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Personality traits and body image: The moderating role of breast surgeries

Abstract

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Being a particular part of the female body, the breasts have a number of important functions, and the evaluation of their shape is emotionally linked to the nature of this area. Surgical operations focused on the aesthetic aspect and, first and foremost, on the health aspect, are of interest to both psychologists and physicians. The objective of the present study was to assess the relationship between personality traits and body evaluation, taking into account the moderating role of breast surgeries, including mastectomy, breast reconstruction and breast reduction. The study was conducted in Poland on 121 women. The study group showed a relationship between personality traits and body self-image. Also, it was observed that there exists a statistically significant moderating effect of the type of surgery on the relationship between individual personality traits and dimensions of body evaluation on the part of female patients. These results provide a more complete understanding of the emotional experience of female patients undergoing breast surgery.

Keywords

personality traits; body evaluation; mastectomy; breast reconstruction; breast reduction

Introduction

Nowadays, a strong connection can be observed between the aesthetics of the female body, especially the breasts, and numerous psychological aspects and socio-cultural functions of the body. However, when making physical changes or undergoing surgeries, aesthetic considerations are not always a priority. Breast surgeries performed for health reasons include mastectomy, mastectomy with reconstruction and breast reduction. Breast cancer treatment is usually based on invasive procedures causing changes in physical appearance, which pose a risk of a change in body image or self-esteem (Morales-Sánchez et al., 2021). This change can be exacerbated by disease-related alopecia (Pierrisnard et al., 2018), breast asymmetry, scarring, discolouration of the fingernails and toenails or weight change (Brederecke et al., 2021; Türk & Yilmaz, 2018).

Personality traits and body image in women

Psychological knowledge about body self-perception reveals that personality traits are particularly important in this process (Digman, 1990). Several studies have shown that dissatisfaction with one's body image is associated with higher levels of neuroticism and lower levels of extraversion (Dalley et al., 2009; Roberts & Good, 2010). Neuroticism, understood as the tendency to experience negative emotions and dissatisfaction, is primarily related to a negative body self-evaluation (MacNeill et al., 2017; Swami et al., 2013). Individuals displaying higher levels of this trait attach more importance to their appearance (Davis et al., 2001) and are more likely to compare themselves with other people who they perceive as attractive (Roberts & Good, 2010). By contrast, extraversion, as a trait of more open-minded people, is associated with a more positive body self-evaluation and lower levels of dissatisfaction with body appearance (Swami et al., 2012).

Body image and breast surgery

In the context of body self-perception, situations where surgical interference with physicality is performed for health reasons deserve special attention. In women, the breasts represent an exceptional area due to their particular social and cultural significance. Women struggling with breast hypertrophy and undergoing breast reduction surgery are shown to experience physical dysfunction (including pain) and feelings of social inadequacy (Cabral et al., 2017; Sabino Neto et al., 2008). There is scientific evidence showing that plastic breast correction surgery not only can produce satisfactory aesthetic results but also has a beneficial effect on body image and a protective function for female patients' emotional experiences (Pérez-Panzano et al., 2017).

Materials and Methods

The objective of this study was to assess the relationship between personality traits and body evaluation of Polish women, considering the type of breast surgery they underwent, such as mastectomy, breast reconstruction and breast reduction.

Participants and Procedure

The study involved 121 participants, divided into four groups: women who did not undergo any breast surgery (40 participants, 33.1%), women who underwent mastectomy (39 participants, 32.2%), women who underwent mastectomy with breast reconstruction (17 participants, 14%) and women who underwent breast reduction (25 participants, 20.7%).

Measures

The study used the *NEO Personality Inventory – FFI* by Costa and McCrae (Costa & McCrae, 1992), in the Polish adaptation by Zawadzki, Strelau, Szczepaniak and Śliwińska (Zawadzki et al., 1998); *Body Evaluation Scale (BES)* by Franzoi and Shields (Franzoi & Shields, 1984), in the Polish adaptation by Lipowska and Lipowski (2013), and an original questionnaire used to measure basic data on the past breast surgeries, age and education of the surveyed women.

Data Analysis

Statistical analyses were conducted using the IBM SPSS Statistics 25 package, with descriptive statistics analysis using the Kolmogorov-Smirnov test and univariate analyses of variance in a between-groups design, as well as correlation analyses with Pearson's r coefficient. Moderation analyses were conducted using the Process macro. The classic threshold of $\alpha = 0.05$ was taken as the significance level. In the first step, the basic descriptive statistics of the quantitative variables under study were calculated together with the Kolmogorov-Smirnov tests to check the normality of the distributions.

Results

Sample Characteristics

The study included women with vocational (8%), secondary (40%) and tertiary (52%) education. They varied in age, with the largest group being women between 40 and 49 years of age (28%) and the smallest group being women between 20 and 29 years of age (8%). The distribution of age and education among the female respondents is shown in Table 1.

Table 1*Distribution of age and education in the studied samples*

	No history of surgery		Mastectomy		Mastectomy and breast reduction		Breast reduction	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
20–29 years of age	17	42.5	1	2.6	0	0	2	8
30–39 years of age	3	7.5	0	0	3	17.6	6	24
40–49 years of age	16	40	4	10.3	9	52.9	7	28
50–59 years of age	2	5	11	28.2	0	0	5	20
60+ years of age	2	5	23	59	5	29.4	5	20
vocational	3	7.5	3	7.7	0	0	2	8
secondary	15	37.5	14	35.9	7	41.2	10	40
tertiary	22	55	22	56.4	10	58.8	13	52

With regard to the level of neuroticism, extraversion and conscientiousness, the distributions were close to normal, as shown in Table 2. Other variables showed distributions different from the Gaussian distribution. In this situation, it was advisable to verify the skewness value of the distribution of the aforementioned variables. If this value is within ± 2 , it should be assumed that the distribution of the studied variable is not significantly asymmetric with respect to the mean (George & Mallery, 2019). Such a value was recorded for all the studied variables. Therefore, it was decided that statistical analyses would be performed using parametric tests.

Table 2*Basic descriptive statistics of the quantitative variables under study*

	<i>M</i>	<i>Me</i>	<i>SD</i>	<i>Sk.</i>	<i>Kurt.</i>	<i>Min.</i>	<i>Max.</i>	<i>W</i>	<i>p</i>
Openness to experience	28.49	28	6.64	−0.07	0.30	8	44	0.09	0.022
Neuroticism	22.22	22	10.46	0.22	0.48	1	47	0.06	0.200
Agreeableness	33.02	34	6.08	−0.54	0.06	13	46	0.10	0.006
Extraversion	29.23	29	7.73	−0.12	−0.31	7	46	0.07	0.200
Conscientiousness	35.24	36	7.13	−0.35	−0.30	16	48	0.07	0.200
Sexual attractiveness	45.69	46	8.19	0.09	−0.60	27	65	0.09	0.025
Weight control	32.90	34	8.55	−0.49	−0.44	11	50	0.11	0.002
Physical fitness	31.22	32	7.51	−0.35	−0.41	11	45	0.09	0.019

Note. *M* – mean; *Me* – median; *SD* – standard deviation; *Sk.* – skewness; *Kurt.* – kurtosis; *Min.* and *Max.* – the lowest and highest distribution values; *W* – Kolmogorov–Smirnov test result; *p* – significance.

Descriptive Statistics and Correlations

A targeted analysis was conducted to assess whether there is any relationship between personality traits and body image. A series of Pearson's r correlation analyses were performed. As many as thirteen statistically significant relationships were found, as shown in Table 3. The level of openness to experience correlated positively with the level of physical fitness. This means that the higher the level of openness to experience of the female respondents, the higher their score on the physical fitness scale. The strength of this relationship was low. The level of neuroticism correlated negatively with the level of all three body image scales. This means that the higher the neuroticism level of the female respondents was, the lower their satisfaction with their own body was. The strength of the relationship between neuroticism and the physical fitness scale was strong. The other two relationships were moderately strong. In contrast, the levels of agreeableness, extraversion and conscientiousness correlated positively with the levels of all three body image scales. The strength of the relationships between extraversion and sexual attractiveness or physical fitness and between conscientiousness and physical fitness was moderately strong. The strength of the other relationships was low. Only two relationships, i.e. between openness to experience and sexual attractiveness scale or weight control, were found not to be statistically significant.

Table 3

Relationships between levels of personality traits and levels of body image

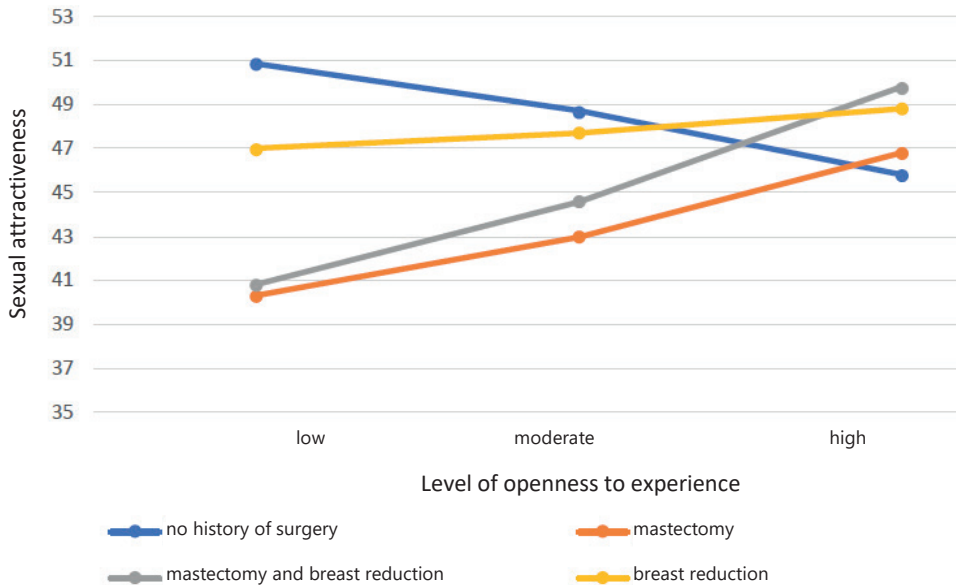
		Sexual attractiveness	Weight control	Physical fitness
Openness to experience	<i>Pearson's r</i>	0.13	0.05	0.20
	Criticality	0.161	0.608	0.030
Neuroticism	<i>Pearson's r</i>	-0.41	-0.38	-0.50
	Criticality	<0.001	<0.001	<0.001
Agreeableness	<i>Pearson's r</i>	0.23	0.26	0.23
	Criticality	0.011	0.005	0.013
Extraversion	<i>Pearson's r</i>	0.36	0.24	0.42
	Criticality	<0.001	0.009	<0.001
Conscientiousness	<i>Pearson's r</i>	0.29	0.19	0.39
	Criticality	0.001	0.035	<0.001

In order to assess whether the type of procedure performed could be a moderator of the relationships between personality traits and body self-evaluation, moderation analyses were performed using the Process macro. It was noted that there is

statistically significant moderating effect of the type of procedure performed on the relationship between level of openness to experience and sexual attractiveness. The correlation was statistically significant and had a negative sign in the group of women who did not undergo any surgery ($B = -0.39$; $SE = 0.17$; $t = -2.34$; $p = 0.021$), was statistically significant and positive in the group of women who underwent mastectomy ($B = 0.50$; $SE = 0.18$; $t = 2.85$; $p = 0.005$) and who underwent mastectomy and breast reconstruction ($B = 0.70$; $SE = 0.34$; $t = 2.03$; $p = 0.044$). By contrast, the relationship was not statistically significant in the group of women who underwent breast reduction surgery ($B = 0.14$; $SE = 0.27$; $t = 0.51$; $p = 0.611$). The results are presented graphically in Figure 1.

Figure 1

Moderating effect of the type of procedure performed on the relationship between sexual attractiveness scale level and openness to experience

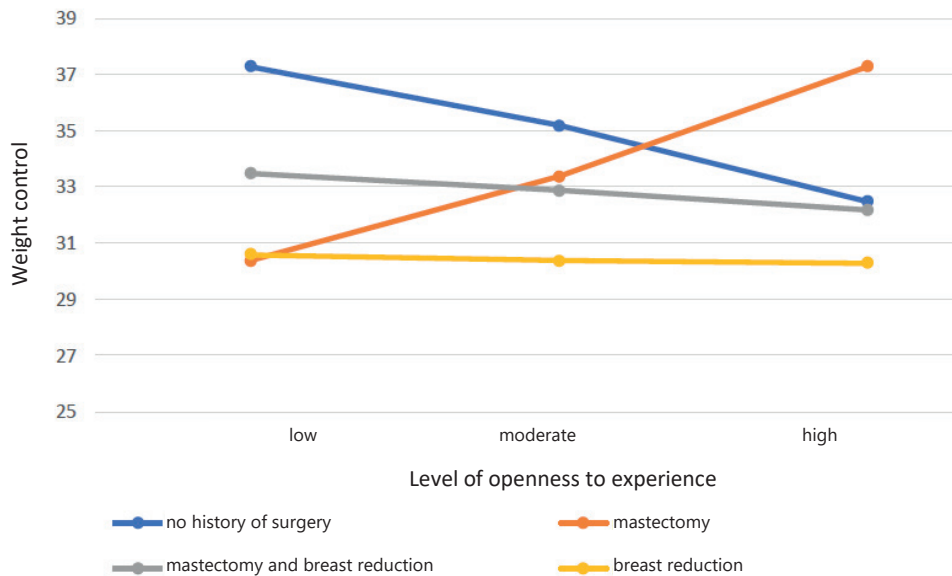


There was also a statistically significant moderating effect of the type of procedure performed on the relationship between level of openness to experience and weight control. This correlation was statistically significant and had a negative sign in the group of women who did not undergo any surgery ($B = -0.37$; $SE = 0.19$; $t = -2.00$; $p = 0.048$) and was statistically significant and positive in the group of women who

underwent mastectomy ($B = 0.53$; $SE = 0.19$; $t = 2.75$; $p = 0.007$). By contrast, it was not statistically significant in the group of women who underwent mastectomy and breast reconstruction ($B = -0.10$; $SE = 0.38$; $t = -0.26$; $p = 0.794$) and women who underwent breast reduction surgery ($B = -0.02$; $SE = 0.30$; $t = -0.08$; $p = 0.938$). The results are presented in Figure 2.

Figure 2

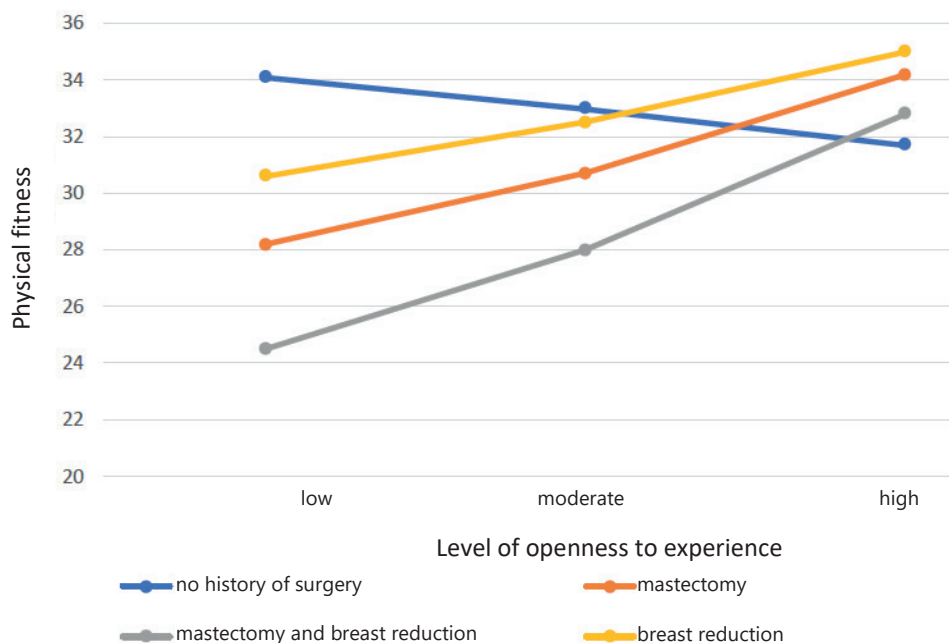
Moderating effect of the type of procedure performed on the relationship between weight control scale level and openness to experience



There was also a statistically significant moderating effect of the type of procedure performed on the relationship between level of openness to experience and physical fitness scale. This correlation was statistically significant with a positive sign in the group of women who underwent mastectomy ($B = 0.46$; $SE = 0.17$; $t = 2.79$; $p = 0.006$); in the group of women who underwent mastectomy and breast reconstruction, it was close to statistical significance ($B = 0.64$; $SE = 0.32$; $t = 1.96$; $p = 0.052$). By contrast, it was not statistically significant in the groups of women who did not undergo any surgery ($B = -0.18$; $SE = 0.16$; $t = -1.16$; $p = 0.250$) and women who underwent breast reduction surgery ($B = 0.34$; $SE = 0.26$; $t = 1.33$; $p = 0.185$). The results are presented graphically in Figure 3.

Figure 3

Moderating effect of the type of surgery performed on the relationship between physical fitness scale level and openness to experience



Discussion

Breast surgeries have a particular significance that cannot be separated from either the aesthetic aspect or the social and cultural context. Women who underwent mastectomy indicate that their sense of self is compromised, so that they remain maladapted to their new appearance (Kimszal & Kurowska, 2018). In the light of contemporary knowledge, it thus seems reasonable to broaden the psychological profile of female patients to be able to support them more effectively and more accurately address the emotional needs resulting from undergoing surgeries. Research suggests that, before undergoing, for example, breast reconstruction surgery, it would be useful to assess female patients' personality factors, in particular their level of neuroticism. Female patients with high scores on this scale should be referred or at least encouraged to seek psychological counselling (Juhl et al., 2017). The results of the authors' own study presented here have confirmed that certain personality traits in the five-factor model are related to body image, a finding that corresponds to contemporary knowledge in the area indicated. Most notably, it

has been demonstrated that there exists a moderating effect of surgeries on the relationship between levels of openness to experience as a personality trait and the levels of physical attractiveness, physical fitness or weight control as dimensions of body evaluation. These results are consistent with contemporary analyses showing a relationship between past breast surgeries and changes in body self-perception (Brandt-Salmeri et al., 2019; Fisher et al., 2019; Morales-Sánchez et al., 2021). Previous studies have also shown that the reasons women decide to undergo breast reconstruction after mastectomy remain related to their sense of femininity and normality (Hoyle et al., 2022), confirming both the aesthetic and socio-cultural importance of the breasts in women's lives. Considering that the physical aspects of the female body are more often subjected to criticism than the male body, women tend to have a stronger tendency to negatively evaluate their own physicality than men (Green, 2018). This is particularly important in the context of women's decisions to undergo breast reconstruction and breast reduction procedures.

Limitations

The study presented in this paper is not free of limitations. In the future, it would be recommended for this type of analysis to include a larger number of women who underwent mastectomy and breast reconstruction. In the analyses presented in this paper, the group was too small, a fact that hindered some statistical analyses. In order to broaden the perspective presented in this study, it would be recommended in the future to collect information on the time between a given surgical procedure and the evaluation of the analysed dimensions in order to be able to observe differences, if any. It should be also borne in mind that the female respondents' evaluations are based on their subjective perspective. In addition, in the future it could be reasonable to include qualitative data in analyses with a view to obtaining a more in-depth insight into such subtle and intimate experiences of female patients as undergoing breast surgery.

Conclusions

Undergoing breast surgery is not unrelated to the psychological consequences of the process. In order to provide patients with the highest standard of support and care, also understood as mental health prevention, the emotional aspects of their experience should be taken into account, as well as the specifics of their personal-

ity traits and their body self-evaluation. Considering the results presented, it appears reasonable to take into account the moderating effect of breast surgery on the relationship between personality traits and body evaluation, and not to neglect psychological aspects in the surgical care offered to female patients after mastectomy, breast reconstruction or breast reduction.

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