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## **Beliefs about penis size: validation of a scale for men ashamed about their penis size**

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### **ACCEPTED MANUSCRIPT**

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### **Abstract**

**Introduction:** No measures are available for understanding beliefs in men who experience shame about the perceived size of their penis. Such a measure might be helpful for treatment planning, and measuring outcome after any psychological or physical intervention. **Aim:** Our aim was to validate a newly developed measure, called the Beliefs about Penis Size Scale (BAPS). **Method:** 173 male participants completed a new questionnaire consisting of 18 items to be validated and developed into the BAPS, as well as various other standardised measures. An urologist also measured actual penis size. **Main outcome measures:** The BAPS was validated against six psychosexual self-report questionnaires as well as penile size measurements. **Results:** Exploratory factor analysis reduced the number of items in the BAPS from 18 to 10, which was best explained by one factor. The 10-item BAPS had good internal consistency and correlated significantly with measures of depression, anxiety, body image quality of life, social anxiety, erectile function, overall satisfaction and the importance attached to penis size. The BAPS was not found to correlate with actual penis size. It was able to discriminate between those who had concerns or were dissatisfied about their penis size and those who were not. **Conclusions:** This is the first study to develop a scale for measurement of beliefs about penis size. It may be used as part of an assessment for men who experience shame about the perceived size of their penis and as an outcome measure after treatment. The BAPS measures various manifestations of masculinity and shame about their perceived penis size including

internal self-evaluative beliefs; negative evaluation by others; anticipated consequences of a perceived small penis and extreme self-consciousness.

### **Introduction:**

Penis size shame (also known as “small penis syndrome”) is found in men who have a normal-sized penis but experience shame about its size. The medical definition excludes men who have a micropenis (1), which is a penis <7.5 cm in the erect length or <4cm in the flaccid state (2).

Men tend to view penis size as much more important than women do (3). There is an astonishing lack of scientific interest in the psychology of male penis size or its treatment. Tiggemann, Martins (4) surveyed 200 men, and found that they were concerned primarily about body weight, penis size and height. In addition, weight, muscularity, height and penis size were related to overall appearance and self-esteem. They identified at least three dimensions on which aspects of the body may potentially differ: visibility, the ability to control the body part, and signifier of masculinity. Compared to body weight, for example, the penis can of course be hidden on most occasions. However, there is little control over penis size and it is strongly associated with masculinity and sexual prowess.

The experience of shame about the size of the penis seems especially relevant in some men. Gilbert and Andrews (5), Gilbert (6) suggest that shame consists of an inner experience of self as an unattractive social agent, or undesirable, which is under pressure to limit possible damage via escape or appeasement. Men with penis size shame appear to be fearful of negative evaluation, rejection or humiliation *by others* (for example in a changing room or by a sexual partner). This would be regarded as external shame in which men commonly respond by performance anxiety, submissive

and avoidance behaviour. Internal shame would refer to one's own self-evaluation about being abnormal or defective in penis size. Some men are very specific in their aesthetic standards (for example a desire for their penis to be symmetrical on both sides) without any fear of negative evaluation by others (7, 8).

Some men with shame about the size of their penis may be diagnosed with Body Dysmorphic Disorder (BDD) (9, 10), where the preoccupation is focussed on their genitals (11, 12). It is not known how many men with shame about their penis size also meet the criteria for BDD. Some surgical studies have described men as having "penile dysmorphic disorder" but these were not reported as based on any structured diagnostic interview or scale (13, 14).

In clinical practice, sexual health physicians, urologists, counsellors and psychotherapists may assess men whose penis size is within the normal range, but who may be seeking a surgical procedure to increase the length or girth of their penis. However, most men may be too ashamed and may rather seek help and seek solutions on the Internet. These include visiting sites that promote lotions, exercises or penile extenders. There are no case series or controlled trials of any psychological intervention for men experiencing shame about their penis size, other than an outcome of preventing surgery (15)(16). There is no standardized, psychometrically validated measure of beliefs about penis size (17). Such a measure might assist in understanding the condition or for treatment planning (18). This involves having a good understanding of the beliefs that motivate an individual. Previous studies have utilized a range of outcomes such as non-standardized satisfaction scales (19, 20).

**Aims:**

The aim of this study was therefore to develop and validate a measure of beliefs about perceived penis size that will be useful for assessment, treatment

planning, and measuring outcomes. From an understanding of shame outlined above, we hypothesised that the new scale might have two factors relating to internal and external shame.

## **Methods**

### *Participants:*

Men were recruited from three sources (a) staff and students at King's College London (n =108), (b) the Mind Search<sup>1</sup> database at the Institute of Psychiatry, Kings College London (n =27) and (c) a link on the website "Embarrassing Bodies" (n = 38). In total, 173 participants from a non-clinical population completed the questionnaires. The demographic data are shown in Table 1. Of these participants, 46 agreed to attend a urology clinic at King's College Hospital, to have the size of their penis measured.

Participants were categorised depending on whether they expressed concern over their penis size (see Table 1). Pearson's Chi-square was calculated across groups, comparing marital status, employment status, education level, ethnicity, and sexual orientation.

### *Procedure:*

We sought in our email to recruit men to a study that was interested in understanding their beliefs and fears about their penis size. We stated that we were interested in

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<sup>1</sup>This database contains details for over 3,500 individuals in the local community who have volunteered to participate in psychological or psychiatric research

recruiting men for the first study whether they were concerned or not concerned about their penis size. In order to take part, male participants had to be aged 18 or above and proficient in English in order to provide consent and complete the questionnaires online for the first part of the study. They were also invited to participate in a second part of the study, which involved measuring the size of their penis (flaccid and erect) by an urologist in a hospital outpatient clinic. On arrival, participants completed a consent form, and were then given privacy in an air-conditioned consulting room at a constant temperature (21°C) at sea level. Then, using a disposable tape measure, each participant had three parameters measured: circumference (girth) of the penile mid shaft; length from suprapubic skin to distal glans (skin-to-tip); and pubis to distal glans (bone-to-tip). The three measurements were recorded in the stretched flaccid state, grasping the glans and exerting a stretching force until the patient felt mild discomfort to obtain maximum stretch.

After the flaccid measurements were taken, each participant was offered the choice of watching pornography on a laptop provided. Watching pornography was either accepted and chosen privately and anonymously, or declined. At this point the urologist left the room. Participants pressed a digital bell to alert the urologist when they were erect and ready to repeat the measurements. Three men required an intra-cavernous injection of 10 micrograms of Prostaglandin E1 in order to sustain an erection. The three measurements were then repeated in the fully erect state without stretching. Participants were given a £10 shopping voucher to thank them for their time for participating in each part of the study. All participants completed the following questionnaires online.

**Measures:****1. Beliefs about Penis Size (BAPS)**

The statements in the new scale were generated from an initial item pool of 18 items based on clinical interviews and case reviews of 8 men who were preoccupied and anxious about their penis size (and whose sizes were in the normal range). A process of iteration occurred so that both men who were ashamed about their penis size and clinicians reviewed the items and the wording was accordingly modified. It was then pilot tested before the final version was used for the study. The final items are listed in Table 2. The respondent is asked to rate how strongly he agrees or disagrees with each of the statements, using a 5-point Likert scale from 0 (“Strongly disagree”) to 4 (“Strongly agree”). The possible range of the final version is 0-40. A higher score therefore represents a greater level of shame about penis size.

**2. Hospital Anxiety and Depression Scale (HAD) (21)**

The 14 items corresponding to the depression and anxiety subscales from the HADS were used to examine the severity of anxiety and depression symptoms. Each subscale is comprised of seven items and higher scores represent increased severity of anxiety and depression. Cronbach’s alpha values for the anxiety subscale (0.86) and depression subscale (0.83) were acceptable.

**3. Social Phobia Inventory (SPIN) (22)**

The SPIN is a 17 item self-report scale that measures the severity of performance and social anxiety. None of the items is specific to sexual situations. Each item is rated by the participant on a 5-point Likert scale. The possible range of scores is 0 (not at all)



to 4 (extremely). Higher scores represent increased severity of social phobia.

Cronbach's alpha was 0.95, indicating high internal reliability.

#### **4. Body Image Quality of Life Inventory (BIQLI) (23)(24)**

The BIQLI is a 19-item self-report scale that measures the impact of body image concerns on a broad range of life domains (for example, social functioning, sexuality, emotional well-being). Each item is rated by the participant on a 7-point Likert Scale, ranging from -3 (very negative effect) to + 3 (very positive effect). The BIQLI is scored as an average numeric score of the 19 items where a more negative score reflects a more negative body image. Cronbach's alpha was 0.97.

#### **5. International Index of Erectile Function (IIEF) (25)**

The IIEF is a 15 item self-report scale that has five subscales: erectile function (range 1-30), orgasmic function (range 0-10), sexual desire (range 2-10), intercourse satisfaction (range 0-15), and overall satisfaction (range 2-10). Across all 5 subscales, a higher score indicates higher erectile function and sexual satisfaction. For all 5 subscales, internal reliability is high, ranging from a minimum Chronbach's alpha value of 0.87 (sexual desire), to a maximum of 0.94 (erectile function, intercourse satisfaction, and total IIEF score).

#### **7. Overall satisfaction with penis size**

Participants were asked to rate a single item "Overall how satisfied are you with the size and appearance of your penis?" They answered the question on a 9-point rating

scale from 0 (“not at all”) to 8 (“extremely”). The higher the score, the greater the overall satisfaction a participant felt with the size or appearance of their penis.

### **8. Importance attached to penis size**

Participants were asked to rate their degree of conviction on a scale between 0-100% as to how strongly they believed the phrase “Size does not matter”. Higher scores indicated less importance placed on penis size.

### **9. Concerns about penis size**

Participants were asked, “Do you have any concerns about the size or shape or appearance of your penis (whether it is erect or not)?” and classified as either concerned or not concerned.

### **Statistical Analysis**

Horn’s Parallel Factor Analysis (26) was performed to examine factorial validity of the BAPS. This was performed with the factor analysis programme ‘FACTOR’ (27). This method is chosen as it is more accurate than Cattell’s scree and Kaiser-Guttman methods (28, 29). The Kaiser-Meyer-Olkin (KMO) is reported to verify the sampling adequacy for the analysis of the correlational matrix. The Bartlett’s test of sphericity is used to determine whether correlations between items were sufficiently large for factor analysis. Excessive correlation was measured by the determinant of the matrix which should be  $> 0.00001$ .

The internal consistency was evaluated using Cronbach’s alpha. Spearman’s rho correlation was used between the scales to test convergent validity. The validity of

group differences on the BAPS was determined by the response to the item on whether they were concerned about the size of their penis.

## **Results**

### *Item Reduction and Factor Analysis*

There were 12 participants with missing data who were excluded from the exploratory factor analysis, resulting in  $n = 161$  participants. We attempted to extract two components (hypothesising internal and external shame as the two factors), using optimal implementation of Parallel Analysis (PA) procedure for determining the number of dimensions in the original pool of 18 items. We used Principal Components Analysis and Direct Oblimin rotation. Analysis of the Mardia's (30) multivariate asymmetry found that the data were not normally distributed (Kolmogorov-Smirnov: 0.16,  $p=0.00$ , skewness corrected for small sample: 3931.323,  $df = 1140$ ,  $p = 1.00$  and kurtosis = 46.675,  $p < .0001$ ). Therefore the polychoric analysis was run. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity indicated that correlations between items were sufficiently large for factor analysis and that communality was  $> .3$  for all items (Table 2). One factor was too small with two items (10, 15) and one of these was a complex loading of  $> .4$  on both factors (Table 3). Furthermore because the correlations of the covariance matrix between several items were excessive ( $> 0.8$ ), the determinant of the matrix was too high. The explained variance based on Eigenvalues also suggested one factor with one variable with an Eigenvalue of 13.3 that accounted for 74% of the variance. Eight items were eliminated to ensure that the determinant of the matrix was high enough. This final 10-item solution was retained for further analyses (Table 4). All items had a

communality of  $> 0.3$ . The Kaiser-Meyer-Olkin (KMO) and the Bartlett's test of sphericity were sufficiently large. There was only one variable with an Eigen value greater than 1 explaining 69.8% of the variance.

#### *Reliability - Internal Consistency*

Internal consistency for the BAPS was conducted. Cronbach's alpha was 0.95 indicating good internal consistency.

#### *Validity – Concurrent and Discriminant*

Concurrent validity was analysed through Spearman's Rho correlations with related measures. We examined the relationship between the BAPS and the HAD-Depression, HAD-Anxiety, SPIN, BIQL, IIEF subscales, overall satisfaction and the importance of penis size (see Table 4). The BAPS measure was significantly correlated with all the other psychological measures, indicating strong concurrent validity. There was strong correlation with overall satisfaction with size and the importance attached to penis size; moderate correlation with HAD Anxiety and HAD Depression, SPIN, BIQL and IIEF erectile function and overall satisfaction; and low correlation with the remaining subscales of the IIEF. The weakest correlation was with IIEF Orgasmic function and IIEF Sexual desire.

The range of the participants penis size was 70 to 180mm (flaccid length); 100-200mm (erect length); 70-130mm (flaccid girth) and erect girth (90-170mm). The BAPS scores were not significantly correlated with either penis length in a flaccid bone to tip non-stretched measure ( $r_s = -.19$ ,  $R^2 = 0.38$ ,  $p = 0.21$ ), or erect state ( $r_s = -.25$ ,  $R^2 = 0.5$ ,  $p = 0.10$ ). In addition, BAPS scores were not significantly correlated

with penis girth in a flaccid ( $r_s = -.26$ ,  $R = .07$ ,  $p = .08$ ) or erect state ( $r_s = .01$ ,  $R = .000121$ ,  $p = .94$ ).

### *Validity – Group Differences*

There were no significant differences in the demographics between the two groups, except age (men with concerns about penis size were older) and an association between sexual orientation (homosexual or bisexual men were more likely to have concerns about penis size ( $\chi^2(1) = 5.26$ ,  $p < .05$ )).

The total BAPS score was significantly higher in the group that expressed concern about their penis size (Median = 19, IQR = 15) compared to the group that did not express any concern (Median = 0, IQR = 7.5) ( $U = 646.00$ ,  $Z = -9.24$ ,  $p < .001$ ,  $d = -1.96$ ).

Participants were also categorised according to whether they were satisfied with their penis size or not. Of the 173 participants, 30% ( $n=52$ ) had rated their satisfaction with the size of their penis scoring between 0 and 2, and were considered dissatisfied with their penis size. In comparison, 35.2% ( $n=61$ ) rated their penis satisfaction as scores 6 to 8, which were considered satisfied. BAPS scores in those satisfied with their penis size and appearance were significantly lower (Median = 2, IQR = 7) than those who were not satisfied (Median = 24, IQR = 11) ( $U = 48.00$ ,  $Z = -8.89$ ,  $p < 0.001$ ,  $d = -1.85$ .)

## **Conclusions**

This is the first study to develop a scale for measurement of beliefs about penis size (BAPS). Exploratory factor analysis reduced the number of items in the BAPS from

18 to 10, and the variance could be best explained by one factor. We were able to demonstrate that the 10-item measure had good internal consistency, with a high Cronbach's alpha. It correlated significantly with the HAD Depression, HAD Anxiety, Body Image Quality of Life, Social Anxiety, all the IIEF subscales, overall satisfaction, and the importance attached to size of the penis. Of note, the weakest correlation was with two IIEF subscales "Orgasmic function" and "Sexual desire" which we would not expect to be affected by shame about penis size.

The BAPS was able to discriminate between those who had concerns about their size and those who did not. We did not match the demographics of both groups, though those who were concerned or dissatisfied with the size of their penis had higher likelihood of being older, homosexual or bisexual. Compared to heterosexual men, homosexual men are at greater risk of body dissatisfaction(31, 32). They are also exposed to more opportunities to compare their size with other men. Future studies will be required to determine if homosexuality is a risk factor for development of shame about penis size (33-35).

The BAPS therefore measures various manifestations of masculinity and shame about penis size. It can provide practitioners with an understanding of their patient's beliefs about their penis size. Two of the items measure internal self-evaluative beliefs (such as being "abnormal"). There are three items that describe a social cognitive component with predictions such as being talked about by others. There are four items on anticipated consequences of a small penis size such as having to avoid situations where they may be naked. Lastly there are two items on extreme self-consciousness – for example the belief that others will be able to see the size of their penis even when

they are not naked. The scale was not able to separate internal or external shame in our sample presumably because the two constructs overlap in the majority of men.

That is, if a man believes that he is abnormal in his penis size then he is likely also to believe that others will evaluate him negatively and may reject or humiliate him.

Of note is that the BAPS was not correlated with actual penis size. This is consistent with previous research in body image that has found that there is no relationship between objective unusualness of a body feature and psychological distress (36),(37). This may help in psycho-education for men to know that there is no relationship between shame about size and the actual size. Thus there are men with larger penis than average who are ashamed about their size and there are men with smaller than average size in whom size is not an issue.

Beliefs about penis size, cognitive processes and behaviours are likely to be related in a model of maintenance and a target for therapy. The BAPS may therefore be one component of an assessment and would be expected to correlate with the frequency of avoidance (for example of sexual situations); safety seeking behaviours (for example comparing penile size to others); compensatory strategies (for example the use of objects to increase the bulk of the genital area) or cognitive processes (such as worry and self-focussed attention).

### *Limitations and Future Directions*

The main limitation of this study was the use of a non-clinical population although a number of participants were significantly distressed and too ashamed to seek help. It was, however, initially necessary to recruit a large sample to investigate the psychometric properties of the scale. Future studies will be required to validate the scale in a clinical setting, in different cultures and in conditions such as Peyronie's Disease, hypospadias, and a micropenis (38, 39). In this study we also depended on a

simple self-report question on satisfaction and or concerns with penis size to demonstrate theory consistent group differences.

The scale has not yet been validated for sensitivity to change after any treatment. However it was able to differentiate between those men who were concerned or dissatisfied with their penis size and those who were not. Future studies will need to validate the scale in men who are undergoing a psychological therapy or receiving a physical treatment. A further limitation is that no test retest reliability has been conducted and this will also need to be evaluated in future studies. Although we did not find any correlation between the BAPS and the actual size, our sample size may be underpowered. Thus we were powered with 46 subjects to detect a moderate correlation (a rho of 0.4) when the probability of getting a significant result of  $p < 0.05$  is 80%. To detect a small correlation of 0.2 then about 200 subjects are required.

Two items in the final scale had a low communality (items 10 and 15). We thought it was important to retain these two items on clinical grounds, as these items were nearly identified as a separate factor. These items represent a more severe form of self-consciousness and avoidance in a minority of men (for example that others will be able to see their size through their trousers or that they will never be able to have children).

Beliefs about penis size may be closely correlated with the importance of sexual performance, about a woman's insatiable demands and sexual conservatism (41). Thus future research might examine the relationships between the BAPS and scales that measure such beliefs – for example the Sexual Dysfunctional Beliefs



Questionnaire (42) or Sexual Beliefs and Information Questionnaire (43) both assess sexual myths and lack of information about normal sexuality. Lastly the Sexual Self-Schema questionnaire (44) may assess attitudes that are that are associated with guiding sexual behaviour.

In summary, the current study has therefore conducted an initial validation on a brief self-report scale that can be used for audit and outcome research in men worried about their penis size. It is free to download from <http://www.kcl.ac.uk/cadat> under “Research”, “Questionnaires”, and “Body Image Questionnaires”. It is of potential use in treatment planning to identify some of the specific fears and beliefs that may have been shaped by past experiences.

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**Table 1:** Frequency distributions of demographic variables

<u>Demographic Variables</u>	<u>Total Frequency (%)</u>	<u>Frequency with concerns about penis size (%)</u>	<u>Frequency without concerns over penis size (%)</u>	<u>Statistic</u>
<b>N</b>	173	93 (54%)	79 (46%)	
<b>Age</b> (median, IQR)	28 (17)	27 (15)	24 (9)	U=2971, Z=-2.16, p=.03*, d=0.41

<b>Marital status</b>				Fisher's Exact Test p=.45
Single	118 (68)	60 (65)	57 (72)	
Married	50 (29)	29 (31)	21 (27)	
Separated / Divorced	5 (3)	4 (4)	1 (1)	
Widowed	0 (0)	0 (0)	0 (0)	
<b>Employment</b>				Fisher's Exact Test p=.15
Unemployed	18 (11)	11 (12)	7 (9)	
Self-employed/ Employed	50 (29)	32 (34)	18 (23)	
Student (full-time)	99 (58)	46 (49)	53 (67)	
Long-term sick leave	4 (2)	3 (3)	1 (1)	
<b>Education level</b>				Fisher's Exact Test p=.70
GCSE /CSE /O-level	6 (4)	5 (5)	1 (1)	
NVQ	7 (4)	4 (4)	3 (4)	
A-level	52 (30)	25 (27)	27 (34)	
Other (e.g. Diploma)	17 (10)	10 (12)	7 (9)	
University degree	53 (31)	27 (29)	25 (32)	
Postgraduate	37 (21)	21 (23)	16 (20)	
<b>Sexual orientation</b>				Fisher's Exact Test p=.03*
Heterosexual	120(70)	58(62)	62(78)	
Homosexual/ Bisexual	52(30)	35(38)	17(22)	

**Table 2.** Sequence of factor analyses to obtain final 10 item scale

Iteration	Items	Factors	KMO Index	Bartlett's test of Sphericity	Determinant of the matrix	Items eliminated *
1	18	2	0.96136	$\chi^2 = 3651.6$ df = 153	0.00000000044261	Nil

				p = .00001		
2	18	1	0.96136	$\chi^2 =$ 3651.6 df = 153 p = .00001	0.000000000044261	Nil
3	12	1	0.93287	$\chi^2 =$ 1969.2 df = 66 p = .00001	0.000003080009135	<p>I will be humiliated by a partner I will never be able to sexually satisfy a partner</p> <p>I will be rejected by a partner</p> <p>I will never be able to enjoy a sexual relationship I will not feel masculine enough I will feel unattractive</p>
4	10	1	0.91790	$\chi^2 =$ 1513.4 df = 45 p = .00001	0.000060556627830	<p>I will be humiliated by a partner I will never be able to sexually satisfy a partner</p> <p>I will have a partner who is less attractive than I would like I will be rejected by a partner</p> <p>I will never be able to stop thinking about it</p> <p>I will never be able to enjoy a sexual relationship</p>

						I will not feel masculine enough I will feel unattractive
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\* items eliminated because of too high a correlation between the items on the covariance matrix

Table 3: Initial exploratory factor analysis (loadings lower than 0.3 omitted).

<b><u>Item</u></b>	<b><u>Factor 1</u></b>	<b><u>Factor 2</u></b>
1. I will be alone and without a partner	0.31	0.31
2. I will be humiliated by a partner	0.83	



3. I will be laughed at by a partner in a sexual situation	0.91	
4. I will never be able to sexually satisfy a partner	0.94	
5. I will have a partner who is less attractive than I would like	0.71	
6. I will be rejected by a partner	0.84	
7. I will never be able to stop thinking about it	0.90	
8. I will never be able to enjoy a sexual relationship	0.87	
9. I will not feel masculine enough	0.97	
10. I will not be able to have children		0.86
11. I will never feel just "right"	0.89	
12. I will not be able to be naked in front of other men (e.g. in changing rooms or the bedroom)	0.94	
13. I will not be able to be naked in front of women	0.84	
14. Others will talk or laugh about my penis	0.95	
15. Others will be able to see the size or shape of my penis even when I have my trousers on	0.41	0.5
16. I will feel self-conscious in sexual situations	0.89	
17. I will feel abnormal	0.83	
18. I will feel unattractive	0.86	

Table 4: Final 10 item scale based on 1 factor

<u>Item</u>	<u>Factor 1</u>	<u>Communality</u>
1. I will be alone and without a partner	0.82	0.67

3. I will be laughed at by a partner in a sexual situation	0.88	0.78
10. I will not be able to have children	0.57	0.32
11. I will never feel just “right”	0.87	0.76
12. I will not be able to be naked in front of other men (e.g. in changing rooms or the bedroom)	0.77	0.60
13. I will not be able to be naked in front of women	0.86	0.75
14. Others will talk or laugh about my penis	0.88	0.78
15. Others will be able to see the size or shape of my penis even when I have my trousers on	0.68	0.46
16. I will feel self-conscious in sexual situations	0.85	0.72
17. I will feel abnormal	0.92	0.85