Exposure to Artworks and Pictures of natural Vulvas: Is there an Effect on Women's Genital Self-image?

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Abstract

Women often feel self-conscious about their genital appearance due to concerns from limited knowledge about "normal" variation of women's genitals. In two experiments (study 1: n=158, M=24.27 years; study 2: n=132, M=26.18 years) we tested the effect of artworks and pictures of diverse vulvas on women and their attitudes towards female genitals, female genital self-image, and their attitude towards female genital cosmetic surgery (FGCS). After the presentation of anatomical vulvas, attitudes towards female genitals became more negative on average. Presentation of artistic images of diverse vulvas lead to more positive attitudes towards female genitals. However, positive attitudes towards FGCS also increased. Simply educating about diversity by showing pictures may not be enough to help women increase their genital self-image.

Key words

Female genital self-image, female genital cosmetic surgery, attitudes, experiment, attitudes towards women's genitals

Introduction

Among young women there is an increasing awareness regarding the appearance of their vulva. A cultural development causes the increased attention and visibility of female genitals in the first place: intimate shaving (Borkenhagen, 2013; Michala, Koliantzaki, & Antsaklis, 2011). In addition, influence of the media (Engeln–Maddox, 2005; Grabe, Ward, & Hyde, 2008) and a 'pornographication' of Western society are mentioned (Borkenhagen, 2013). Since the late 1990s, nude and pornographic portrayals of women depict shaved intimate areas. In 2001, the first fully shaved playmate was shot for the Playboy

(Borkenhagen, 2013). In Western countries, it is common to select porn actresses according to the appearance of their labia, and digitally modify images in magazines to retouch protruded labia (Green, 2005; McDougall, 2013; Sharp & Tiggemann, 2016). According to the current Western norm for female genitals, they should be invisible and form a smooth curve between the thighs with no protruding labia (Bramwell, 2002). In the media, a specific ideal of beauty is marketed: flat, hairless, and prepubertal (Bramwell, 2002), often using the term "Barbie look" (Iglesia, Yurteri-Kaplan, & Alinsod, 2013). This distorted presentation may have negative consequences on women, since beauty ideals presented in the media influence the self-perception of young girls (A. Crouch & Degelman, 1998) and women feel less comfortable in their own body when confronted with digitally modified images (Grabe et al., 2008).

Even human anatomy textbooks depict non-protruding and symmetrical vulvas (Howarth, Sommer, & Jordan, 2010). Moreover, plastic surgeons perceived larger inner labia significantly more "disgusting" and "unnatural" than other physicians did. Male surgeons tended to score higher than their female colleagues (Reitsma, Mourits, Koning, Pascal, & Van der Lei, 2011). Surgical websites are pathologizing the "normal", normalizing modification, and promoting cosmetic surgery as an easy non-risky option (Liao, Taghinejadi, & Creighton, 2012; Moran & Lee, 2013). Many female genital cosmetic surgeries (FGCS) are performed purely justified by subjective reports of physical or psychological difficulties without formally evaluating them before or after the operation (Liao et al., 2010).

Unfortunately, there is a lack of representational norms in scientific literature (Basaran, Kosif, Bayar, & Civelek, 2008; Lloyd, Crouch, Minto, Liao, & Creighton, 2005; Wildfang Lykkebo, Drue, Lam, & Guldberg, 2017) to counteract the influence of personal preferences even in the medical professions. In addition, women see naked child bodies more often than those of adult women and may infer that non-protruding labia are the norm

(Bramwell, Morland, & Garden, 2007). Altogether, this may lead to a distorted perception for young women of what is being considered “normal” labia sizes (Lloyd et al., 2005; Michala et al., 2011). In the absence of representational population norms and presentations depicting the natural variability of vulvas, how should women develop a concept of average and acceptable morphology? There is ample room for insecurity and dissatisfaction with one’s own genitals.

The importance of the appearance of one’s own labia becomes clear in a Dutch study. Forty-three percent of women surveyed stated that the appearance of their labia minora was important. About 76% of participants often examined their own genitals and 38% paid attention to the labia of others. 71% of the women considered their own labia to be normal, 14% to be abnormal and 7% considered genital surgery (Koning, Zeijlmans, Bouman, & van der Lei, 2009). Feelings of self-consciousness often arise due to concerns from limited knowledge about how women’s genitals should look, smell, or feel (DeMaria, Meier, & Dykstra, 2019). Women who decide to undergo a genital surgery often find their vagina “odd” and “funny” and strive for a “normal” look (Bramwell et al., 2007), a beautification of their vulva or an improvement in their sexual function or satisfaction (Liao et al., 2010). A survey of 162 patients on their motives for intimate surgery in France showed that 87% wanted to have their labia reduced for esthetical reasons, 64% reported discomfort when wearing clothes, 43% pain during intercourse and 26% difficulties in physical activity (Rouzier, Louis-Sylvestre, Paniel, & Haddad, 2000). Another reason often cited is the dissatisfaction with sexual life, caused by a lack of self-confidence in the genital appearance. The operation is meant to help building more confidence and therefore achieving a more satisfying sex life (Bramwell et al., 2007). However, negative genital self-image and self-awareness are related to less pleasure, less sexual involvement, and sexual dissatisfaction (Berman, Berman, Miles, Pollets, & Powell, 2003; Komarnicky, Skakoon-Sparling, Milhausen, & Breuer, 2019). On the other hand, there is no association between labia size and sexual desire (Bramwell et al.,

2007), sexual function (Lloyd et al., 2005), or physical discomfort (Reitsma et al., 2011). Even though these aspects are usually cited as the first reasons for considering an operation (Bramwell et al., 2007). Thus, it is not labia size per se, but a positive genital self-image that is relevant for positive sexual experiences in women.

Howarth and colleagues "strongly encourage scientific and educational/artistic initiatives that promote clinical and popular understanding of the range of variation in genital morphology" (Howarth et al., 2010; p. 78). In research on body positivity, there is the hypothesis that engaging with body positive content may be associated with psychological and physical benefits (R. Cohen, Irwin, Newton-John, & Slater, 2019). There are now several freely accessible, educational websites on the diversity of female genital areas (for example, The Center Fold Project, the Labia Library, the Large Labia Project) (Sharp & Tiggemann, 2016).

In an Australian experimental study, an education online resource had a positive impact on the perception of "normality" in women (Sharp & Tiggemann, 2016). One group saw a seven-minute, open-source video about digitally modifying inner labia for soft porn magazines to conform to Australian nudity regulations. Another group saw anatomical images of female genitals, a third group served as a control condition, which viewed neither the video nor the pictures. In the education video group, awareness increased of the diversity of female genital appearance and the digital process of media images. But there was no effect of either resource on women's attitudes towards their own genitals (Sharp & Tiggemann, 2016).

If the mere presentation of diverse anatomical pictures did not have an impact on the women's attitudes towards their genitals, what about artistic depictions as suggested by Howarth (2010)? What about the effect of presenting pictures of natural vulvas in the context of nature, creating associations with imagery considered beautiful in nature (for instance, flowers, sea shells)? What effect would these pictures have on the genital self-image, the

attitude towards female genitals, and the consideration of own labiaplasty? These questions were tested with two online experiments where women viewed artistic pictures (Study 1) or anatomically diverse pictures together with images from nature (study 2).

STUDY 1 – Artistic Pictures

Research Question and Hypotheses

The present online experiment examined whether the presentation of anatomical or artistic images of the diversity of female genitals has an effect on the genital self-image, the general attitude towards female genitals, or the consideration of FGCS.

H1: The presentation of anatomical and artistic images creates a more positive attitude towards female genitals compared with the control condition (pictures of natural landscapes).

H2: The presented anatomical and artistic pictures lead to more satisfaction with the own genitals.

H3: The presented anatomical and artistic pictures lead to decreased acceptance rates of FGCS. In the neutral condition acceptance rates stay the same.

Material and Methods

Study Design

The current study was an experimental design with two factors: 1) factor time: measurement time points (before and after image presentation) and 2) randomized group allocation to one of three conditions: *anatomical*, *artistic*, or *natural landscapes*. In the anatomical condition, participants saw 20 *anatomical* photos of unaltered vulvas, in the *artistic* condition 20 artistic images of natural vulvae, and in the *neutral* condition 20

photographs of natural landscapes. The dependent variables were the genital self-image and the attitudes towards female genitals, as well as attitudes and personal consideration of cosmetic intimate surgery.

Sample

164 participants completed the survey. Since the experimental group allocation did not work for six participants, they were excluded. Thus, the final sample size was 158 participants. The age range was between 18 and 35 years (M = 24.27, SD = 3.99), over half of the participants had a university degree (51.5%, n = 83). The majority of participants were students (73.4%, n = 116) and did not have any children, 95.6% (n = 151). The sexual orientation of the participants was predominantly heterosexual (94.5%, n = 149). Over half of the women were in a stable partnership, 57% (n = 90). Most participants (76.6%, n = 121) had previously heard of cosmetic intimate surgery, 37 (23.4%) never heard of it before. Only two participants had undergone a cosmetic intimate surgery (3.16%). More details are given in Table 1. There were no significant differences between the experimental groups.

-- Insert Tab. 1 near here --

Procedure

We included young women between the ages of 18 and 35, as the demand of female genital surgery is the most common in this age range (Borkenhagen, 2013). The call for participants was distributed via social networks and the university digital platform. The study was conducted online via UNIPARK Enterprise Feedback Suite with random group allocation. It took about 25 minutes to complete the survey. At the beginning participants gave their informed consent and learned about FGCS, in case they had not previously heard about it, which was true for n=37 of the sample (23.4%). After completing these questions,

women were shown pictures depending on their group allocation. Each image was displayed on a separate page and the women were informed that there were no time constraints. This was followed by the second measurement. Data collection took place in November 2017. We followed the ethical standards of the Declaration of Helsinki.

Material and Measures

Pictures

As described above, participants were shown 20 pictures per condition. Most of the anatomical photos (n = 17) were taken from the freely accessible website "The Labia Project" (http://www.labialibrary.org.au/photo-gallery/#view-from-below). Those were pictures of natural variations in vulvas viewed "from below". The approximately life-size images included close-up views of anatomical, unoperated, natural vulvas without digital modification and without other body parts visible. They differed in terms of labial size, shape, age and skin color of women, both shaved and unshaved intimate areas were shown. In addition, three pictures by photographer Grit Scholz (2010) were added to include more vulvas with natural pubic hair growth.

The images of the artistic condition came from the artist Jacqueline Secor (https://jacquelinesecorart.com). Again, the images were chosen from the perspective "from below" showing the diversity of female genitals in with varying anatomical features. The pictures were rendered aesthetically and somewhat more abstract by embellishments, warm color choices and a relation to nature (through flowers and plants in the pictures).

In the nature condition, participants viewed neutral nature pictures of beaches, mountains, or plants. We took care to choose neutral images, which did not evoke any genital associations.

Attitude Towards Women's Genitals Scale (ATWGS, Herbenick, 2009) was used to assess the general attitude of the participants towards female genitals. For the present study, the original English version of the ATWGS has been translated and back-translated by a native speaker into German. The questionnaire consists of ten items capturing the general attitude and feelings regarding the appearance, smell, and view of society towards female genitals (Herbenick, 2009). The answer format is a four-point rating scale from 1 = *strongly disagree* to 4 = *strongly agree*. The ATWGS has sufficient internal consistency (Cronbach's alpha = .85) and convergent and predictive validity (Herbenick, 2009). The reliability of the total score of the German translation in the current study was Cronbach's alpha of .79. Higher values indicate a more positive attitude towards female genitals.

Female Genital Self Image Scale (FGSIS, Herbenick & Reece, 2010) was used to assess the genital self-image in a German translation (Grohé, 2017). The FGSIS contains seven items about the appearance, smell, and function of one's own vulva, as well as the feeling towards one's own genitals in interpersonal situations, e.g. in contact with the sexual partner or medical doctors (Herbenick & Reece, 2010). The response scale is a four-point rating scale from 1 = *strongly agree* to 4 = *strongly disagree*. Good reliability (Cronbach's alpha = .88) and validity have been established (Herbenick & Reece, 2010; Herbenick et al., 2011). The reliability in the present is Cronbach's Alpha = .75.

Attitude towards genital cosmetic surgery. We used four ad-hoc items to assess the attitudes towards genital cosmetic surgery: We asked participants if they were considering genital surgery for themselves. If answered "yes", the reasons were asked giving three options: for aesthetic, or functional reasons, or both or other. Secondly, we asked for the general evaluation of female genital surgery, with the answer options 1 = positive, 2 = ambivalent / neutral, 3 = negative.

Socio-demographics. In addition to the common sociodemographic data, we asked whether the participants had previously heard of female genital surgery or undergone genital cosmetic surgery themselves.

Statistical analysis

The dependent variables represented the genital self-image, the attitude towards female genitals, the consideration, evaluation, and attitudes regarding female genital surgery, while group allocation and time of measurement were the independent variables. In order to ensure sufficient test power, we calculated a priori optimal sample sizes with G*Power (Faul, Erdfelder, Lang, & Buchner, 2007).

The effect of the independent variables on the interval-scaled dependent variables (ATWGS, FGSIS) was investigated by means of a 2x3 repeated measures ANOVA with the factor time (pre, post) and the factor picture condition (anatomical, artistic, neutral). To avoid alpha-error accumulation, the Tukey-HSD correction was used in the post-hoc analyses. For the analyses of the attitudes towards FGCS, we used Wilcoxon's rank sum test. Overall, we checked for violations of assumptions before the analyses. No violations were found. To check for a priori group differences, we carried out one-way ANOVAs which did not yield any significant differences between the groups. We used common conventions when interpreting effect sizes (J. Cohen, 1988).

Results

Attitude towards female Genitals

The ANOVA with repeated measures showed a statistically significant interaction between the measurement time points and the study groups with an effect size in the range of moderate effects ($F=8.474$, $p<.001$, partial $\eta^2=.099$). However, the differences between the groups were not significant. At time 2, on a descriptive level, participants in the *Anatomical*

condition reported a negative shift in their attitudes towards female genitals after presentation of the images. In the *Artistic* condition, attitudes increased. In the control condition (*Neutral*, landscape pictures) no change was observed (see Tab. 2). Since the differences between the groups were not significant, the hypothesis was not supported. For the *Anatomical* condition data even showed effects contrary to our hypotheses, e.g. attitudes towards female genitals worsened.

-- *Insert Tab. 2 near here* --

Genital Self-image

The ANOVA with repeated measures showed a significant interaction between time and group with an effect size in the range of moderate effects ($F=5.136$, $p \leq .007$, partial $\eta^2=.06$). Overall, the participants showed a more positive genital self-image after the image presentation in the *Artistic* and in the *Anatomical* condition and a slight decrease in the control condition (*Neutral*, landscape pictures). However, the differences between the groups were not significant. Thus, the second hypothesis could not be supported.

Attitude towards genital cosmetic Surgery

In the *Anatomical* condition, attitudes towards FGCS were on average more positive after the presentation of the pictures than before (*Anatomical*: at t1 9.4% rated "positive", at t2 18.9% "positive", $Z=-2.179$, $p \leq .029$). In the *Neutral* control and *Artistic* condition, no significant changes in attitudes towards FGCS were observed (*Artistic*: t1 13.2% vs. t2 20.8% "positive", $Z=-1.633$, $p \leq .102$; *Neutral*: t1 3.8% vs. t2 5.8% "positive", $Z=-1.394$, $p \leq .163$). The third hypothesis could not be supported.

STUDY 2 – pictures of naturally diverse vulvas accompanied by pictures from nature

Research Question and Hypotheses

Since in Study 1 women seemed to react negatively to the sole presentation of natural vulvas and, in her book, Grit Scholz (2010) took great care to depict pictures of vulvas together with similar looking pictures from nature, which most perceive as aesthetic or beautiful (like blossoming flowers, sea shells). See for an example https://www.das-tor-ins-leben.de/b%C3%BCcher/das-tor-ins-leben/. By portraying these pictures together, the idea was to create a more neutral, positive look on vulvas and their shapes and colors. In Study 2 we tested this potential effect.

H1: The presentation of anatomical images of vulvas combined with natural images creates a more positive attitude towards female genitals compared with the control condition (pictures of natural landscapes).

H2: The presented anatomical images of vulvas combined with natural images combined increases the genital self-image compared with the control condition (pictures of natural landscapes).

H3: The presented anatomical pictures combined with natural images lead to decreased acceptance rates of FGCS. In the neutral condition acceptance rates stay the same.

Material and Methods

Study Design

The current study was an experimental design with two factors: 1) factor time: measurement time points (before and after image presentation) and 2) randomized group allocation to one of two conditions: *combined anatomical and pictures of nature* vs. *natural landscapes* (control condition). In the anatomical condition, participants saw 20 pictures

divided in two halves. One half depicting an *anatomical* photo of unaltered vulvas, the other half a picture from nature (for instance a blossoming flower, a sea shell, bark) which were similar looking to the presented vulva. In the *neutral* condition, 20 photographs of natural landscapes were presented. The dependent variables were the genital self-image and the attitudes towards female genitals.

Sample

132 women completed the survey. The age range was between 18 and 50 years (M = 26.18, SD = 6.88), about half of the participants had a university degree (47.4%, n = 110). The majority of participants were students (63.4%, n = 147) and did not have any children, 87.9% (n = 204). The sexual orientation of the participants was predominantly heterosexual (64.2%, n = 149) followed by homosexual (n = 37; 15.9%) and bisexual (n=34, 14.7%). Half of the women were in a committed relationship, 59.5% (n = 138). Most participants (86.2%, n = 200) had previously heard of cosmetic intimate surgery. Four participants had undergone a cosmetic intimate surgery (1.7%). See Table 1 for details. There were no significant differences between the experimental groups.

Procedure

The call for participants aimed at women between the ages of 18 and 35, since the demand of female genital surgery is the most common in this age range (Borkenhagen, 2013). However, some women older than 35 years of age chose to participate as well. The call was distributed via social networks and the university digital platform, as well as an online forum for LGBTQ+ women. The study was conducted online in an identical fashion to Study 1 (see above). Data collection took place in November/December 2018.

Material and Measures

Pictures

As described above, participants were shown 20 pictures in each condition. In the *Anatomical + nature* experimental group, women saw pictures by photographer Grit Scholz (2010) who published pictures of a wide range of natural vulvas, where each vulva is presented with a picture from nature with was similar in shape or form (for instance, a sea shell). In the *Neutral* condition, participants viewed neutral nature pictures of beaches, mountains, or plants. We took care to choose neutral images, which did not evoke any genital associations.

Measures

To measure attitudes towards women's genitals and the female genital self-image we utilized the ATWGS and the FGSIS as well as the rating on FGCS (see Study1).

Statistical analysis

We carried out two-way ANOVAs with repeated measures and Wilcoxon rank sum tests similar to Study 1 (see above).

Results

Attitude towards female Genitals

The ANOVA with repeated measures showed a statistically significant interaction between the measurement time points and the study groups with an effect size in the range of small effects ($F=11.136$, $p<.001$, partial $\eta^2=.046$). At time 2, participants in the *Anatomical+nature* condition reported slightly less positive attitudes towards female genitals after presentation of the images, whereas the control condition stayed on the same level (see Tab. 2). Thus, the data did not support the hypothesis.

Genital Self-image

The ANOVA with repeated measures showed no significant interaction between time and group (F=1.770, $p \leq .185$, partial $\eta^2=.008$). Ratings regarding the genital self-image remained virtually the same before and after the presentation of the different pictures. Thus, the second hypothesis could not be supported.

Attitude towards genital cosmetic Surgery

In the *Anatomical+nature* condition, attitudes towards FGCS were on average more positive after the presentation of the pictures than before (at t1 7.7% rated "positive", at t2 22.2% "positive", Z=-3.869, $p<.001$). In the *Neutral* control, no significant changes in attitudes towards FGCS were observed (t1 7.0% vs. t2 11.3% "positive", Z=-1.941, $p \leq .052$). The third hypothesis could not be supported.

Discussion

This study is the first to test the artistic images of natural vulvas as an intervention to improve women's genital self-image. In addition, the influence of anatomical or artistic images on general attitudes toward female genitals has not been previously tested with a validated instrument (such as the ATWGS). The results of this online experiment partly showed a different picture than initially expected and hypothesized.

Overall, participants had quite positive views about female genitals and their own genitals. A Dutch study found similarly positive result regarding women's genital self-image (Laan, Martoredjo, Hesselink, Snijders, & van Lunsen, 2016). Contrary to the expected positive effect of the anatomical images, the attitude towards female genitals of the subjects after the presentation of anatomical vulvas on average became more negative. Additionally, and contrary to the intention of the "intervention", the women showed greater understanding of considering surgical procedures after seeing the natural diversity of female genital areas. Both contradicted previous expectations and hypotheses.

In contrast to the results of the study by Laan and colleagues (2016), no statistically significant change in the genital self-image of women after the anatomical images was found in this online experiment. In the Dutch study, similar images produced an improvement in the participants' genital self-image. In an Australian study, on the other hand, images as sole intervention also had no effect (Sharp & Tiggemann, 2016).

One reason for this outcome could be that women rarely see other women naked (Laan et al., 2016) and the perspective chosen (view from below) for the study is rather unfamiliar to (heterosexual) women. In addition, empiric evidence shows that the habit of shaving the genital area and the availability of pornography influence the ideal image of the vulva in public, and thus also of women (Borkenhagen, 2013; Koning et al., 2009; Sharp & Tiggemann, 2016). Due to the media bias and a societal taboo around the depiction of natural vulvas, the images of this study may have surprised some of the participants. For some subjects, the images may have provided the first opportunity to see a number of natural female genitals (N. S. Crouch, Deans, Michala, Liao, & Creighton, 2011; Reitsma et al., 2011; Sharp & Tiggemann, 2016). The depicted anatomical diversity may have contradicted the ideal and familiar image of participants. Since, genital self-image was quite positive in our samples, it would be interesting to see if the images have a stronger effect in women who feel very insecure about the “normality” of their appearance.

Simply educating about diversity may not be enough, though. In a qualitative study, several women stated that they were well aware of the natural variety, yet they found their genital appearance disturbing (Bramwell et al., 2007). They felt the desire for surgical change, despite the knowledge of diversity. The same can be observed with other cosmetic surgeries. Every day, women see the large variety of lips, breasts or imperfect bodies. Nevertheless, they aspire to a social ideal of beauty and take great health risks for a supposedly perfect appearance (Sieverding, 1983). More comprehensive interventions may be needed. In

Germany, there is an online intervention spanning four sessions over a month, where women learn to love their unique vulva (https://akademie-der-weiblichkeit.de/meine-yoni/). This could be a more promising approach for long-term improvements in female genital self-image which needs to be evaluated in future.

The artistic images, however, lead to more positive attitudes towards female genitals in our study. The results of this study show that a more abstract and artistic representation of the diversity of female genitals has a positive impact on women's attitudes. Natural variations of female genitals may be more aesthetic and appealing to some women through the artistic aspect, creating a promising alternative approach. This potential effect needs to be replicated in further studies.

Limitations and future studies

One limitation of this study is that the sample consisted mainly of a homogenous sample of educated, young, and heterosexual women. Therefore, it is not possible to generalize the results to other women. For homo- or bisexual women, the images could evoke different emotions than heterosexual participants.

The participants in this study had a fairly positive genital self-image and a positive attitude towards female genitals in general, which was perhaps one of the reasons why women "dared" to participate in the study. If dissatisfaction with their genitals has led women not to take part in the study, the results of this study can only be generalized to women with a rather positive attitude. The effect of exposure to anatomical images could be more effective in a sample of women with more negative genital self-image and should be explored in further research.

It should also be criticized in this study that the ideal image of the participants was not assessed. So, it can only be assumed that personal preference and natural diversity contradicted each other, which may have led to the more negative attitude towards female

genitals after viewing anatomically diverse images. In terms of the measures, the attitudes towards FGCS was assessed with a single ad-hoc formulated item. Even though, this item seemed sensitive to change, a psychometrically sound scale would be preferable in future studies. Additionally, we need to consider that the two measurement time points were directly before and after the images were presented. This does not allow conclusions about the long-term effects of the images. After manipulation with anatomical images, the study by Laan and colleagues (2016) showed a sustained and positive effect on the genital self-image after fourteen days. Little is known about the effects beyond this period.

Conclusions

It is also important to educate parents and girls about the development of female external genitals during adolescence (Michala et al., 2011). The development of prevention and intervention strategies that involve all parties (doctors, men and women) and promote open-mindedness, backed by transparent and stigma-free knowledge seems vital. This may reduce the number of self-conscious women who have concerns about not being "normal" and prevent medically unnecessary surgeries. However, great care needs to be invested, to create interventions that are not counterproductive (e. g. lead to more understanding for FGCS).

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Table 1

Socio-demographic data of the groups

	Study 1						Study 2			
	Anatomical (*n* = 53)		Artistic (*n* = 53)		Neutral (*n* = 52)		Anatomical plus Nature (*n*=117)		Neutral (*n*=115)	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Age	24.1	(3.5)	24.4	(4.2)	24.4	(4.3)	26.18	6.88	27.11	7.13
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Education										
University	30	(56.6)	22	(41.5)	31	(59.6)	52	(44.4)	58	(50.4)
High School	22	(41.5)	29	(54.7)	29	(54.7)	59	(50.4)	48	(41.7)
Secondary School	1	(1.9)	2	(3.8)	3	(5.8)	6	(5.2)	8	(6.9)
Children	2	(3.8)	2	(3.8)	3	(5.8)	13	(11.1)	14	(12.2)
Sexual Orientation										

Heterosexual	50	(94.3)	50	(94.3)	49	(94.2)	72	(61.5)	77	(67.0)
Homosexual	0	(0)	0	(0)	1	(1.9)	19	(16.2)	18	(15.7)
Bisexual	3	(5.7)	3	(5.7)	1	(1.9)	18	(15.4)	16	(13.9)
Other	0	(0)	0	(0)	1	(1.9)	8	(6.9)	4	(3.5)
Relationship Status										
Relationship	30	(56.6)	33	(62.3)	27	(51.9)	61	(52.1)	55	(47.8)
Single	19	(35.8)	19	(35.8)	18	(34.5)	39	(33.3)	38	(33.0)
Married	3	(5.7)	1	(1.9)	7	(13.5)	8	(6.8)	14	(12.2)
Other	1	(1.9)	0	(0)	0	(0)	9	(7.7)	8	(6.8)
Heard of FGCS	42	(79.2)	39	(73.6)	40	(76.9)	97	(82.9)	103	(89.6)
History of FGCS	0	(0)	2	(3.8)	0	(0)	1	(0.9)	3	(2.6)

Note: FGCS = Female genital cosmetic surgery

Table 2

Analysis of variance across three conditions Antatomical, Artistic, and Neutral across both time points

STUDY 1										
		Anatomical		Artistic		Neutral		ANOVA interaction time*group		
Variables		*M*	*SD*	*M*	*SD*	*M*	*SD*	F	*p*	Partial η^2
ATWGS	Time 1	30.40	4.41	30.59	3.36	31.19	4.01	8.474	<.001	.099
	Time 2	29.40	5.58	31.08	4.06	31.69	4.17			
FGSIS	Time 1	20.09	3.22	19.72	2.94	20.00	3.24	5.136	.007	.062
	Time 2	20.85	3.36	20.08	3.40	19.71	3.58			

STUDY 2								
		Anatomical + Nature		Neutral		ANOVA interaction time*group		
Variables		*M*	*SD*	*M*	*SD*	F	*p*	Partial η^2
ATWGS	Time 1	32.48	4.61	32.53	4.73	11.136	.001	.046
	Time 2	31.74	5.20	32.81	4.71			
FGSIS	Time 1	20.31	4.01	20.26	3.46	1.770	.185	.008

Time 2	20.38	3.84	19.94	3.36

Note: ATWGS = Attitude Towards Women's Genitals Scale, FGSIS = Female Genital Self Image Scale