

# What's normal? Influencing women's perceptions of normal genitalia: an experiment involving exposure to modified and nonmodified images

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**Objective** Examine women's perceptions of what is 'normal' and 'desirable' in female genital appearance.

**Design** Experiment with random allocation across three conditions.

**Setting** Community.

**Sample** A total of 97 women aged 18–30 years.

**Methods** Women were randomly assigned to view a series of images of (1) surgically modified vulvas or (2) nonmodified vulvas, or (3) no images. They then viewed and rated ten target images of surgically modified vulvas and ten of unmodified vulvas.

**Main outcome measures** Women used a four-point Likert scale ('strongly agree' to 'strongly disagree'), to rate each target image for 'looks normal' and 'represents society's ideal'. For each woman, we created two summary scores that represented the extent to which she rated the unmodified vulvas as more 'normal' and more 'society's ideal' than the modified vulvas.

**Results** For ratings of 'normality,' there was a significant effect for condition ( $F_{2,94} = 2.75$ ,  $P = 0.007$ ,  $r_{adj}^2 = 0.082$ ): women who had first viewed the modified images rated the modified target vulvas as more normal than the nonmodified vulvas, significantly different from the control group, who rated them as less normal. For ratings of 'society's ideal,' there was again a significant effect for condition ( $F_{2,92} = 7.72$ ,  $P < 0.001$ ,  $r_{adj}^2 = 0.125$ ); all three groups rated modified target vulvas as more like society's ideal than the nonmodified target vulvas, with the effect significantly strongest for the women who had viewed the modified images.

**Conclusions** Exposure to images of modified vulvas may change women's perceptions of what is normal and desirable. This may explain why some healthy women seek labiaplasty.

**Keywords** Cosmetic surgery, female genitalia, labia reduction, labiaplasty.

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## Introduction

Labiaplasty (reducing and making the labia minora symmetrical) is the most widely performed female genital cosmetic procedure<sup>1</sup> with its popularity increasing dramatically since it first entered public awareness 15 years ago.<sup>2</sup> From 2001 to 2010, the number of labiaplasty procedures covered by the NHS in the UK increased five-fold.<sup>3</sup>

Normal genitalia show considerable variation, with healthy labia minora ranging from 2 to 10 cm in length.<sup>4</sup> Yet women with normal labia are seeking labiaplasty<sup>3</sup> and healthcare professionals are performing these procedures.<sup>5,6</sup>

There is no relationship between the size of the labia minora and sexual pleasure<sup>7</sup> or physical discomfort,<sup>8</sup> with aesthetic concerns the primary reason for requesting the surgery among adult women<sup>7</sup> and adolescents.<sup>9</sup> Research indicates that the majority of women believe that normal labia minora do not protrude beyond the labia majora,<sup>10</sup> whereas the vast majority of physicians agree that this aesthetic represents society's ideal.<sup>8</sup>

We address women's perceptions of what is 'normal' and 'desirable' to understand whether misperceptions may underlie requests for unnecessary vulval surgery. Cultural representations of women's genitals reinforce the idea that

labia minora should be invisible.<sup>11</sup> Widely available pornography containing selective or digitally altered images, together with limited exposure to other women's genitals,<sup>7</sup> gives a false impression of what is normal.<sup>12</sup> Our research<sup>13</sup> on cosmetic surgery websites that offer labiaplasty shows the pathologising of normal genital diversity, by depicting and describing large labia as abnormal.

Although this suggests that women's perceptions of normal and desirable vulval appearance may be influenced by exposure to a narrow range of images, no research has directly explored whether this is the case. This paper examines how exposure to images of either nonmodified or surgically modified vulvas (post-labiaplasty) affects women's perceptions of normality and of social desirability. Our research is informed by a concern that unrealistic concepts lead to genital dissatisfaction and encourage women to seek unnecessary labiaplasty.

We make two main predictions. First, that those primed by viewing images of modified vulvas will then rate images of modified vulvas as more normal than nonmodified images; second, that irrespective of priming condition, images of modified vulvas will be perceived as closer to society's ideal than nonmodified vulvas.

## Methods

### Participants and recruitment

Ninety-seven women between the ages of 18 and 30 years participated. Following institutional research ethics clearance, participants were recruited through posters displayed in a university campus and a sexual health clinic, advertisements in a university newsletter and a free daily newspaper, and an announcement in a senior undergraduate lecture on health psychology. Posters and advertisements were headed 'Every Woman Has One: Looking at Female Genitalia' and featured a woman's torso wearing a pair of knickers. They invited women aged 18–30 years to view 'a range of images of women's vaginas', for the purpose of examining 'women's perceptions of normality and abnormality' with respect to vulval appearance. We used the term 'vagina', rather than the more accurate 'vulva', because it is the term most widely used colloquially in Australia.

### Research design

Participants were randomly allocated to one of three conditions: 'nonmodified', 'modified' and control. In Phase 1 of the experiment, those in Condition 1 viewed 35 photographs of unmodified vulvas on screen, each for a period of 5 seconds. Those in Condition 2 saw 35 photographs of surgically modified vulvas, while Condition 3 (control) viewed a blank screen for 1 minute. In Phase 2, all women viewed the same set of 20 randomly ordered photographs of vulvas, ten nonmodified and ten modified, and rated each for normality

and the extent to which it represented society's ideal. They were then invited to respond to an open-ended question.

## Materials and procedure

### Images

The images were obtained from medical websites and research collections. Images selected for inclusion were similar to what might appear in a medical textbook: colour close-ups of the external female genitalia including the labia, taken with the woman lying on her back and the camera positioned between the thighs. Images showed no clothes and were not sexualised. Nonmodified images depicted labia of varying length, and were selected on the basis of not having had labiaplasty: these images were sourced from 'before' shots on medical websites advertising labiaplasty and from a feminist publication depicting a range of normal vulvas.<sup>14</sup> The modified images were selected from 'after' shots on medical websites advertising labiaplasty.

### Procedure and outcome measures

Women who responded to recruitment materials were informed by email that the study involved viewing explicit images online, that it could be conducted in privacy at a place of their own choosing, or in a private research room at the university, and that it would take around 30 minutes. All confirmed that they were female and between 18 and 30 years old, and indicated a preference to complete the study in a time and place of their own choosing. They were then provided with the web address and an individual username and password.

Opening the webpage displayed a participant information sheet, reiterating the information provided in the advertisements and including information about ethics clearance and complaints procedures. A participant consent box asked women to confirm that they were over 18 and understood the nature of the study, in order to proceed.

In Phase 1, women in the 'nonmodified' and 'modified' conditions were informed that they would view 35 images of vulvas, which would display automatically on the screen in sequence (the sequence was the same for all participants). They were informed that they were not required to do anything besides look at each individual image. Participants then selected 'continue' to proceed, and the 35 individual images were displayed for 5 seconds each. Participants in the control condition were informed that they would view a blank screen for 1 minute and were not required to do anything during this time.

There followed a page, identical for all three conditions, giving instructions for Phase 2. This stated that they would now view 20 images of vulvas and would be asked to rate each image on two criteria. Participants selected 'continue' once ready to begin.

Each image was shown, and after a 3-second delay, two statements appeared alongside it on the screen: 'This vagina looks normal', and 'This vagina represents society's ideal'. Participants responded to each on a four-point Likert scale labelled from 'strongly agree' to 'strongly disagree'. As soon as the participant had made both responses, the next image appeared. If a participant did not rate an image on one or both criteria, a dialogue box appeared inviting her to complete the responses or select 'ok' to proceed to the next image. These steps were repeated for all 20 images (ten nonmodified and ten modified), which were presented to all participants in the same random order.

The next page was headed 'Your Opinion?' and read: 'Research has shown that many women today are dissatisfied with how their genitals look. We would love to hear any thoughts you have about why this might be the case', with a text box beneath for participants to type a response if they chose to do so (analysis of these responses is reported elsewhere, C. Moran and C. Lee, under review). A final screen contained participant debriefing information, signalling the end of the experiment.

Separate debriefing sheets were prepared for each condition. Each began by thanking the participant for her participation and explaining that the aim of the study had been 'to examine whether women had a realistic perception of what a normal vagina looks like'. It continued by explaining the research design and which group the participant had been in. Educational information and suggestions for further reading on female genital cosmetic surgery were provided.

## Results

To reduce each participant's set of ratings to two dependent variables, the following procedure was followed. For the 'normality' ratings, we first calculated the mean normality rating of the ten 'nonmodified' vulvas and the mean normality rating of the ten 'modified' vulvas for each woman, then subtracted the 'modified' mean from the 'nonmodified' mean. This produced a summary score, which could theoretically range from +3 to -3, and was positive if the respon-

dent generally rated the 'nonmodified' vulvas as more normal than the 'modified' vulvas, and negative if she rated the 'nonmodified' vulvas more normal. The same process was following with the 'society's ideal' ratings, to produce a summary score which was positive if the respondent generally rated the 'nonmodified' vulvas as more like society's ideal than the 'modified' vulvas, and negative if she rated the 'nonmodified' vulvas as more like society's ideal.

Two one-way between-groups univariate analyses of variance were performed to examine the effect of the three conditions on the summary scores for ratings of normality and for society's ideal (Table 1 for descriptive statistics). In each analysis, there was a significant main effect for condition. Normality:  $F_{2,94} = 2.75$ ,  $P = 0.007$ ,  $r_{adj}^2 = 0.082$ ; society's ideal:  $F_{2,92} = 7.72$ ,  $P < 0.001$ ,  $r_{adj}^2 = 0.125$ .

*Post hoc* tests with Bonferroni adjustments for the 'normal' variable showed a significant difference between the 'modified' and control groups: the 'modified' group rated the 'modified' vulvas as more normal than the 'nonmodified' vulvas (mean = -0.16, SD = 0.59) whereas the control group rated the nonmodified vulvas as more normal (mean = 0.25, SD = 0.48); the 'nonmodified' group was not significantly different from either of the others.

*Post hoc* tests with Bonferroni adjustments for the 'society's ideal' variable showed all three groups significantly different from each other. All three group means were negative, indicating an overall tendency for all participants to rate the 'modified' vulvas as more ideal than the 'nonmodified' vulvas, but the 'modified' group mean (-0.77, SD = 0.47) was significantly lower than the 'nonmodified' group mean (-0.36, SD = 0.47), which in turn was significantly lower than the control mean (-0.31, SD = 0.56).

## Discussion

We explored the extent to which exposure to images of either modified or nonmodified vulvas impacted on women's perceptions of normal and desirable vulval appearance. This empirical investigation is the first of its kind to document the extent to which such exposure may impact on women's perceptions.

**Table 1.** Mean (standard deviation) of responses to Phase 2 images, by condition

Condition	n	'Normal' rating (range 1-4)			'Society's ideal' ratings (range 1-4)		
		Nonmodified images (1-4)	Modified images (1-4)	Difference (-3 to +3)	Nonmodified images (1-4)	Modified images (1-4)	Difference (-3 to +3)
Nonmodified	33	2.68 (0.54)	2.58 (0.52)	0.10 (0.45)	2.09 (0.31)	2.43 (0.56)	-0.36 (0.49)
Modified	33	2.67 (0.73)	2.83 (0.49)	-0.16 (0.59)	1.87 (0.37)	2.64 (0.40)	-0.77 (0.47)
Control	31	2.65 (0.38)	2.40 (0.39)	0.06 (0.48)	2.03 (0.35)	2.34 (0.42)	-0.31 (0.56)

## Main findings

As expected, women who had first viewed the modified images rated the modified vulvas as more normal than the nonmodified vulvas. The control group, on the other hand, rated the images of the nonmodified vulvas as more normal than the modified vulvas. Also, as predicted, all three groups rated the images of the modified vulvas as more like society's ideal than the nonmodified vulvas, with the effect significantly strongest for the women who had viewed the images of the modified vulvas.

## Strengths and limitations

A strength of the study is that the sample of women in the 18 to 30-year age bracket is representative of the age range at which women are most likely to undergo labiaplasty.<sup>3,6</sup> Despite this, research shows that girls as young as 10 years<sup>9</sup> and women up to 45 years<sup>3</sup> whose labia are within the normal range are presenting to healthcare professionals seeking labiaplasty or genital assessment.

The sample was recruited mostly through a university (67%) and consisted of relatively privileged women, those most likely to have the resources to seek out this type of surgery. Nonetheless, as a convenience sample was used, caution should be exercised before generalising these results. Recruitment materials made it clear that involvement required looking at a range of photographs of vulvas, and it is possible that women who chose to do this may have different attitudes to their bodies and sexuality than women who saw the advertising material and chose not to participate. Further, this study has not enabled us to explore the impact of exposure to such images on men, or the extent that men may or may not express a preference for less visible labia. This requires further investigation, as the opinions of male sexual partners may influence women's perceptions of their own genitalia. It is also the case that asking women the extent to which each vulva 'represents society's ideal' makes explicit to participants that the researchers believe that there is a social ideal of genital appearance, and may have served to create, rather than reflect, views about this ideal.

## Interpretation

These results suggest that exposure to images of modified vulvas may change women's perceptions of what is normal and desirable. This resonates with findings from a number of studies demonstrating that visual representations of vulvas available to the general community typically depict 'absence' as normal. These depictions range from those in mainstream media such as women's magazines,<sup>11</sup> to those in pornography, encompassing both 'soft' porn publications such as Playboy,<sup>15</sup> and more graphic images and videos available in online pornographic websites.<sup>16</sup> These sources overwhelmingly depict a uniform morphology, one

in which the labia minora are not visible outside the labia majora, leading women in general to have inaccurate perceptions of what a 'normal' vulva looks like.

Other research has shown that women are unsure of what 'normal' looks like and express concerns that their own genitals are abnormal.<sup>7,17</sup> These insecurities may be exacerbated by trends in pubic hair removal, rendering the labia more visible.<sup>18</sup> The fact that each of the three groups believed the modified vulvas were closer to society's ideal than the nonmodified images is therefore unsurprising. While pornography certainly contributes to this perceived 'ideal', the wider sociocultural context is one in which women's genitals are negatively constructed<sup>19</sup> and visible labia minora have historically been associated with racial inferiority and promiscuity<sup>20</sup> and continue to be pathologised through a range of derogatory slang terms.<sup>21</sup> These understandings exist alongside the widespread availability of labiaplasty, with numerous television programmes, newspaper and magazine articles normalising and publicising the practice. As Elliott<sup>22</sup> argued, 'cosmetic surgery culture promotes the very anxieties it seeks to quell'. In the light of these findings, it seems imperative that women have access to greater education and knowledge of normal genital diversity, and are equipped to challenge socially constructed beliefs about vulval normality. This would include exposure to images demonstrating normal diversity, and awareness of media regulations and practices regarding the airbrushing of images. Healthcare professionals and the community sector both have a role to play in delivering these important messages.

## Conclusion

These findings are a small first step that may go some way to explaining the rise in demand for labiaplasty, in the absence of any morphological abnormality or physical trauma. Given that aesthetic concerns are cited as the most common reason for women undergoing labiaplasty, greater awareness around genital diversity and genital appearance is vital. It is important that healthcare professionals are aware of the range of diversity and that their decisions around labiaplasty are not based on subjective opinions. Research, for example, shows that there is a significant difference in the likelihood of male or female general practitioners, gynaecologists or cosmetic surgeons referring or performing a labiaplasty, with male cosmetic surgeons the most likely to approve the procedure.<sup>8</sup> As well as highlighting the range of normal genital diversity, healthcare professionals should make explicit the lack of evidence supporting the claimed psychological, functional or relationship benefits of labiaplasty,<sup>4,17</sup> and the implications of a treatment that involves the removal of tissue that is important to sexual function and arousal.<sup>23,24</sup> The fact that the request for surgery is primarily located in the psychosocial rather than the physical, also indicates that a referral for

counselling may be beneficial to assist women to overcome negative perceptions of their genital appearance. Additionally, much greater research regarding the clinical effectiveness of labiaplasty is required. For example, randomised comparisons between surgical and nonsurgical interventions such as education and support may provide evidence on their relative values.

Greater education about genital diversity at a community level is also vital. This should encompass the health, educational and voluntary sectors, as well as the media to encourage awareness about genital diversity and the social and cultural forces that may drive women to seek unnecessary surgery. Girls and women need to be encouraged to deal with feelings of insecurity about their bodies and genitals in ways other than through surgical intervention.

### Disclosure of interests

None.

### Contribution to authorship

This paper is part of CM's PhD thesis, supervised by CL. They designed the study, collected data, analysed the data, discussed the findings, and wrote the paper collaboratively. CM was solely responsible for participant recruitment, data cleaning and literature review.

### Details of ethics approval

The procedures of the study received ethics approval from the School of Psychology Ethics Sub-Committee, The University of Queensland, Australia, on 13 December 2011. Clearance number 11-PSYCH-PHD-73-JJ.

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## Supporting Information

Additional Supporting Information may be found in the online version of this article:

**Data S1.** Powerpoint slides summarising the study. ■

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## Journal club

### Scenario

At a gynaecology clinic, a woman was referred to you with menorrhagia. Genital examination was unremarkable and transvaginal ultrasound showed fibroids. You have suggested appropriate management. At the end of the consultation, she asked ‘my vagina does not look symmetrical, is it normal?’

### Description of research

<b>Participants</b>	Women aged 18–30 years in Australia
<b>Comparison</b>	(1) Viewing of a series of images of surgically modified vulvas (2) Viewing of a series of images of nonmodified vulvas (3) Did not view any images of vulvas
<b>Outcomes</b>	Rating of normality and ‘society’s ideal’ (on a four-point Likert scale) on a series of images of nonmodified and surgically modified vulvas viewed
<b>Study design</b>	Randomised controlled trial

### Discussion points

- . How common is plastic surgery to the genitalia (e.g. labiaplasty) in your practice?
- . How did the researchers recruit participants? Are the participants recruited representative of the population?
- . Is randomisation, allocation concealment and attainment adequate in this study?
- . Can you briefly summarise the results of this study? What are their potential implications?
- . What is your opinion on restricting public display of images of modified sexual organs?
- . How would you answer the question posed by the woman in the scenario? (Data S1)

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