only) | ✓ | ✓ (Study 2 only) | ✓ | ✓ | ✓ (Study 2 only) | ✓ | ✓ (Study 2 only) |
| Mind Attribution Task | ✓ | ✓ (Study 1 only) | | ✓ | | ✓ | ✓ (Study 1 only) | ✓ (Study 1 only) | ✓ (Study 1 only) | ✓ (Study 1 only) |
| Self-dehumanisation Scale | ✓ | | | | | ✓ | | | | |
| Narcissistic Personality | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| Drive for muscularity (for women) | ✓ | | | ✓ | | | | | | |
| Differentiation by known groups | | | | | | | | | | |
| Gender | ✓ | ✓ | ✓ | | ✓ | | | | | |

| Psychometric Property | Women | | | | | Men | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SOQ | OBC-Surv | SOBBS | | | SOQ | OBC-Surv | SOBBS | | |
| | | | Factor 1 | Factor 2 | Total | | | Factor 1 | Factor 2 | Total |
| Sexual objectification experiences | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Criterion Validity | | | | | | | | | | |
| Concurrent Validity | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Predictive Validity | | | | | | | | | | |
| Exercise for weight control | ✓ | ✓ | | | ✓ | ✓ | | | | ✓ |
| Exercise for attractiveness | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | ✓ |
| Exercise for tone | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | ✓ |
| Incremental Validity | | | | | | | | | | |
| Exercise for weight control | | | | | | | | | | |
| Exercise for attractiveness | | | | | ✓ | | | | | ✓ |
| Exercise for tone | | | | | | | | | | |

*Note*. Mark "✓" indicates that the relevant psychometric property of the self-objectification measure is supported. SOQ = Self-Objectification Questionnaire; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; Factor 1 = Self-Objectification Beliefs and Behaviors Scale- Observer's Perspective; Factor 2 = Self-Objectification Beliefs and Behaviors Scale- Body as Self; Total = Self-Objectification Beliefs and Behaviors Scale Total.

**Appendix C**

**Participant Demographics for Study 3**

| Variable | Women (*n* = 105) | | | | | | Men (*n* =104) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Study 3a (*n* = 24) | | Studies 3a and 3b (*n* = 56) | | Study 3b (*n* = 25) | | Study 3a (*n* = 25) | | Studies 3a and 3b (*n* = 51) | | Study 3b (*n* = 28) | |
| | *n*(%) or *M*±*SD* (95%) | Range (min-max) | *n*(%) or *M*±*SD* (95%) | Range (min-max) | *n*(%) or *M*±*SD* (95%) | Range (min-max) | *n*(%) or *M*±*SD* (95%) | Range (min-max) | *n*(%) or *M*±*SD* (95%) | Range (min-max) | *n*(%) or *M*±*SD* (95%) | Range (min-max) |
| Age | 38 ± 12.03 | 18 - 57 | 36.18 ± 11.91 | 18 - 57 | 39.32 ± 10.97 | 18 - 56 | 36.76 ± 10.43 | 19 - 54 | 36.43 ±12.11 | 18 - 47 | 39.21 ± 10.98 | 19 - 55 |
| Ethnicity | | | | | | | | | | | | |
| White | 14(58.3%) | | 39(69.6%) | | 21(84%) | | 18(72%) | 31(60.8%) | 31(60.8%) | | 21(75%) | |
| Mixed or multiple ethnic groups | 1(4.2%) | | 2(3.6%) | | 1(4%) | | 2(8%) | 5(9.8%) | 5(9.8%) | | 2(7.1%) | |
| Asian or Asian British | 1(4.2%) | | 13(23.2%) | | 1(4%) | | | | | | | |
| Black, African, Caribbean, or Black British | 6(25%) | | 2(3.6%) | | 1(4%) | | 5(20%) | 10(19.6%) | 10(19.6%) | | 3(10.3%) | |
| Prefer not to say | 2(8.3%) | | | | 1(4%) | | | 5(9.8%) | 5(9.8%) | | 1(3.6%) | |
| Others | | | | | | | | | | | 1(3.6%) | |

*Note.* Study 1a = Participants who completed Study 1a only; Studies 1a and 1b= Participants who completed Study 1a and 1b; Study 1b= Participants who completed Study 1b only. A one-way ANOVA indicated there was no statistically significant difference in mean age among the women groups who completed Study 1a only, completed both Studies 1a and 1b, and completed Study 1b only, $F$ (2, 104) = .67, $p$ = .514. A one-way ANOVA indicated there was no statistically significant difference in mean age among the men groups who completed Study 1a only, completed both Studies 1a and 1b, and completed Study 1b only, $F$ (2, 103) = .613, $p$ = .540.

**Appendix D**

**The Frequency and Extremity Scores of all Items, Study 3**

| Item | Women ($n$ = 105) | | | | Men ($n$ = 104) | | | |
|---|---|---|---|---|---|---|---|---|
| | Frequency | | Extremity | | Frequency | | Extremity | |
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Item.1 | 76.18 | 24.41 | 75.20 | 23.29 | 57.14 | 29.35 | 56.43 | 29.16 |
| Item.2 | 65.51 | 26.03 | 75.60 | 26.27 | 51.95 | 26.99 | 55.07 | 27.37 |
| Item.3 | 66.76 | 27.23 | 73.10 | 24.61 | 58.09 | 28.41 | 54.60 | 29.07 |
| Item.4 | 63.46 | 30.46 | 75.41 | 26.71 | 30.13 | 28.03 | 42.04 | 31.32 |
| Item.5 | 70.75 | 26.17 | 72.35 | 23.09 | 57.18 | 30.41 | 55.53 | 29.34 |
| Item.6 | 65.20 | 27.41 | 70.21 | 26.64 | 49.37 | 29.89 | 53.53 | 32.54 |
| Item.7 | 61.96 | 28.41 | 71.01 | 26.01 | 44.58 | 30.91 | 51.44 | 31.65 |
| Item.8 | 59.60 | 29.53 | 76.29 | 24.39 | 42.91 | 32.60 | 50.55 | 30.19 |
| Item.9 | 71.11 | 25.70 | 79.46 | 23.07 | 50.30 | 32.47 | 56.76 | 29.79 |
| Item.10 | 83.28 | 22.37 | 85.21 | 21.75 | 55.01 | 32.42 | 60.59 | 30.64 |
| Item.11 | 80.26 | 21.12 | 84.56 | 20.04 | 57.89 | 32.23 | 58.43 | 32.29 |
| Item.12 | 87.74 | 17.11 | 82.73 | 23.74 | 61.61 | 30.02 | 60.56 | 30.23 |
| Item.13 | 84.95 | 20.70 | 85.73 | 21.50 | 55.57 | 31.13 | 61.91 | 29.51 |
| Item.14 | 77.69 | 22.22 | 83.25 | 23.55 | 42.72 | 32.60 | 55.03 | 32.07 |
| Item.15 | 76.25 | 23.92 | 82.93 | 23.90 | 40.22 | 32.25 | 51.77 | 31.39 |
| Item.16 | 68.88 | 30.54 | 77.94 | 25.19 | 34.67 | 29.70 | 49.88 | 32.74 |
| Item.17 | 74.31 | 26.20 | 81.31 | 22.48 | 40.39 | 30.36 | 48.68 | 32.54 |
| Item.18 | 69.30 | 27.39 | 72.18 | 27.23 | 38.83 | 29.90 | 47.12 | 31.58 |
| Item.19 | 70.70 | 26.19 | 81.43 | 23.71 | 35.37 | 31.78 | 51.43 | 32.78 |
| Item.20 | 72.83 | 27.59 | 74.95 | 26.39 | 60.62 | 27.84 | 61.53 | 28.62 |
| Item.21 | 66.80 | 27.43 | 75.06 | 26.80 | 55.58 | 28.04 | 63.27 | 27.13 |
| Item.22 | 65.91 | 29.29 | 74.24 | 26.40 | 49.04 | 29.53 | 53.68 | 29.59 |
| Item.23 | 47.08 | 31.49 | 73.09 | 29.89 | 35.47 | 27.83 | 55.88 | 30.76 |
| Item.24 | 49.36 | 31.10 | 70.80 | 31.10 | 38.13 | 27.34 | 51.30 | 28.81 |

| Item | Women ($n$ = 105) | | | | Men ($n$ = 104) | | | |
|---|---|---|---|---|---|---|---|---|
| | Frequency | | Extremity | | Frequency | | Extremity | |
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Item.25 | 64.96 | 29.41 | 77.38 | 27.39 | 52.07 | 30.95 | 62.80 | 26.61 |
| Item.26 | 62.58 | 27.81 | 73.91 | 27.40 | 47.03 | 30.00 | 57.68 | 25.86 |
| Item.27 | 64.04 | 33.28 | 73.65 | 31.04 | 29.75 | 28.02 | 41.52 | 32.30 |
| Item.28 | 72.16 | 32.94 | 81.71 | 26.39 | 47.21 | 32.09 | 49.26 | 32.50 |
| Item.29 | 51.38 | 34.91 | 70.71 | 33.02 | 28.95 | 27.66 | 40.63 | 30.36 |
| Item.30 | 73.25 | 26.97 | 78.23 | 25.89 | 47.93 | 31.43 | 55.32 | 31.85 |
| Item.31 | 71.74 | 28.17 | 79.20 | 25.48 | 47.43 | 31.83 | 56.29 | 30.58 |
| Item.32 | 66.19 | 30.92 | 75.91 | 26.01 | 49.88 | 30.62 | 57.05 | 30.34 |
| Item.33 | 78.39 | 24.84 | 76.44 | 25.70 | 58.84 | 31.59 | 59.58 | 29.87 |
| Item.34 | 70.58 | 28.53 | 81.38 | 22.14 | 53.85 | 32.99 | 60.00 | 30.69 |
| Item.35 | 69.38 | 28.47 | 79.57 | 25.25 | 51.29 | 32.35 | 59.31 | 30.51 |
| Item.36 | 70.85 | 28.05 | 81.00 | 21.24 | 48.31 | 32.49 | 60.58 | 30.01 |
| Item.37 | 70.84 | 27.87 | 78.68 | 24.89 | 48.27 | 31.43 | 57.35 | 30.00 |
| Item.38 | 73.35 | 27.55 | 80.13 | 23.73 | 61.80 | 31.29 | 62.07 | 29.46 |
| Item.39 | 34.29 | 35.99 | 66.06 | 36.68 | 23.57 | 27.44 | 44.49 | 33.62 |
| Item.40 | 36.86 | 35.54 | 65.05 | 37.44 | 21.72 | 27.09 | 44.05 | 33.65 |
| Item.41 | 32.44 | 35.61 | 64.23 | 38.97 | 24.99 | 27.19 | 45.38 | 35.52 |
| Item.42 | 35.11 | 37.21 | 62.89 | 37.12 | 32.03 | 28.91 | 43.92 | 33.52 |
| Item.43 | 39.04 | 34.65 | 61.72 | 34.54 | 33.35 | 30.28 | 46.01 | 33.02 |
| Item.44 | 26.24 | 32.66 | 64.15 | 38.82 | 22.61 | 26.66 | 45.91 | 36.97 |
| Item.45 | 39.00 | 36.20 | 69.46 | 34.97 | 31.59 | 31.86 | 50.24 | 35.72 |
| Item.46 | 42.75 | 36.51 | 67.48 | 35.25 | 35.91 | 31.08 | 47.42 | 31.72 |
| Item.47 | 45.44 | 38.02 | 67.76 | 33.46 | 40.93 | 35.95 | 50.51 | 32.72 |
| Item.48 | 73.48 | 22.18 | 80.94 | 19.06 | 44.25 | 26.88 | 55.70 | 26.61 |
| Item.49 | 86.43 | 17.58 | 81.80 | 20.53 | 54.46 | 28.85 | 60.47 | 27.05 |
| Item.50 | 73.63 | 21.47 | 80.21 | 22.30 | 36.22 | 24.94 | 52.01 | 27.25 |

| Item | Women ($n$ = 105) | | | | Men ($n$ = 104) | | | |
|---|---|---|---|---|---|---|---|---|
| | Frequency | | Extremity | | Frequency | | Extremity | |
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Item.51 | 71.43 | 22.03 | 79.28 | 20.69 | 51.87 | 27.78 | 60.37 | 25.88 |
| Item.52 | 68.40 | 21.67 | 78.84 | 21.40 | 51.52 | 26.00 | 60.56 | 25.74 |
| Item.53 | 75.20 | 27.88 | 78.72 | 25.40 | 47.14 | 30.28 | 48.87 | 28.55 |
| Item.54 | 65.47 | 31.43 | 79.11 | 23.30 | 38.73 | 26.86 | 52.08 | 27.02 |
| Item.55 | 58.32 | 33.75 | 77.27 | 26.22 | 37.09 | 26.13 | 50.14 | 27.34 |
| Item.56 | 54.42 | 35.24 | 79.88 | 25.04 | 35.05 | 29.42 | 53.68 | 30.98 |
| Item.57 | 57.33 | 28.74 | 69.49 | 27.96 | 34.57 | 28.23 | 45.38 | 30.35 |
| Item.58 | 49.43 | 31.90 | 77.93 | 24.78 | 35.89 | 29.31 | 52.49 | 30.83 |
| Item.59 | 46.70 | 37.29 | 72.10 | 32.92 | 21.90 | 23.34 | 47.77 | 31.86 |
| Item.60 | 39.63 | 37.68 | 73.04 | 33.90 | 18.04 | 23.43 | 45.42 | 35.40 |
| *M* | 63.11 | 28.85 | 75.66 | 26.90 | 43.15 | 29.58 | 53.16 | 30.56 |
| *SD* | 14.80 | 5.17 | 5.87 | 5.07 | 11.38 | 2.48 | 6.07 | 2.54 |
| Range | [26.24, 87.74] | [17.11, 38.02] | [61.72, 85.73] | [19.06, 38.97] | [18.04, 61.80] | [23.34, 35.95] | [40.63, 63.27] | [25.74, 36.97] |

**Appendix E**

**The Initial Item Pool of the W-SOMS**

| Item | Item number | |
|---|---|---|
| | Study 1 | Studies 2 and 3 |
| Body Evaluation | | |
| In TV programs and movies, female characters' bodies are looked at in a sexual way by other characters (e.g., staring, leering, gazing, ogling). | 1 | 1 |
| In TV programs and movies, female characters' bodies or body parts are commented on in a sexual way by other characters. | 2 | 2 |
| In TV programs and movies, female characters' bodies or sexuality are commented on in a sexual and humorous way (e.g., sexual jokes, gags or innuendos). | 3 | 3 |
| In TV programs and movies, female characters' physical appearance is evaluated by other characters. | 5 | 4 |
| In music videos, female models or music artists are looked at in a sexual way by others (e.g., staring, leering, gazing, ogling). | 11 | 8 |
| Music lyrics include sexual comments about women's body or body parts. | 14 | 11 |
| Music lyrics mention the sexualised body or body parts of women. | 15 | 12 |
| Music lyrics refer to sexualised clothing that highlight women's body parts. | 16 | 13 |
| Music lyrics mention sexualised movements that highlight women's body parts. | 17 | 14 |
| Music lyrics mention that women are looked at by others. | 18 | 15 |
| Music lyrics involve the evaluation of women's bodies or body parts. | 19 | 16 |
| In music lyrics, someone talks about sexual behaviours they would want to do to women. | 50 | 17 |
| On social media, someone makes inappropriate sexual comments about women's bodies or their sexuality. | 54 | 27 |
| Sexualised Body Representation | | |
| In TV programs and movies, female characters wear revealing clothing, and expose their bodies for no reason. | 48 | 5 |
| TV Programs and movies highlight female characters' bodies or sexuality, while their personalities and intellect are less emphasised. | 9 | 6 |

| Item | Item number | |
|---|---|---|
| | Study 1 | Studies 2 and 3 |
| In music videos, camera angles focus on female models' sexualised bodies or body parts, rather than their faces. | 10 | 7 |
| In music videos, female models or music artists wear revealing clothing, or expose their bodies. | 12 | 9 |
| In music videos, female models are represented as decorations, and their bodies and sexuality are used to attract audiences. | 13 | 10 |
| In magazines and advertisements, female models wear revealing clothes, or expose their bodies. | 20 | 18 |
| In magazines and advertisements, female models pose in a sexually suggestive way. | 21 | 19 |
| In magazines and advertisements, female models are featured with sexually suggestive facial expressions (e.g, flirtatious winking, licking lips). | 22 | 20 |
| In advertisements, female models are represented as decorations, and their body or sexuality are used to sell the products. | 25 | 21 |
| In advertisements, female models' bodies or sexuality are highlighted (e.g., body exposure, revealing clothes), while the product itself is less focused on. | 52 | 22 |
| In video/ computer games, female avatars' bodies are hypersexualised with a disproportional breast to waist ratio. | 28 | 23 |
| In video/computer games, female avatars wear revealing clothing or expose their overly sexualised bodies (e.g., an exaggerated breast to waist ratio). | 53 | 24 |
| Women portrayed in social media wear revealing clothes, or expose their bodies. | 30 | 25 |
| Women portrayed in social media pose in a sexually suggestive way. | 31 | 26 |
| Importance of Physical Appearance | | |
| Print/online articles and online comments talk about the importance of physical appearance in women's desirability. | 32 | 28 |
| Print/online articles and online comments encourage women to do something to look more physically attractive (e.g., exercising, dieting, or wearing certain clothing). | 33 | 29 |
| Print/online articles and online comments judge women's value by what they look like rather than who they are as a person. | 34 | 30 |
| Print/online articles and online comments suggest that being with an attractive woman gives a partner prestige. | 35 | 31 |

| Item | Item number | |
|---|---|---|
| | Study 1 | Studies 2 and 3 |
| Print/online articles and online comments suggest people are only interested in women if they are physically attractive. | 36 | 32 |
| Print/online articles and online comments suggest women's main concern should be their appearance. | 37 | 33 |
| Print/online articles and online comments encourage women to attract romantic partners by improving their physical attractiveness | 38 | 34 |

*Note*. There were 34 items in initial item pool of the Women-SOMS, representing Body Evaluation (13 items), Sexualised Body Representation (14 items) and the Importance of Physical Appearance (7 items); Item numbers were ordered from 1 to 60 in Study 1, and reordered from 1 to 34 in Studies 2 and 3.

**Appendix F**

**The Initial Item Pool of the Men-SOMS**

| Item | Item number | |
|---|---|---|
| | Study 1 | Studies 4 and 5 |
| Sexualised Body Representation | | |
| In music videos, camera angles focus on male models' sexualised bodies or body parts, rather than their faces. | 10 | 1 |
| In music videos, male models or music artists wear revealing clothing, or expose their bodies. | 12 | 2 |
| In music videos, male models are represented as decorations, and their bodies and sexuality are used to attract audiences. | 13 | 3 |
| In magazines and advertisements, male models wear revealing clothes, or expose their bodies. | 20 | 4 |
| In magazines and advertisements, male models pose in a sexually suggestive way. | 21 | 5 |
| In advertisements, male models are represented as decorations, and their body or sexuality are used to sell the products. | 25 | 6 |
| In advertisements, male models' bodies or sexuality are highlighted (e.g., body exposure, revealing clothes), while the product itself is less focused on. | 52 | 7 |
| Importance of Physical Appearance | | |
| Print/online articles and online comments judge men's value by what they look like rather than who they are as a person. | 34 | 8 |
| Print/online articles and online comments suggest people are only interested in men if they are physically attractive. | 36 | 9 |
| Print/online articles and online comments encourage men to attract romantic partners by improving their physical attractiveness. | 38 | 10 |

*Note*. There were 10 items in initial item pool of the Men-SOMS, representing Sexualised Body Representation (7 items) and the Importance of Physical Appearance (3 items); Item number were ordered from 1 to 60 in Study 1, and reordered from 1 to 10 in Studies 2 and 3.

**Appendix G**

**Participants Demographics for Study 4**

| Variable | Women (*n* =340) | | Men (*n* = 100) | |
|---|---|---|---|---|
| | *N(%)* or *M±SD* (95%) | Range (min-max) | *N(%)* or *M±SD* (95%) | Range (min-max) |
| Age | 38.32 ± 11.52 | 18 - 59 | 38.33 ± 11.85 | 18 - 58 |
| Ethnicity | | | | |
| White | 305 (89.7%) | | 85 (85%) | |
| Mixed or multiple ethnic groups | 8 (2.4 %) | | 2 (2%) | |
| Asian or Asian British | 11 (3.2%) | | 8 (8%) | |
| Black, African, Caribbean, or Black British | 13 (3.8%) | | 4 (4%) | |
| Prefer not to say | | | 1 (1%) | |
| Others | 3 (0.9 %) | | | |

**Appendix H**

**Participant Demographics for Study 5**

| Variable | Women | | | | Men | | | |
|---|---|---|---|---|---|---|---|---|
| | Time 1 ($n$ = 331) | | Time 2 ($n$ = 288) | | Time 1 ($n$ = 328) | | Time 2 ($n$ = 299) | |
| | $n$(%) or $M$±$SD$ (95%) | Range (min-max) | $n$(%) or $M$±$SD$ (95%) | Range (min-max) | $n$(%) or $M$±$SD$ (95%) | Range (min-max) | $n$(%) or $M$±$SD$ (95%) | Range (min-max) |
| Age | 38.24 ± 11.24 | 18 - 58 | 39.04 ± 11.16 | 18 - 58 | 38.09 ± 11.75 | 18 - 58 | 38.66 ± 11.83 | 18 - 58 |
| Ethnicity | | | | | | | | |
| White | 309(93.4%) | | 271(94.1%) | | 294(89.6%) | | 273(91.3%) | |
| Mixed or multiple ethnic groups | 4(1.2%) | | 3(1%) | | 8(2.4%) | | 3(1.0%) | |
| Asian or Asian British | 11(3.3%) | | 8(2.8%) | | 17(5.2%) | | 15(5.0%) | |
| Black, African, Caribbean, or Black British | 4(1.2%) | | 4(1.4%) | | 7(2.1%) | | 7(2.3%) | |
| Prefer not to say | 2(0.65%) | | 1(0.3%) | | 2(0.6%) | | 1(0.3%) | |
| Others | 1(0.3%) | | 1(0.3%) | | | | | |
| Education | | | | | | | | |
| Less than high school degree | 5(1.5%) | | 5(1.7%) | | 8(2.4%) | | 8(2.7%) | |
| High school or equivalent degree | 125(37.8%) | | 108(37.5%) | | 112(34.1%) | | 103(34.4%) | |
| Some University but no degree | 40(12.1%) | | 32(11.1%) | | 42(12.8%) | | 36(12.0%) | |
| Bachelor's degree | 120(36.3%) | | 107(37.2%) | | 121(36.9%) | | 108(36.1%) | |
| Master's degree or above | 41(12.4%) | | 36(12.5%) | | 40(12.2%) | | 39(13.0%) | |
| Others | | | | | 5(1.5%) | | 5(1.7%) | |
| Income | | | | | | | | |
| £0 - £10,000 | 20(6%) | | 19(6.6%) | | 27(8.2%) | | 25(8.4%) | |
| £10.000 - £20.000 | 38(11.5%) | | 33(11.5%) | | 46(14%) | | 42(14.0%) | |
| £20.000 - £30.000 | 55(16.6%) | | 46(16.0%) | | 61(18.6%) | | 54(18.1%) | |
| £30.000 - £40.000 | 59(17.8%) | | 49(17.0%) | | 48(14.6%) | | 43(14.4%) | |
| £40.000 - £50.000 | 44(13.3%) | | 39(13.5%) | | 41(12.5%) | | 39(13.0%) | |
| £50.000 - £60.000 | 28(8.5%) | | 26(9.0%) | | 31(9.5%) | | 29(9.7%) | |
| £60.000 - £70.000 | 22(6.6%) | | 20(6.9%) | | 25(7.6%) | | 22(7.4%) | |
| £70.000 - £80.000 | 16(4.8%) | | 14(4.9%) | | 13(4%) | | 12(4.0%) | |
| £80.000 or more | 33(10%) | | 29(10.1%) | | 23(7%) | | 22(3.7%) | |
| Prefer not to say | 16(4.8%) | | 13(4.5%) | | 13(4%) | | 11(3.7%) | |

*Note.* A significant difference in age was found between the women who completed and who did not complete the Time 2 survey ($t$ (329) = 3.38, $p$ < .001), and the men who completed and who did not complete the Time 2 survey ($t$ (38) = 3.53, $p$ < .001).

**Appendix I**

**Psychometric Properties of The Women-SOMS and Men-SOMS for Study 5**

| Psychometric Property | Women-SOMS | | | | Men-SOMS |
|---|---|---|---|---|---|
| | Total | Importance of Physical Appearance | Sexualised Body Representation | Body Evaluation | |
| Internal Consistency | ✓ | ✓ | ✓ | ✓ | ✓ |
| Test-retest Reliability | ✓ | ✓ | ✓ | ✓ | ✓ |
| Construct Validity | | | | | |
| Convergent Validity | | | | | |
| SATAQ3-IG | | | | | |
| SOBBS | | | | | |
| OBC-Body Shame | | | | | |
| OBC-Surveillance | | | | | |
| Interpersonal Sexual Objectification witnessed in media | ✓ | ✓ | ✓ | ✓ | ✓ |
| Discriminant Validity | | | | | |
| ISOS | | | | | |
| CME-2-AS | | | | | |

| Psychometric Property | Women-SOMS | | | | Men-SOMS |
|---|---|---|---|---|---|
| | Total | Importance of Physical Appearance | Sexualised Body Representation | Body Evaluation | |
| Differentiation by daily media usage | ✓ | ✓ | ✓ | ✓ | ✓ |
| Predictive Validity | | | | | |
| SATAQ3-IG | ✓ | | | ✓ | ✓ |
| SOBBS | ✓ | | | ✓ | ✓ |
| OBC-Surveillance | ✓ | | | ✓ | ✓ |
| Incremental Validity | | | | | |
| SATAQ3-IG | | | | | ✓ |
| SOBBS | | | | | ✓ |
| OBC-Surveillance | | | | ✓ | |

*Note*. Mark "✓" indicates the psychometric property of the measure was supported. Women-SOMS Total = Women-Sexually Objectifying Media Total Score; Women-SOMS Importance of Physical Appearance = Importance of Physical Appearance subscale; Women-SOMS Sexualised Body Representation = Sexualised Body Representation subscale; Women-SOMS Body Evaluation = Body Evaluation subscale; Men-SOMS= Men-Sexually Objectifying Media Scale; SATAQ3-IG= Internalisation General Subscale of The Sociocultural Attitudes Towards Appearance Scale-3; SOBBS = Self-Objectification Beliefs and Behaviours Scale; OBC-Body Shame= Objectified Body Consciousness Body Shame Scale; OBC-Surv = Objectified Body Consciousness Body Surveillance Scale; ISOS = Interpersonal Sexual Objectification Scale; CME-2-AS= The Antisocial Subscale of Content-based Media Exposure Scale 2.