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The impact of breast scarring on perceptions of attractiveness:

an experimental study

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Abstract

This study explored whether breast scarring following a lumpectomy generated negative judgements using an experimental between subjects factorial design. Eight images of women varying in terms of breast scarring (present vs. absent), beauty (average vs. high) and celebrity (as a proxy for familiarity; present vs. absent) were rated by 232 participants. The results showed that scarring resulted in lower ratings of attractiveness and self esteem and higher ratings of femininity. Scarred celebrities were judged as particularly unattractive. Women's assumption that they will be judged more harshly following breast cancer surgery may be reflected in the actual ratings of others.

Key words: scarring, disfigurement, breast cancer, attractiveness

Introduction

Many people are born visibly different which can impact upon their perceptions of self (Rumsey and Harcourt, 2004; 2005). In addition, an increasing number of people have various forms of surgery which can result in visible scarring. In line with this, research has addressed the psychological impact of being visibly different either congenitally or through scarring and has explored which factors influence whether or not a form of disfigurement has a detrimental impact upon a person's self perception. Some research has focused on either facial or bodily scarring. For example, Turner et al (1997) reported that visible facial disfigurements have been found to decrease self-confidence and promote a negative self-image amongst those individuals affected. Similarly, Cohen et al (1982) concluded that people with facial scarring or disfigurement tend to have poorer self-esteem and body image. In contrast, in terms of body scarring and disfigurement, Macgregor (1989) argued that bodily impairments are capable of causing equally as much psychological damage as facial disfigurement. Further, it has been suggested that mild differences may be more detrimental than severe impairments as those with obvious scarring or disfiguration are likely to experience more consistent negative reactions enabling them to normalise the reactions of others (Lansdown et al, 1997). In addition, Coughlan and Clarke (2002) argued that the use of camouflage for visible disfigurement exacerbates the problem because the individual must cope with the fear that other individuals may change their opinion and reject their appearance once the "truth" has been discovered. Some research has also explored the impact of the person's age when the scarring occurs. For example, Bradbury (1997) argued that individuals who undergo an appearance change later on in life as oppose to at birth or early in childhood, suffer greater psychological difficulty as they must grieve the loss of their previous

appearance and cope with reactions from significant others who need to re-associate their loved one with their new appearance.

Research therefore shows that scarring and disfigurement can result in changes in an individual's self perception. The present study focused on the impact of scarring found in breast cancer patients who have undergone surgery. Breast cancer affects up to 12% of women and its prevalence has increased over the past few decades. Contemporary treatments offered are mastectomy, mastectomy with reconstruction or conservative breast surgery (lumpectomy) all of which induce a degree of scarring. Breast scarring following surgery is therefore a problem that an increasing number of women now have to face (Moyer et al, 1997). This is particularly difficult for many women as breasts are embedded within issues of sexuality and femininity (Hobler-Kahane, 2005) which is exacerbated by the media who perpetuate the belief that women are most attractive when in possession of 'firm, fully-rounded, healthy breasts [suggesting] the absence of this asset will destroy the woman's overall well-being and sense of value within society' (Goldberg, 1990). Furthermore, breast scarring is not permanently visible and occurs later on in life which may make adjustment a more complex process. This is supported by research indicating that women can experience lowered mood and changes in their sense of femininity, attractiveness and body image following breast surgery (Pinder et al, 1993; Moyer, 1997; Carver et al, 1998; Yurek et al, 2000; Petronis et al, 2003; Steginga et al, 1998; Kraus, 1999; Hartl et al, 2003).

Disfigurement and scarring would therefore seem to have a detrimental impact upon an individual's self perception. Newell (2000) argued that this is based upon the

assumption that other people will judge an individual as less attractive if they are scarred in some way. To date however, only a few studies have explored whether this assumption is evidence based and whether people with scarring are in fact judged more negatively than those without. Bull and Brooking (1985) addressed this issue for those with a facial “port-wine stain” (a strawberry mark) and reported that those with a disfigurement were rated less attractively than those without. Similarly, Rumsey et al (1982) described how strangers leave a larger space between themselves and those with a facial disfigurement than those without, Houston and Bull (1994) demonstrated how the seat next to a person with a facial birthmark was left empty more often than if the person had no birthmark and Rumsey et al (1986) reported that passers by were less likely to answer a market researcher’s questions if they had a facial disfigurement. Further, in a recent study Grandfield, Thompson and Turpin (2005) examined people’s attitudes to a range of dermatological conditions compared to clear skin using both explicit and implicit attitude measures and showed that participants showed a significant preference for clear skin. Such research reflects the ‘what is beautiful is good’ stereotype described by Dion and colleagues in the 1970’s (Dion et al, 1972). Whether scarring resulting from breast cancer surgery, however, induces similarly negative reactions remains unknown.

In line with this the present study aimed to explore how people judge those with and without scarring following breast cancer surgery in terms of their attractiveness, perceived self esteem and femininity. Such judgements however are not made in isolation but in the context of other aspects of both the person making the judgements and the person being judged. The present study explored the role of the age and gender of the person making the judgements as it was hypothesised that such factors

may influence the extent to which they are affected by breast scarring. In terms of aspects of the person being judged, research in parallel areas of judgement formation suggests that such judgements may be influenced by whether the person with the scarring is considered beautiful or familiar.

In terms of beauty, research consistently shows physical attractiveness has a powerful impact upon initial impressions resulting in the use of the physical attractiveness stereotype (Reinisch et al, 1987). For instance, if an observer's initial impression of a person is that she is beautiful, the observer is likely to think positively about all other aspects of that person, regardless of whether these inferences are truly justified (Eagley et al, 1991). This also reflects the 'halo effect' whereby an individual who is perceived to excel in one area of life, is also perceived to excel in all other areas (Dion et al, 1972; Nisbett and Wilson, 1977; Wetzel et al, 1981). It is therefore possible that imperfections on a beautiful individual may be over-looked if their beauty is seen to over-ride the negativity of their disfigurement (Cook, 1981). In line with this, the present study explored whether the impact of breast scarring was influenced by whether or not the woman being judged was considered beautiful.

In terms of familiarity, research also indicates that a more familiar person may be attributed with more favourable and positive characteristics and be more preferred than a less familiar one (Monson and Synder, 1977; Berschied and Reis, 1998). This has been labelled the 'mere exposure effect' (Zajonc, 1968; Corneille et al, 2005) and suggests that familiar stimuli will appear increasingly pleasant and will therefore be rated more positively. For example, from their study of attitudes to dermatological conditions, Grandfield et al (2005) concluded that although people showed a

preference for clear skin, stereotypes seemed to be inhibited in those who knew someone with a dermatological condition. It is possible that the impact of breast scarring would be influenced by whether or not the scarred person is also familiar. This seems particularly pertinent given that scarred breasts are more likely to be seen and therefore judged by familiar partners than by strangers with no prior representation of the individual. In the present study familiarity was operationalised through the use of either celebrity or unknown women.

In summary, an increasing number of women are undergoing surgery for breast cancer which can leave visible scarring. Some research indicates that they can subsequently suffer from changes in their sense of self and feelings of attractiveness which is in part predicated on the assumption that they will be judged more negatively by others. To date however, this assumption remains untested. In line with this the present experimental study aimed to explore the impact of breast scarring on judgements of attractiveness, self esteem and femininity. In addition, the study assessed whether the impact of scarring was influenced by the age and gender of the person making the judgements and whether or not the woman being judged was beautiful or a celebrity (and therefore familiar). The study focused on the impact of scarring following conservative breast surgery (lumpectomy) which results in relatively minimal damage to the breast size and shape and the least scarring. This was chosen as it is currently the most commonly used surgical approach for women with breast cancer detected in its early stage (Yurek et al, 2000).

Method

Participants

Questionnaires were handed out to 244 students and employees from one University in the UK. Two hundred and thirty two completed questionnaires were received from 111 men (47.8%) and 121 women (52.2%) who had a mean age of 33.9 years ($SD=12.83$) ranging from 19-65 (response rate= 95.1%). Of these 55% ($n=127$) were students and 45% ($n=105$) were University employees. They were split in terms of whether they were single ($n=63$, 27.2%), in a relationship but not cohabiting ($n=83$, 35.8%) and living with a partner ($n=86$, 37.1%). Ethical approval was obtained from the University Ethics Committee.

Design

The study involved an experimental between subjects factorial design. Each participant was randomly assigned to receive one of eight pictures which varied in terms of the three independent variables: breast scarring (present vs. absent), beauty (high vs. average) and celebrity (as a proxy measure for familiarity; present vs. absent). A sample size of 232 was deemed acceptable to enable sufficient numbers in each of the eight cells (approx $n=30$) and to be able to detect significant differences between the two levels of each of the three independent variables with alpha set at 95% and beta set at 80%.

Materials

For the purpose of the study both familiarity and beauty were defined according to the ratings of independent raters. In an ideal situation, a degree of familiarity would have been achieved by selecting pictures of women who were tailored to each participant in terms of being known and familiar. However, given the large scale of the study and the use of an experimental design this was not possible. Therefore it

was decided to use a proxy measure of familiarity in the form of images of celebrity women. This enabled the selection of images of women who were reliably familiar to all participants and who were significantly more familiar than those selected to reflect unfamiliarity. This methodology raises questions about whether the familiarity of someone known vicariously through the media is equivalent to the familiarity attributed to someone known in reality. However, given the problems with any other assessment of familiarity this was chosen as a feasible solution. In order to develop the images for the study the following studies were carried out.

Developing the materials.

Stage 1:

Twenty passport-sized photographs of celebrity and non celebrity women were selected from a range of magazines and the internet. These were selected to provide a variation in both familiarity and beauty. Five individuals (three men, two women) aged in their twenties who were unaware of the research hypotheses rated each of the photographs for beauty and familiarity. To do this they were given four separate pieces of blank A4 paper headed with one of four titles; beautiful and familiar, beautiful and non-familiar, average-looking and familiar, average-looking and non-familiar. They were asked to study the images and place them on one of the four pages according to how physically attractive and familiar they were. The back of every image contained a number (1-20) so that images could be easily categorised.

Stage 2:

The eight most popular images from stage 1 (i.e.: two from each A4 sheet) were then re-piloted to assess how beautiful and familiar the images were. For this stage five

men and five women aged in their early twenties rated each image on five-point Likert scales for beautiful and familiar ('not at all' (1), 'very much' (5)). From this, four images were identified to represent one of each of the categories (beautiful and familiar / beautiful and unfamiliar / average and familiar / average and unfamiliar) for the main study. No further stages were carried out as the pictures seemed to clearly fall into the different categories.

Adding breast scarring

Adobe Photoshop computer software was used to manipulate the images. The four images were re-cropped to reveal the woman naked from the waist upwards. Real-life post-breast cancer surgery scars resulting from lumpectomy were identified from a web site providing information to women about the possible results of surgery. One image was selected and used as a template to add scars to half of the images. Each of these images was then manipulated to make it look like the women had undergone breast cancer surgery. This resulted in eight photographs of women which varied in terms of scarring (present vs. absent), beauty (high vs. average) and familiarity (present vs. absent). Examples of the images are available on request.

Procedure

The study aimed to recruit men and women who varied in terms of age and gender. To this end the researcher recruited participants from lectures, the library and academic buildings. It was explained that the study aimed to compare opinions about physical attractiveness. The researcher handed the participant the questionnaire and negotiated a convenient way of collecting the completed questionnaire so that the experimenter was absent during the procedure. Participants were randomly assigned

to one of the eight experimental conditions and received one picture. When data was collected in groups (i.e: individuals recruited from lectures) it was ensured that participants did not rate the same image as the individuals next to them.

Outcome measures

Participants were asked to rate the image in terms of the following constructs using a five-point Likert scale ('not at all' (1), 'very much so' (5)). The items were summated to create mean scores for each construct and the reliability of these constructs was assessed using Cronbach's alphas.

- i) Attractiveness: This was assessed using the terms 'attractive', 'sexy', 'good-looking' and 'desirable' ($\alpha=.95$) which were taken from previous research exploring raters' judgements of women who varied in terms of body size (Ogden and Munday, 1996).
- ii) Femininity: This was assessed using the words 'elegant', 'sensitive' and 'emotional' which were identified in previous research as reflecting femininity (Deaux et al, 1985; Gillen, 1981). ($\alpha=.75$).
- iii) Self esteem: This was assessed using the terms 'confident', 'has good self-esteem' and 'feels good about herself' ($\alpha=.92$).

In addition, the participants were asked to describe their gender, age, relationship status and whether they were students or employees.

Results

Data analysis

The results were analysed to explore the effect of scarring (present vs absent) on participants' ratings and whether this effect was influenced by levels of beauty (high vs average) or celebrity (present vs absent) using ANOVAs and to explore the impact of responders' own gender and age on their ratings using ANCOVA.

1. Effect of experimental manipulation

The effect of the experimental manipulation on ratings of attractiveness, femininity and self esteem was analysed using 3 way ANOVA. The means and SD are shown in table 1.

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i) Effect of scarring

The results indicated a main effect of scarring on ratings of attractiveness ($F=11.84$, $p=0.001$) and self esteem ($F=40.13$, $p=0.0001$) but not on ratings of femininity ($F=2.11$, $p=0.15$). The means indicated that those with breast scarring were rated as less attractive and as having lower self esteem than those without scarring but that scarring had no effect on ratings of their femininity.

ii) Effect of beauty

The results indicated a main effect of beauty on attractiveness ($F=185.6$, $p=0.0001$), femininity ($F=23.2$, $p=0.0001$) and self esteem ($F=33.82$, $p=0.0001$) indicating that the more beautiful picture was rated as more attractive, more feminine and as having higher self esteem than the less beautiful picture.

iii) Effect of celebrity

The results indicated a main effect of celebrity on attractiveness ($F=185.6$, $p=0.0001$), femininity ($F=5.2$, $p=0.02$) and self esteem ($F=33.82$, $p=0.0001$) indicating that the celebrity pictures were rated as more attractive, more feminine and as having higher self esteem than the non celebrity pictures.

iv) Two way interactions with scarring

The results showed a significant interaction between scarring and celebrity for attractiveness ($F=10.3$, $p=0.002$) but not for femininity ($F=3.01$, $p=0.08$) or self esteem ($F=1.68$, $p=0.19$). The means indicate that being a celebrity increased the negative impact of scarring on ratings of attractiveness. In particular, whereas being scarred or not had no effect of ratings of attractiveness for the non celebrity woman (means= 2.79 vs 2.81, $t=0.55$, $p=0.6$), when the woman was a celebrity the scarred woman was rated as significantly less attractive than the unscarred woman (means 3.25 vs 3.8, $t=-4.3$, $p=0.0001$). The results showed no significant interactions between scarring and beauty for attractiveness ($F=2.1$, $p=0.2$), femininity ($F=0.3$, $p=0.6$) or self esteem ($F=1.02$, $p=0.3$).

2. Effect of participants' own characteristics

The results were finally analysed to explore the impact of the responders' own age and gender on the impact of scarring using ANCOVA. The results showed no significant interactions between either age or gender for ratings of attractiveness or self esteem or any effect of age on ratings of femininity. However, they did show a significant interaction between scarring and gender for femininity. Post hoc tests showed that whilst women rated the scarred picture as more feminine (mean=2.89, $SD=0.9$) than the unscarred picture (mean=2.55, $SD=0.86$), men showed only a

minimal difference between the scarred (mean = 3.00, SD=1.01) and unscarred pictures (Mean=3.07, SD=0.8).

Discussion

The present study aimed to explore the impact of breast scarring on judgements of attractiveness, self esteem and femininity and to assess whether such judgements were influenced either by aspects of the person being judged or aspects of the person making the judgements. There are some problems with the study, however, that need to be considered. First the participants were recruited from a University which limits the generalisability of the study to other wider populations. However, the sample did consist of both students and employees who provide a broader perspective than just students alone. Second the study used an experimental design which creates an artificial setting for making judgements as real life judgements draw upon a whole range of sources of information. However, this approach enabled the variables assessed to be controlled. Central to this however was the operationalisation of familiarity and the use of celebrity photos. In a naturalistic setting familiarity would relate to an intimate relationship based upon a knowledge and understanding of a whole range of personal characteristics. For the purpose of this study it would not have been possible to use images of people that were familiar in this way. Celebrity images were therefore chosen as a proxy measure for familiarity. Although the kind of familiarity felt towards someone who is known through the media is obviously different to that experienced from a real relationship, the use of celebrity images at least enabled this construct to be assessed within the experimental setting.

The results showed that breast scarring had a detrimental impact upon participants' ratings of attractiveness and self esteem. Previous research indicates that those with scarring or disfigurements report lowered self esteem and feel less attractive (Turner et al, 1997; Cohen et al, 1982; Bradbury, 1997). Women following breast cancer surgery also report similar changes in their perceptions of self (Pinder et al, 1993; Moyer, 1997; Petronis et al, 2003; Kraus, 1999). In part, such lowered self image may be predicated on the assumption that they will be judged more negatively by others. The results from the present study provide empirical support for this and indicate that breast scarring does result in more negative judgements. This supports previous research which has indicated negative attitudes to a range of visible differences (eg. Rumsey et al, 1982; 1986; Grandfield et al, 2005) and suggests that this is also the case for breast scarring. The results, however, also indicated that women rated the scarred woman as more feminine than the unscarred woman. Perhaps scarring engenders a sense of vulnerability which is considered feminine by other women who are more able to identify with the woman they are judging.

The study also explored whether the impact of scarring was influenced by whether the scarred woman was considered beautiful or was a celebrity. The results showed no role for beauty which is in conflict with theories of the 'halo effect' and the physical attractiveness stereotype (Dion et al, 1972; Cook, 1981; Nisbett and Wilson, 1977). Being beautiful did not override the detrimental impact of being scarred. Being a celebrity, and therefore more familiar, however, did seem to have an effect with the negative impact of scarring being exacerbated for ratings of attractiveness for those women that were considered more familiar. This is in conflict with previous research which has suggested that familiarity may engender more favourable attributes

(Berscheid and Reis, 1998; Grandfield et al, 2005). This may reflect the use of celebrity as a proxy measure for familiarity. Alternatively, perhaps, familiarity creates a set of expectations which are then undermined if the woman being viewed is scarred.

To conclude, women often experience negative changes to their perception of self following breast cancer surgery which may be due to the assumption that they will be judged more harshly. The results from the present study indicate that this assumption is reflected in the actual ratings of others as the raters did consider the scarred women as less attractive and as having lower self esteem. This is exacerbated if they were also a celebrity and therefore familiar. The scarred women, however, were rated as more feminine by women. Therefore, people in general may judge women with scarred breasts more negatively, particularly if they are familiar to them. But other women may be less likely to do so.

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Table 1: Effect of experimental manipulation (Means / SDs)

Var	Not scarred (n=116)				Scarred (n=116)			
	Not beautiful (n=56)		Beautiful (n=60)		Not beautiful (n=61)		Beautiful (n=55)	
	N/celeb (n=27)	Celeb. (n=29)	N/cele (n=30)	Celeb. (n=30)	N/celeb (n=31)	Celeb. (n=30)	N/cele (n=28)	Celeb (n=27)
attractive	1.79 ± 0.63	3.37 ± 0.62	3.82 ± 0.82	4.3 ± 0.8	1.78 ± 0.75	3.1 ± 0.73	3.79 ± 0.56	3.4 ± 0.85
feminine	2.11 ± 0.69	2.87 ± 0.78	3.0 ± 0.87	3.2 ± 0.84	2.46 ± 0.79	2.97 ± 1.04	3.38 ± 0.7	3.0 ± 0.97
self esteem	3.27 ± 0.82	4.13 ± 0.8	4.3 ± 0.8	4.6 ± 0.58	2.56 ± 1.12	3.67 ± 0.74	3.33 ± 0.99	3.95 ± 0.69