

Psychosocial predictors of an interest in cosmetic surgery

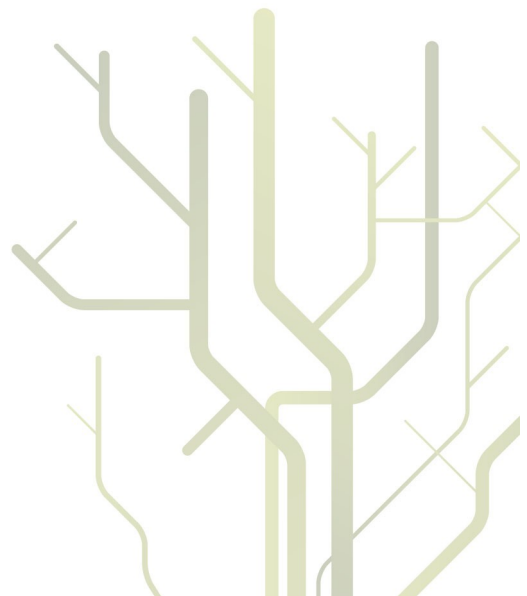
Based on a population study of young Norwegian women



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Abstract

This thesis aims to provide more knowledge about psychological and social aspects of cosmetic surgery, in particular what factors are associated with the increased interest in having such surgery oneself. The first paper is angled from a more public health perspective, with focus on what factors predicts whether someone considers having cosmetic surgery in general. In the second paper, the focus shifts to a slightly more clinical perspective when various characteristics in women interested in the four most common cosmetic surgical procedures are studied. Finally, the association between eating problems and an interest in liposuction is investigated in the third paper.

All papers are based on the same sample of 1862 women aged between 18 and 35 years who responded to a questionnaire sent to 3500 women randomly drawn from the general population in 2006.

Forty-nine percent of the respondents were interested in cosmetic surgery. The multiple regression analyses found that several psychological and social factors predicted such an interest. A low educational level was one of the strongest, and the only common predictor, throughout all subgroups. Social factors such as being recommended cosmetic surgery or knowing someone who had had cosmetic surgery, and psychological factors such as poor body image predicted an interest in cosmetic surgery. When studying the characteristics of women interested in the different cosmetic surgery procedures, an interest in abdominoplasty was associated with less psychological and more social factors, notably having children. The strongest predictor of an interest in liposuction was being divorced and/or separated. It was found that 52% of women with eating problems would consider liposuction, which is almost three times the percentage found in women without eating problems.

List of papers

The thesis is based on the following papers, referred to in the text as papers I, II and III.

I. Javo IM, Sørliie T. Psychosocial predictors of an interest in cosmetic surgery among young Norwegian women: A population-based study. *Plast Reconstr Surg.* 2009;124:2142–2148.

II. Javo IM, Sørliie T. Psychosocial characteristics of young Norwegian women interested in liposuction, breast augmentation, rhinoplasty and abdomioplasty: A population-based study. *Plast Reconstr Surg.* 2010;125:1536–1543.

III. Jávo IM, Pettersen G, Rosenvinge JH, Sørliie T. Predicting interest in liposuction among women with eating problems: A population-based study. *Body Image.* 2011 Sep 9 [Epub ahead of print].

Abbreviations

APA	American Psychiatric Association
ASAPS	American Society for Aesthetic Plastic Surgery
ASPS	American Society of Plastic Surgeons
BMI	Body Mass Index
BDD	Body Dysmorphic Disorder
CI	Confidence Interval
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
EDS-5	Eating Disturbance Scale-5
ICD-10	International Classification of Diseases, Tenth Revision
OR	Odds Ratio
SLCL	Self Liking and Competence Scale
SCL	Symptom Check List
TIPI	Ten Item Personality Inventory

1 Introduction

Plastic surgery is a medical speciality which amongst others includes reconstructive surgery and cosmetic surgery. According to the American Society of Plastic Surgeons (ASPS), reconstructive surgery is generally performed to improve functions, but may also be done to approximate a normal appearance, whereas cosmetic surgery intends to reshape normal structures of the body in order to improve appearance. A key feature in any kind of plastic surgery is to achieve an optimal aesthetic result. Consequently, every reconstructive procedure will also have a cosmetic component, and a given problem may actually be experienced by the patient as more aesthetically than medically disturbing although the procedure is medically indicated.

Although the costs of having cosmetic surgery are relatively high, it is no longer restricted to the upper socioeconomic levels. According to statistics from the American Society for Aesthetic Plastic Surgery (ASAPS), 13 million cosmetic procedures were performed in the US in 2010. However, the vast majority of these procedures (89%) were minimally-invasive procedures such as Botulinum Toxin Type A injections, soft tissue fillers, chemical peels and laser hair removal. The actual number of minimally-invasive cosmetic procedures performed is thought to be underestimated, as it does not cover appearance-enhancing treatments performed by non-physicians (Sarwer and Crerand, 2008). On the other hand, many of the minimally-invasive procedures require repeated treatments, as the effects are limited and often reversible, thus giving the impression of a higher prevalence of the number of women having such procedures done. The number of cosmetic *surgical* procedures performed in the US has increased steadily from 1997 to 2005 (ASAPS). However, between 2005 and 2010 it has actually been a 24 percent decrease in the number of cosmetic surgical procedures performed. The top five cosmetic surgical procedures for women performed in the US in 2010 were breast augmentation, liposuction,

blepharoplasty, abdominoplasty and breast reduction (ASAPS). Breast reduction is often a medically indicated procedure, and when excluding this procedure, rhinoplasty enters among the top five. Similar statistics do not exist in Norway, but there are some studies providing rough estimates. A Norwegian national survey (Statistics Norway, 2008) found that 3% of men and 7% of women aged 18-65 years have undergone some kind of cosmetic surgery. In another Norwegian study, 7.7% of women between the ages of 22 and 55 years reported to have undergone cosmetic surgery, while 22.6% indicated a wish for such (von Soest et al., 2006).

Cosmetic surgery differs from most other types of surgery, as it is the patient and not the doctor who initiates it. Because of this and other ethical considerations, there are strict regulations of marketing cosmetic surgery in Norway. These regulations were defined by law in 2005 and prohibit the use of pre- and postoperative photos or the use of any statement in marketing that may be offending to people with variations of normal appearance. Further, any marketing of credit- and down-payment solutions is illegal due to its aggressive nature, in order to protect the patients from making impulsive decisions of having cosmetic surgery (Helse- og omsorgsdepartementet, 2005).

1.1 Factors influencing the motivation for cosmetic surgery

1.1.1 Cultural factors and media

Women's perceived beauty ideal may differ with time and between cultures. For instance, the Western idealized female body has moved from a less curvaceous body shape in the early part of the twentieth century to a more curvaceous shape at mid-century and returned to a less curvaceous shape at the end of the century (Byrd-Bredbenner et al., 2005). Caucasian women have typically reported a higher degree of body dissatisfaction

than women of African descent (Rucker and Cash, 1992; Aruguete et al., 2005; Roberts et al., 2006; Kronenfeld et al., 2010) and the body dissatisfaction tend to appear at a lower BMI level among Caucasian women than among Hispanic women (Fitzgibbon et al., 2000). However, the thin ideal of beauty is becoming standard in more and more cultures. The International Body Project, which surveyed more than 7000 individuals across 10 world regions, found that age, BMI, and Western media exposure predicted body weight ideals, and further that body dissatisfaction and drive for thinness was commonplace in high socioeconomic settings across world regions (Swami et al., 2010). In line with this, Delinsky (2005) found that ethnic identity was unrelated to body dissatisfaction and only slightly negatively correlated with likelihood of future cosmetic surgery. Delinsky (2005) further found that internalization of sociocultural attitudes toward appearance strongly predicted the likelihood of future cosmetic surgery.

The apparent internalization of Western beauty standards does not only concern weight issues. In Eastern Asia, particularly China and South Korea, the cosmetic surgery market is booming, due to what may seem to be an increasing desire to comply with Western beauty ideals and to reduce strong ethnic facial characteristics. The request for “Asian upper blepharoplasty”, in which a crease is created above the eye, is the most common procedure in Asian women (ASPS; Ishigooka et al., 1998; Nguyen et al., 2009). On the other hand, it may be that the increase in cosmetic surgery is reflecting the economic growth and hence increased possibilities to purchase cosmetic surgery, as some authors argue that the Asian upper blepharoplasty is not a Westernization procedure and has been performed for more than a century (Nguyen et al., 2009; Wong, 2009).

An increasing acceptance of a given phenomenon in a society can be reflected by repeated interest about the subject in the media. In contrast, mass media itself may contribute to the increased acceptance, by promoting and trivializing certain aspects of it.

Several studies have examined the relationship between media and interest in cosmetic surgery. One study showed that cosmetic surgery patients who regularly watched reality television programs featuring cosmetic surgery reported a greater influence from media to pursue cosmetic surgery, felt more knowledgeable about cosmetic surgery, and felt that the reality television program was more similar to real life than did low-intensity viewers (Crockett et al., 2007). Other studies have also showed that regular viewership of cosmetic surgery television programs is related to more favorable cosmetic surgery attitudes (Sperry et al. 2009) and interest in having cosmetic surgery in the future (Delinsky, 2005; Markey and Markey, 2010). It is reasonable to assume that many of those who choose to watch such programs already have a more accepting attitude towards cosmetic surgery than people who are not at all interested in these programs. However, experimental studies indicate that participants who are asked to watch a television program about cosmetic surgery want to have cosmetic surgery more than do participants who are not exposed to such a television program (Mazzeo et al. 2007; Markey and Markey, 2010). The media effect is also demonstrated by the study of Swami (2009a) where an interest in cosmetic surgery was predicted by feeling pressured by media to strive for cultural ideals of beauty. A systematic investigation of all articles from UK newspapers that were published in 2006 containing the term plastic surgery found that two-thirds of feature articles on cosmetic surgery portrayed it as risk-free without mentioning potential problems or complications. The authors argued that this “surely contributes to the misguided perceptions and unrealistic expectations of cosmetic surgery” (Reid and Malone , 2008).

1.1.2 Social factors

To know someone who has had cosmetic surgery or to have been recommended it by others has been found to strongly predict an interest in cosmetic surgery (Schlebusch and

Mahrt, 1993; Delinsky, 2005; von Soest et al., 2006; Brown et al., 2007). It may be that these social factors make cosmetic surgery seem more familiar and reduce the taboo associated with cosmetic surgery, thereby increasing the possibility of considering cosmetic surgery oneself. On the other hand, it may also contribute to a greater external *pressure* to have cosmetic surgery, as women are constantly reminded that they can, and maybe should, look better.

Occupational factors may also be associated with an interest in cosmetic surgery. A French study of patients scheduled for facial cosmetic surgery found that 20% were seeking employment, compared to an unemployment level of 12% at that time, and that 22% claimed to be motivated by a professional point of view (Meningaud et al., 2001). Further, Henderson-King and Brooks (2009) studied predictors of an interest in cosmetic surgery in undergraduate females, and found that women with materialist aspiration (i.e. a drive for financial success, social recognition, and attractive appearance) were more accepting of cosmetic surgery and reported an interest in having a higher number of procedures than others.

Although it might not influence a *wish* for cosmetic surgery, the private economy most likely plays an important role in the decision to actually have cosmetic surgery. However, the costs of a cosmetic surgical procedure, i.e. 10,000-50,000 NOK depending on the type of procedure (Teres Medical Group), can be compared with the costs of an exotic vacation, redecorating the house, and so on. In other words, during stable economic times most Norwegians could probably afford it, maybe by sacrificing other luxury items, or by taking out a small personal loan. The effect of the global economy on cosmetic surgery is demonstrated in a recently published study showing a direct correlation of cosmetic surgery volume to major US stock market indices (Gordon et al., 2010).

The availability of cosmetic surgery, i.e. the number of clinics in a given area and the

distance to the closest clinic, might also influence the decision to actually have cosmetic surgery. Presuming that common marketing strategies to a certain degree also apply to the market of cosmetic surgery, it would seem probable that for someone who is curious or undecided about having cosmetic surgery, the threshold to make an appointment with a plastic surgeon depends on the effort it takes for the patient to get there. This is particularly relevant in a country like Norway with its large distances between cities and towns. For instance, it would require more dedication to book and pay for a flight and travel several hours to a different city in order to have a consultation with a plastic surgeon, than to stop by the surgeon's office before going home from work.

1.1.3 Psychological factors

Solvi et al. (2010) performed a qualitative study on fourteen breast augmentation patients with the aim of investigating how and why these patients decided to undergo such surgery. They found four psychological processes associated with breast augmentation surgery: to create, improve, repair and restore. In addition to a basic drive for femininity, the authors found that appearance dissatisfaction, ideal figure, self-esteem, comments, clothes and sexuality were factors generating a wish for breast augmentation. This is in line with the findings of von Soest et al. (2006), who also found that poor body image and a history of being teased predicted a wish for cosmetic surgery. Another study of breast augmentation patients found that more than half of the patients were motivated to have this procedure by a desire to improve self- and body image, unsatisfactory sexual relationships, and interpersonal relations (Schlebusch and Mahrt, 1993).

The Big-Five personality framework, which is comprised of five bipolar traits: Extraversion, Openness, Agreeability, Emotional Stability and Conscientiousness, have been found to be associated with both body image and an interest in cosmetic surgery.

Body image has also been conceptualized as having several dimensions (Brown et al., 1990). Two of the most studied dimensions of body image are appearance evaluation – the subjective rating of one's appearance – and appearance orientation – the personal attentiveness in one's appearance. The interaction between personality factors, body image, and cosmetic surgery is not fully understood. A low level of Emotional Stability has been associated with poor appearance evaluation (Kvalem et al., 2006), and with high appearance orientation (Davis et al., 2001; Kvalem et al., 2006). Furthermore, Extraversion has been associated with more positive appearance evaluation, but also higher appearance orientation (Kvalem et al., 2006). Swami et al. (2009b) tested the association of the Big-five personality traits and different aspects of acceptance of cosmetic surgery in 332 university students. Among their findings were that low levels of Openness and of Agreeability predicted participants who would consider cosmetic surgery. Furthermore, high levels of Emotional Stability and of Conscientiousness predicted likelihood of considering cosmetic surgery. The latter findings are rather counterintuitive, considering the results of a previous study performed by the same author (Swami, 2008), where Emotional Stability and Conscientiousness were both found to be positively correlated with body appreciation. In another study, Zojaji et al. (2007) tested the MMPI (Minnesota Multiphasic Personality Inventory) scale on 66 rhinoplasty patients and found none of the patients to be within normal ranges, compared to 30 of 50 in the control group selected from the normal population. The most common personality trait found in the rhinoplasty patients was obsessiveness-compulsiveness, which also turned out to be one of the personality traits associated with poor satisfaction following surgery.

To my knowledge, only one study has investigated the association between interpersonal attachment style and an interest in cosmetic surgery. Davis and Vernon (2002) found in their study that in particular attachment anxiety, i.e. excessive approval

seeking and concern over achieving/maintaining the love of others, predicted an interest in cosmetic surgery.

In a Japanese study of 415 patients seeking cosmetic surgery, notably facial surgery, the patients underwent a psychiatric interview after their first consultation with the plastic surgeon. Using the ICD-10 criteria, 40% of the female subjects were diagnosed with a possible mental disorder. Depressive episode and neurotic disorders were the most common diagnostic groups, whereas paranoid- and histrionic personality disorders were the major personality abnormalities found (Ishigooka et al., 1998). The percentage of mental disorders in this study was high, although not as high as reported in a study from the earlier era of cosmetic surgery research (Edgerton et al., 1960). Meningaud et al. (2001) found that half of the patients scheduled for facial cosmetic surgery had a history of psychotropic treatment. Furthermore, in a retrospective study, 19% of cosmetic surgery patients had reported a history of mental health problems, mainly depression, compared to 4% in the non cosmetic control group. In the same study, 18% of the cosmetic surgery patients reported using psychotropic medication at the time of consultation, mainly antidepressants, compared to 5% in the control group (Sarwer et al., 2004). A recently published population-based study following more than 1500 adolescent females over a period of 13 years found several mental health symptoms to predict prospective cosmetic surgery, including symptoms of depression and anxiety, history of self-harm, parasuicide, and use of illicit drugs (von Soest et al. 2011a).

1.2 Body dysmorphic disorder

BDD (body dysmorphic disorder) is defined as a preoccupation with an imagined defect in one's appearance. Alternatively, where there is a slight physical anomaly, the persons

concern is markedly excessive. Further diagnostic criteria are that the preoccupation causes clinically significant distress or impairment in social, occupational, or other important areas of functioning, and that it is not better accounted for by another mental disorder such as anorexia nervosa (APA, 1994). BDD appears to be relatively common and is believed to be under diagnosed (Phillips, 2004). In a nationwide survey in Germany (n=2,552), the prevalence of BDD was 1.7% (Rief et al., 2006). Although the diagnosis of BDD is made with a clinical interview, the above mentioned study used the DSM-IV diagnostic criteria for self-rating, supplemented with questions about body areas of concern as well as a screening tool to measure somatoform symptoms. Two smaller community samples have found a prevalence of 0,7% (Faravelli et al., 1997; Otto et al., 2001) based on clinical interviews, while in cosmetic surgery clinics, between 6 % and 10 % of patients comply with the diagnostic criteria of BDD (Ishigooka et al., 1998; Sarwer et al., 1998; Altamura et al., 2001). In the latter study 18% were found to have subclinical BDD (Altamura et al., 2001).

The most common areas of concern are hair, nose and skin (Phillips et al., 1993). The preoccupation with appearance consumes 3 to 8 hours per day, and is often associated with low self-esteem, unworthiness, shame, embarrassment, fears of rejection and beliefs of being unlovable (Phillips, 2004). Most patients further believe that others stare at the defect, talk about it or mock it (Phillips, 2004). As a consequence they might stop working and socializing, or even become housebound (Phillips, 1991; Phillips et al. 1993). Patients with BDD present with a variety of psychiatric comorbidity, including eating disorders (Gunstad and Phillips, 2003; Ruffolo et al. 2006), obsessive-compulsive disorders (Brawman-Mintzer et al., 1995; Veale et al., 1996; Altamura et al., 2001; Gunstad and Phillips, 2003), social phobia (Brawman-Mintzer et al., 1995; Veale et al., 1996; Gunstad and Phillips, 2003), substance use disorders (Gunstad and Phillips, 2003),

depression (Gunstad and Phillips, 2003; Phillips, 1991; Phillips et al., 2004), suicidal ideation and suicide attempts (Phillips et al., 1993; Veale et al., 1996; Altamura et al., 2001; Phillips et al., 2005). Despite the patients' conviction of cosmetic surgery being the solution to their problems, BDD is generally considered a contraindication for having cosmetic surgery as the majority of patients will have the same or even worse symptoms following surgery (Phillips et al., 2001; Tignol et al., 2007), whereas cognitive behavior therapy and SSRI's have shown to be efficacious and are considered the treatments of choice (Neziroglu and Khemiani-Patel, 2002; Phillips, 2002). Moreover, disappointed or rejected BDD patients may threaten to sue or harm their surgeons (Sarwer, 2002; Hodgkinson, 2005), underscoring the importance of identifying this patient group at the first consultation and referring them to a mental health care provider with experience in body image disturbances.

1.3 *Eating disorders*

Eating disorders have several features in common with BDD. Anorexia nervosa, bulimia nervosa and BDD share the commonalities of compulsive behavior (mirror checking and measuring parts of the body) and an underlying preoccupation with appearance accompanied by a body image distortion. Ruffolo et al. (2006) suggested the presence of a grey area between eating disorders and BDD, and that the overlap of symptoms may prevent clinicians from completely ruling out eating disorders as a form of BDD. While the association between BDD and cosmetic surgery have been thoroughly studied, to my knowledge, only one report of case studies (Willard et al., 1996) reports on an unfortunate combination of eating disorders and cosmetic surgery. In this study, patients with bulimia compulsively requested liposuction with unrealistic expectations that surgical alteration of

the body would be an emotional and physical panacea. This lack of attention to eating disorders in people with an interest in liposuction is surprising given the similar body image problems as with BDD. Moreover, this lack of attention may be unfortunate for at least three reasons. The first reason concerns the possible negative iatrogenic effects of doing liposuction on patients with eating disorders. Secondly, a failure of health care providers to be aware of patient's ideas of liposuction as the solution of their eating problems may undermine psychological treatment strategies and the building of a therapeutic alliance. Thirdly, in a public health perspective, increased knowledge about the various factors contributing to the growing wish for cosmetic surgery is needed, including the association between eating disorders and liposuction.

Although having a known, serious eating disorder is considered a contraindication for having body-reducing cosmetic surgery in Norway (Norsk Plastikkirurgisk Forening, 2003), it may be time-consuming and difficult to identify patients with such an illness, especially bulimia nervosa and binge eating disorders, where physical signs of the illness often are lacking. The cross-cultural and cross-historical review of anorexia nervosa and bulimia nervosa by Keel and Klump (2003) suggests that while specific motivations related to weight concerns do not seem to be essential in order to produce anorexia nervosa, binge-purge syndromes affecting normal-weight women may not emerge in the absence of weight concerns. The apparently greater concern of weight as part of an attempt to comply with thin beauty ideals in bulimia nervosa, together with the higher prevalence of bulimia nervosa than anorexia nervosa in Western countries (Favaro et al., 2003; Swanson et al., 2011), makes it likely that the main group of patients with eating disorders seeking liposuction will be that of binge-purge syndromes.

1.4 Psychiatric issues concerning breast augmentation patients

The female breast is a ubiquitous symbol of femininity. Hence, women's dissatisfaction with their breast size may not only represent the mere aesthetic appearance of their breasts, but also a lack of femininity (Beale et al., 1980). It may therefore seem reasonable that women having breast augmentation surgery may display certain psychological characteristics that are less prominent in women being dissatisfied with other aspects of their appearance. Jacobsen et al. (2004) discovered a significantly higher prevalence of psychiatric admission prior to cosmetic surgery among breast augmentation patients compared with breast reduction patients and with patients seeking other cosmetic procedures. It has also been found an increased self-reported use of psychotropic drugs, notably antidepressants, among women with breast implants compared to women from the general population (Sarwer et al., 2003; Breiting et al., 2004). Furthermore, a 2- to 4-fold risk of suicide has consistently been reported among women with cosmetic breast implants compared to the general population (Brinton et al., 2001; Koot et al., 2003; Pukkala et al., 2003; Jacobsen et al., 2004; Brinton et al., 2006; Villeneuve et al., 2006). It is possible that patients having breast implants already possess more suicidal ideation *before* the surgery than women in the general population. Considering the high suicidal comorbidity in BDD patients, Phillips KA (2007) proposed that the increased suicide rates in breast augmentation patients might relate to the high prevalence of BDD patients undergoing breast augmentation/lift (Crerand et al., 2005). Theoretically, cosmetic surgery may worsen or improve these patients' prognosis, depending on the degree to which their expectations to the physical and psychological effects of the surgery are fulfilled. Another possibility is that cosmetic surgery in itself has no effect on the patients' suicide risk whatsoever. Nevertheless, the association between cosmetic surgery and suicide risk remains to be elucidated. Whatever the association between breast augmentation and suicide is, an

awareness of this matter is highly important, as the health care workers who meet these women with their thoughts or decisions about having cosmetic breast augmentation have a unique opportunity to identify potential suicidal risk factors and thereby offer or refer high-risk patients to proper guidance and treatment. Moreover, due to the lack of information about the relationship between cosmetic breast implants and suicide, Sarwer et al. (2007) advice that women who seek breast augmentation who are suspected by the plastic surgeon of having psychopathology should undergo a mental health consultation before having cosmetic surgery.

1.5 Patient satisfaction and psychological effects of cosmetic surgery

In proportion to the tremendous amount of cosmetic surgical procedures performed around the world the past decades, little is known about the psychological effects of cosmetic surgery, and within the existing literature, many studies do not extend follow-ups beyond 6-12 months postoperatively and most studies do not include a control group.

A prospective German study of 228 cosmetic surgery patients examined postoperative changes in satisfaction with general life, health and appearance. Measurements were done up to 6 months postoperatively. They found a positive influence on health and appearance, but the influence of appearance diminished at 6 months follow-up (Papadopulos et al., 2007). Another prospective study of 105 cosmetic surgery patients found a significant improvement of quality of life and depression scores 6 months postoperatively (Rankin et al., 1998). Another study with a slightly longer follow-up period examined patients before and 9 months after facial cosmetic surgery using standardized measures of depression, social anxiety and quality of life. They found that patients had significantly greater social anxiety than controls, which improved postoperatively, whereas

the depression scores, although initially high, did not improve (Meningaud et al., 2003). Schlebusch and Mahrt (1993) followed 20 breast augmentation patients 3 years postoperatively. The patients included in the study were selected because they had experienced significant psychological distress preoperatively which had been a prime motivation for their elective request for breast augmentation. They found that most patients experienced psychological gains following surgery such as improved self-esteem, body image, sexual functioning and interpersonal skills, in addition to decreased levels of anxiety and depression. Although this study had a relatively long follow-up period, the small number of patients weakens the study. A larger five-year follow-up study of 79 cosmetic rhinoplasty patients, measuring levels of neuroticism, extraversion and anxiety 3 months before, 6 months after and 5 years after cosmetic surgery, found a decrease in anxiety and neuroticism in both postoperative evaluations and an increase of extraversion at the 6 month evaluation only. However, most patients with marked preoperative psychological distress maintained high scores on the neuroticism and anxiety scale 5 years after surgery (Ercolani et al., 1999). In line with this, Borah et al. (1999) found that preexisting psychological conditions were positively correlated with postoperative psychological complications like disappointment, anxiety and depression.

A study of breast augmentation patients found improved body image 6 months postoperatively compared to preoperative levels (Banbury et al., 2004). Sarwer et al. (2008) conducted a study measuring body image, self-esteem and depressive symptoms before surgery and up to 2 years postoperatively. The main finding was an improvement in body image within the first 3 months after cosmetic surgery, which was maintained without deterioration through 2 years following surgery. In line with this, a Norwegian study which measured similar outcomes, found a significant improvement in body image and a small effect on self-esteem 5 years following surgery (von Soest et al., 2011b). However,

patients remained less satisfied with the body part that had been operated on after the follow-up compared with the body part reported as least liked in the comparison group. In the same study a few preoperative characteristics were found to predict negative evaluation of the surgical result, including low self-esteem, a short time spent considering having surgery, and being influenced by others to have surgery. A population-based 13-year follow-up study by the same main author (von Soest et al., 2011a) actually found a greater increase in levels of depression, anxiety, eating problems, and alcohol use, in women who underwent cosmetic surgery during the course of the study compared to non-patients.

In sum, it appears that most patients are very satisfied with the cosmetic result, and have positive changes in body image following cosmetic surgery, whereas there are mixed results of the effect on self-esteem and anxiety/depressive symptoms. It remains unclear what the overall long-term effects of cosmetic surgery are – not only the possible positive or negative effects on mental health, but also possible effects on personality or interpersonal relations, and whether dissatisfaction with other parts of the body appear at different rates than among controls.

1.6 Preoperative psychological examination

In the study of Meningaud et al. (2001), most patients reported that competence was an essential quality for a cosmetic surgeon. More interestingly, 44% spontaneously reported qualities such as listening, kindness, trust, honesty etc, as essential. Blackburn and Blackburn (2008) stress the importance of understanding the patient's complaint and preoperative expectations, as most patient dissatisfaction in cosmetic surgery is based on failures of communication and patient selection criteria, and not on technical faults (Ward,

1998). The Norwegian Association of Plastic Surgeons has provided ethical guidelines which oblige plastic surgeons in Norway to reveal unrealistic expectations and any mental illness that might affect the patient's decision to have surgery. Furthermore, having a known serious eating disorder is listed as a contraindication for body-reducing procedures, and age below 18 years is listed as a relative contraindication for cosmetic surgery in general (Norsk Plastikkirurgisk Forening, 2003). In Norway, plastic surgeons estimate that they reject up to 30% of patients who seek cosmetic surgery, due to among others psychological conditions not compatible with cosmetic surgery (Teres Medical Group, 2009).

2 Aims

The overall aim of this thesis was to provide insight into what psychological and social factors differentiate women who are interested in cosmetic surgery from women without such an interest. We hypothesized that an interest in cosmetic surgery is predicted by BDD-like symptoms, eating problems, body image, self-esteem, personality, emotional distress, a history of being teased, interpersonal relationships, social acceptance of cosmetic surgery, educational level, marital status, having children, age, BMI and level of physical exercise.

With few exceptions, previous research on cosmetic surgery has focused on clinical samples comprising women already scheduled for or those who have had a surgical procedure. Because many women with an interest in cosmetic surgery of various reasons never consult a cosmetic surgeon or are eventually rejected because of psychopathology, unrealistic expectations, or other reasons, this thesis aimed to provide more knowledge about the variety of motivational factors in women in the general population with an interest in cosmetic surgery – women the plastic surgeons might eventually meet in their office. Moreover, we restricted the sample to young women aged between 18 and 35 in order to avoid too many respondents with age-related motives for their interest in cosmetic surgery. A fear of growing old does not necessarily reflect the esthetic component only, but because appearance obviously serves as a visible indicator of age it is possible that some women subconsciously cover up this anxiety by reducing the signs of aging by means of cosmetic surgery. As we wanted to minimize this hypothetical effect of age we set the upper age limit to 35.

More specific objectives were to:

- 1) Identify psychosocial factors associated with an interest in cosmetic surgery in

general.

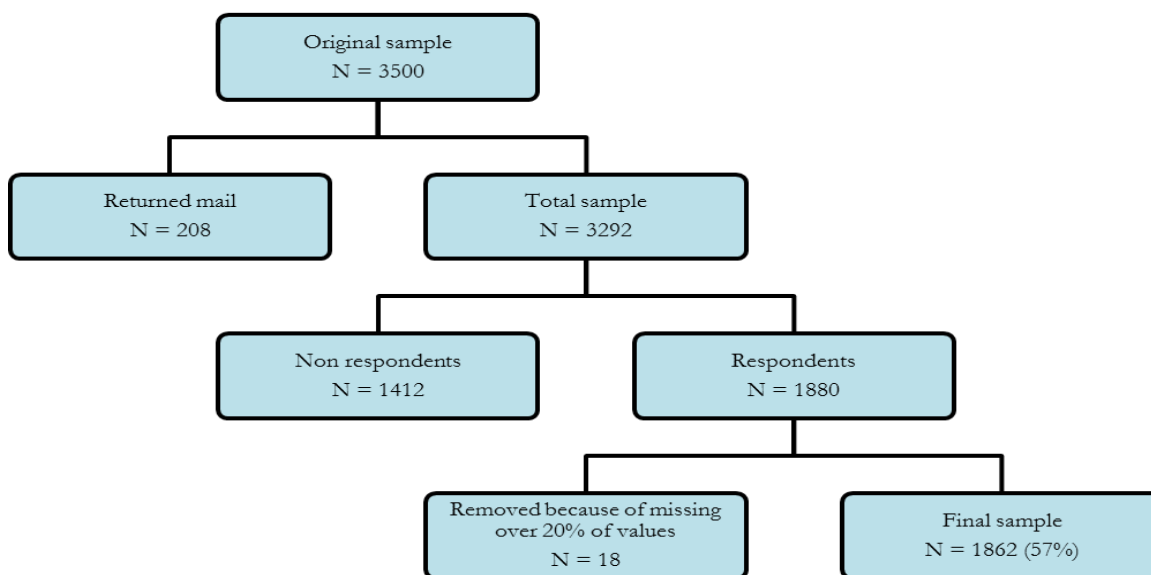
- 2) Identify psychosocial characteristics of women interested in different procedures (liposuction, breast augmentation, rhinoplasty, and abdominoplasty).
- 3) Investigate if there are specific psychosocial factors associated with an interest in liposuction among women with eating problems compared to women without eating problems.

3 Material and methods

3.1 Sampling, invitation and ethical issues

The names of 3500 women aged 18-35 years from the female population of the two northernmost Norwegian counties (i.e. Troms and Finnmark) were randomly drawn by Statistics Norway. The selection was based on year of birth using a unique national identity number which each inhabitant is assigned by law. A letter of invitation together with a questionnaire with 114 questions was sent by mail in June 2006, which was made anonymous by replacing the national identity numbers with serial numbers. A reminder was given twice. The informants consented by returning the completed questionnaires. The project was endorsed by the Regional Committee for Medical and Health related Ethics, and the Norwegian Social Science Data Services.

Of 3500 questionnaires, 208 were returned because of incorrect address, giving a final sample of 3292 participants. 1880 participants returned the questionnaire of which 18 had to be eliminated because of too many missing values. 1862 participants represent a response rate of 57%. The flow of participants is shown in figure 1.



3.2 Assessments

3.2.1 Sociodemographic variables

Because Northern Norway is inhabited by two ethnic groups – Norwegians and indigenous Sámi, some of which possess a dual identity – we used five questions to describe Norwegian or Sámi ethnicity, and one question to describe a different cultural belonging.

Educational level was defined as completed or ongoing at junior school-, high school-, college- or university level. This was later categorized into high (college/university) or low (junior school/high school) educational level.

Relationship status was coded as married, in a long-term relationship, divorced/separated or none of the above. Having children was coded yes or no.

The perceived quality of relationship with family and friends was measured with one yes/no question assessing whether or not the respondent felt that she had enough good friends, whereas one yes/no question recorded the respondents' experience with being repeatedly teased for appearance. Five-point Likert single items assessed whether the respondent wished a better relationship to father and to mother. The latter was unified into a single variable labelled 'quality of relationship with parents' in papers I and II.

3.2.2. Personal habits

One yes/no question recorded whether or not the respondents exercised regularly, and if so how many hours per week.

Height and weight were also recorded and later used to calculate BMI. According to World Health Organization standards, BMI was divided into *underweight* (BMI < 18.5), *normal weight* (BMI 18.5-24.99) and *overweight* (BMI ≥ 25).

Satisfaction with one's sexual-life was rated on a five-point Likert item.

3.2.3 Attitudes towards cosmetic surgery

One yes/no question assessed whether or not the respondents had one or several parts of their appearance not matching their own beauty ideal.

Cosmetic surgery was in the questionnaire defined as plastic surgery without a recommendation and referral by a physician because of deformities, trauma or other medical indications. We asked whether or not the respondents would consider having cosmetic surgery and if so which type of procedure. Finally, we asked whether or not the respondents previously had undergone cosmetic surgery.

Indicators of social acceptance of cosmetic surgery was measured with two yes/no questions recording whether or not the respondents knew someone who had undergone cosmetic surgery, and whether or not they had been recommended cosmetic surgery.

3.2.4 Psychological variables

We used the MINI DSM-IV criteria for diagnosing BDD (Sheehan et al., 1998), for self-rating of what we labeled as “BDD-like symptoms” (yes/no questions): 1) are you constantly thinking that there is something wrong with your appearance?, 2) has this concern continued despite the fact that people (including your GP) sincerely think that your dissatisfaction with your appearance is exaggerated?, 3) has this concern caused significant distress or impairment in social functioning or in any other area? A yes on all three questions was needed to comply with having BDD-like symptoms.

Body image was measured by two subscales of the MBSRQ (Brown et al., 1990) as translated into Norwegian by Loland (1998). We used the appearance evaluation subscale measuring the overall satisfaction with one’s appearance (7-item, 5-point Likert scale; Cronbach’s alpha 0.83) and the appearance orientation subscale measuring the individual’s perceived importance of her own appearance (12-item, 5-point Likert Scale;

Cronbach's alpha 0.90).

We used a Norwegian translation of Tafari and Swann's SLCS to measure global self-esteem (Silvera et al., 2001) which constitutes a) a self-liking dimension, based on perception of feedback from the social environment (10-item, 5-point Likert scale; Cronbach's alpha 0.91); and b) a self-competence dimension, based on internal conceptions of success and failure in performing tasks (10-item, 5-point Likert scale; Cronbach's alpha 0.88).

A 10-item version of the Big-Five personality inventory was used (Gosling et al., 2003). It has shown adequate levels in terms of: (a) convergence with the widely used Big-Five measures in self, observer, and peer reports, (b) test-retest reliability, (c) patterns of external correlates, and (d) convergence between self and observer ratings. Each subscale was a 2-item, 5-point Likert scale. Cronbach's alphas were 0.70 (extraversion); 0.21 (agreeability); 0.49 (conscientiousness); 0.52 (emotionally stable); and 0.36 (openness). When using this instrument, relatively low Cronbach's alpha values are expected (Gosling et al., 2003). The Cronbach's alpha values reported in paper III were 0.70 (extraversion), 0.25 (agreeability), 0.37 (conscientiousness), 0.50 (emotionally stable) and 0.21 (openness). Because of the extremely low Cronbach's alpha of the agreeability and the openness subscale, in paper III we used the items constituting these subscale as distinct variables: "sympathetic/warm" and "critical/quarrelsome" from the agreeability subscale, and "openness to new experiences" and "conventional/less creative" from the openness subscale.

The respondents were asked to define their level of intimate interpersonal functioning within one of three levels (Bowlby, 1977; Ainsworth et al., 1978; Hazan and Shaver, 1987):
1) "I find it easy to have close relationships. I like to depend on others and that others depend on me. I am seldom concerned that others will leave me or come too close to me."

2) “I feel somewhat uncomfortable when having others close to me. I find it difficult to trust them completely and to depend upon them. I feel uneasy when others are coming too close and my partners wish more intimacy than I do.”

3) “I feel that others are reluctant to be as close as I want. I often feel worried that my partner does not love me or does not want to continue the relationship. I want to merge together with another person. This wish often frightens them away.” The first of the three is described as secure attachment style, whereas the second is an avoidant attachment style, and the third is an anxious/ambivalent style of attachment. Seventy percent of the full study sample belonged to the secure, 24% to the avoidant, and 6% to the anxious/ambivalent attachment style. When tested separately, the three attachment styles showed increasing strengths of OR when testing for associations with an interest in cosmetic surgery, with OR 0.54 for the secure style, OR 1.58 for the avoidant style, and OR 2.31 for the anxious/ambivalent style. Interpersonal attachment style was therefore included in the logistic regression analyses, although the attachment styles are considered categorical.

The SCL-5 is a short version of the anxiety and depression subscales of the Hopkins Symptom Check List (5-item, 5-point Likert scale, score range for each item 1-4, Cronbach’s alpha 0.88). The score range for each item was originally 1-5, but was later reduced to 1-4 by combining the scores 2 and 3. This was done to be able to use a cut-off value of 2.0, according to Strand et al., 2003, indicating pathological scores from 2.0 and above.

A 5-item, 5-point Likert scale (Eating Disturbance Scale, EDS-5) was used to measure eating problems (score range = 5-25, Cronbach’s alpha in the overall sample = .83) where higher scores indicate eating problems. In the original publication (Rosenvinge et al., 2001) the EDS-5 reached a sensitivity of .90 and a specificity of .88 and an internal

consistency ranging from .83-.86. The five items cover frequency of eating to comfort oneself when being unhappy, guilt feelings after eating, using strict diets or rituals to control eating, feeling to fat as well as dissatisfaction with one's eating habits. The original scale with a 1-7 score range was changed to a range of 1-5, similar to the score range of the other variables used in the questionnaire. Defining cut-off as 1 SD above the current mean score of 11.8 (SD = 4.50) gave a cut off value of 16, similar to the cut off value in the original EDS-5 validation study. Given the mean score in the overall sample and the 1 SD above mean-definition of a cut-point, we obtained the same value (i.e., ≥ 16) as in the original EDS-5 validation study (Rosenvinge et al., 2001). Obviously, a consequence of restricting scores ranging between 1-5 is a reduction of variance. By coincidence, the same cut-off score was obtained in the present study as in the original EDS-5 validation study using a 1-7 range, but the restriction of range yields different interpretations. However, in the present study the standard psychometric definition of a cut off as 1 SD above sample means still indicates that scores above the cut-off point may identify significant eating problems. In the present investigation, mean scores ≥ 16 were used to psychometrically define eating problems, and to identify the sample of women with eating problems in paper III (N = 378).

3.3 Statistical analyses

Missing values for each item ranged from 0–3%, except for the variable measuring teasing history, where missing value was 14%*. For the continuous variables, missing values were replaced by the series mean. Variables that were significant in the univariate logistic regression analyses were included into the multiple logistic regression analysis by

*See chapter 9. Errata

stepwise regressions. The significance levels for the univariate analyses were set at $p < .001$ in paper I, $p < .01$ in paper II, and $p < .05$ in paper III. The significance levels for all multivariate analyses were set at $p < .05$. Correlations involving dichotomous predictors were tested by Spearman's rho and those involving continuous predictors with Pearson's r. The possibility of co-linearity was tested among predictor variables that were correlated ≥ 0.50 . The strength of the predictors was expressed as OR with 95% C.I.s. For the continuous predictors, the odds ratio indicates the effects of a one unit change in the predictor (Hosmer and Lemeshow, 2000). Group differences in paper III were tested with Chi-Square tests for the dichotomous variables and with one-way ANOVA for the continuous variables. All statistical tests were two-tailed, and the significance level in the multiple regression analysis was set at $p = 0.05$. SPSS for Windows 16.0 was used for the statistical analyses in paper I and II, whereas PASWStatistics 18.0 was used for the statistical analyses in paper III.

4 Results – summary of papers

Paper I

The objective of this paper was to investigate attitudes towards cosmetic surgery in the young, female population, and to find psychological and social factors that would predict a general interest in cosmetic surgery. One of the main findings was that 49% of the respondents reported that they would consider having cosmetic surgery. However, only 3.4% reported to have undergone cosmetic surgery. Seventy-six percent reported having one or several flaws in their appearance. Nevertheless, one fourth of those who did not report any beauty flaw would still consider cosmetic surgery. An interest in cosmetic surgery, i.e. a consideration of having cosmetic surgery, was in the multiple regression analysis independently predicted by having been recommended cosmetic surgery (OR 2.57, 95% CI 1.52-4.33), knowing someone who had undergone cosmetic surgery (OR 1.90, 95% CI 1.51-2.41), having BDD-like symptoms (OR 2.31, 95% CI 1.37-3.92), educational level (OR 0.57, 95% CI 0.45-0.73), been teased for appearance (OR 1.81, 95% CI 1.20-2.73), having children (OR 1.70, 95% CI 1.35-2.15), agreeability (OR 0.90, 95% CI 0.83-0.97), appearance evaluation (OR 0.94, 95% CI 0.92-0.96), appearance orientation (OR 1.05, 95% CI 1.03-1.06) and quality of relationship with parents (OR 0.94, 95% CI 0.88-0.99). Most of the remaining variables were significantly associated with an interest in cosmetic surgery in the univariate analyses, but were non-significant in the multivariate analysis. This includes the self-esteem variables, emotional stability, openness, conscientiousness, interpersonal attachment security, emotional distress, distorted eating behavior*, satisfaction with sexual-life, physical exercise and perception of having enough good friends. Variables not at all associated with an interest in cosmetic surgery were age, BMI*, relationship status and extraversion.

*see chapter 9. Errata

Paper II

This paper was based on the same data material as paper I, but now the main objective was to explore characteristics of women interested in liposuction, breast augmentation, rhinoplasty and abdominoplasty, i.e. the four most popular cosmetic surgery procedures in this age group. Twenty-five percent of the respondents reported that they would consider liposuction, 15% would consider breast augmentation, 7.0% rhinoplasty and 5.6% abdominoplasty. More than half of those interested in rhinoplasty and in breast augmentation were interested in more than one procedure. All except those interested in rhinoplasty, had a somewhat higher rate of previous cosmetic surgery than what was found in the general population (paper I). Low educational level, having been recommended cosmetic surgery, and low appearance evaluation were significant predictors in the multiple regression analyses of all four procedures. Low educational level had the strongest association with an interest in breast augmentation, whereas having been recommended cosmetic surgery had the strongest effect on an interest in rhinoplasty. The OR of appearance evaluation was twice as high when predicting an interest in abdominoplasty than in breast augmentation. Further, BDD-like symptoms, teasing history, and appearance orientation were predictors of an interest in all procedures but abdominoplasty. The OR of BDD-like symptoms was twice as high when predicting rhinoplasty compared to liposuction. The predictive effect of appearance orientation was strongest in an interest in breast augmentation, whereas the ORs of teasing history had more even values. Except rhinoplasty, an interest in all of the procedures were predicted by having children and knowing someone who had undergone cosmetic surgery. Both predictors had highest ORs in the abdominoplasty group. The OR of having children was five times greater for abdominoplasty than for liposuction. Being divorced/separated and having an eating disorder* were significant predictors of an interest in liposuction only.

Agreeability and physical exercise were significant predictors of rhinoplasty only, although physical exercise was positively associated also with the other procedures in the univariate analyses. Emotional distress, the self-esteem variables, satisfaction with sexual-life and quality of relationship with parents were significantly associated with all procedures in the univariate analyses only.

*see chapter 9. Errata

Paper III

This paper was based on the same data material as paper I and II, but a subsample was drawn comprising participants who screened positively for eating problems (20 percent of the total sample, N=378). The main objective of this paper was to investigate attitudes towards liposuction in this subsample, and to see if the same or different factors were associated with an interest in liposuction in these women as compared with women without eating problems. Most of these women (61%) were overweight, i.e. had a BMI above 25, compared to 29% of women without eating problems. Fifty-two percent reported that they would consider liposuction, compared to 18% of women without eating problems.

The interest in liposuction was in the multiple regression analysis independently associated with a wish for a better relationship with their father (OR 1.25, 95% CI 1.06-1.49), having been teased for their appearance (OR 1.78, 95% CI 1.01-3.14), being married (OR 0.44, 95% CI 0.25-0.78), having a low educational level (OR 0.53, 95% CI 0.34-0.84), being critical/quarrelsome (OR 1.34, 95% CI 1.11-1.63), low appearance evaluation (OR 0.95, 95% CI 0.91-0.99) and high appearance orientation (OR 1.05, 95% CI 1.02-1.08). Being recommended cosmetic surgery, having emotional distress, and BDD-like symptoms were positively associated with an interest in liposuction in the univariate analyses only, whereas age, self-liking and self competence were negatively associated. All other variables were non-significant.

5 General discussion

5.1 Methodological issues

5.1.1 Definition of an interest in cosmetic surgery

An interest in cosmetic surgery was defined as a “Yes” on the question “Would you consider cosmetic surgery?”. This means that everyone who theoretically would consider cosmetic surgery now or in the future, were included. Therefore the present study not only includes women who actually decide to have cosmetic surgery, but also those who, due to various factors, never will act on their interest. The objective of this study was however to investigate what factors contribute to an interest in cosmetic surgery, regardless of the individuals' actual possibilities of having cosmetic surgery with respect to financial abilities, feelings of shame or guilt, and fear of pain, risk associated with the surgery and/or anesthesia, or other complications.

5.1.2 Sampling, representativity and generalizability

The sample was drawn by Statistics Norway in order to obtain a representative sample of the female population with regard to age and postal address. Forty-three percent did not respond, amongst whom the youngest from Finnmark county were overrepresented. Many young women temporarily migrate from Finnmark county in order to take a higher education and are therefore not living at their official address, which may explain the low response rate from this group. Thus, some reasons for not responding may be unrelated to the issues addressed in the study. Further information about the non responders was unfortunately not available. However, it is likely that individuals with less interest in cosmetic surgery were less inclined to respond. The sample was drawn from the two northernmost counties in Norway, i.e. only two out of 19 counties in the country. The cultural differences between the north and the rest of the country may limit generalization.

On the other hand, according to Statistics Norway (2010), women in the two northernmost counties have approximately the same level of education as the rest of the country. One cultural element more specific to the north of Norway is the indigenous Sámi people living there. In our questionnaire we included questions regarding ethnicity in order to test for possible differences between the Sámi and the Norwegians, but there were no differences in the prevalence of undergone- nor of an interest in cosmetic surgery.

5.1.3 Assessment of predictor variables

The inclusion of a great variety of social and psychological potential predictor variables provides strength to the current study. The instruments assessing body image, self-esteem and eating disorders had all Cronbach's alpha values above 0.80. However, some methodological issues are related to the usage of four of the measures:

The scoring range of the EDS-5, measuring eating problems, was modified from its original 1-7 to 1-5. The cut-off value of this variable was defined as one standard deviation of the mean and equaled 16.0, i.e. the same cut-off value as used for the original instrument (Rosenvinge et al., 2001). Obviously, a consequence of restricting score range to 1-5 is a reduction of variance. By coincidence, the same cut-off score was obtained in the present study as in the original EDS-5 validation study using a 1-7 range, but the restriction of range yields different interpretations. However, in the present study the standard psychometric definition of a cut-off as 1 SD above sample means still indicates that scores above the cut-off point may identify significant eating problems.

Personality was measured using the Ten Item Personality Inventory (TIPI). The scoring range was also here changed from 1-7 to 1-5. However, no cut-off values nor any total scale sum values were used, reducing any possible disturbing effects of an altered scoring range. Nevertheless, a scoring range from 1-5 may capture less of the variance in

a variable than a scoring range of 1-7, which means that the results regarding the effect of personality might have been underestimated. Moreover, the Cronbach's alpha values of the TIPI subscales were somewhat low, except for the Extraversion subscale (0.70). In particular, the Agreeability and openness subscales had extremely low Cronbach's alpha values. In paper III these subscales were therefore divided into their two items representing both poles of the dimensions and then used as distinct variables.

BDD-like symptoms were measured using the actual diagnostic criteria from DSM IV, similar to that in two previous studies (Fitts et al., 1989; Biby, 1998). The former study did however exclude women with eating disorders, and the latter used DSM III and a Likert format. Furthermore, these questions are not meant for self-rating, and the results must therefore be interpreted with caution.

Finally, interpersonal attachment security was measured by asking the respondents to define their level of interpersonal functioning into one of three styles of attachment (Bowlby, 1977; Ainsworth et al., 1978). The lack of a validated instrument to measure interpersonal attachment style is obviously a weakness. Moreover, the three attachment styles are considered categorical, as described in chapter 3.2.4, and the inclusion of this variable in logistic regression analyses threatens the interpretative value of this predictor. The results must therefore be interpreted with great caution. An alternative, and perhaps slightly better, procedure would have been to dichotomize the predictor into secure (style 1) and less secure (styles 2 and 3).

5.1.4 Statistical analyses

In paper I, the significance level was set at 0.001, whereas in paper II it was set at 0.01, and in paper III it was set at 0.05. The significance levels in the first two papers were set lower than the standard level of 0.05 in an attempt to reduce type I errors. On the other

hand, setting the significance level too low might have resulted in type II errors. The risk of type II errors, however, decreases with large sample sizes.

5.2 Results

5.2.1 Prevalence of an interest in cosmetic surgery

Almost half of the respondents (49%) reported an interest in cosmetic surgery, which is more than twice the number previously reported among Norwegian women (von Soest et al., 2006). This inconsistency can be explained by the different age groups of the two studies. This thesis had an age span of 18-35 years, whereas the study of von Soest et al. had an age span of 22-55 years. Although age has previously been found to predict an interest in cosmetic surgery (Henderson-King and Henderson-King, 2005), age was not a significant predictor of an interest in cosmetic surgery in the multivariate analyses in this thesis nor in the study of von Soest et al. In fact, the mean age of the respondents with an interest in cosmetic surgery was in both studies somewhat lower than among the respondents without such an interest. Moreover, the outcome variables were not measured identically in the two studies. In this thesis the respondents were asked whether or not they would consider cosmetic surgery, whereas in the study of von Soest et al. the respondents were asked to indicate a wish to have cosmetic surgery from 1 (“not at all”) to 5 (“very much”). A wish to have cosmetic surgery may reflect a more decisive thought process than just considering having cosmetic surgery, making it more likely that a higher proportion of the respondents in the study of von Soest et al. answered that they did not wish for cosmetic surgery as compared to the respondents of this thesis. In particular, the respondents' willingness of being open to cosmetic surgery in the future is better captured by stating a hypothetical question than a more decisive question of an actual wish to have

cosmetic surgery at the time of completing the questionnaire. One fourth of the respondents in our material who denied to have any beauty flaws at the moment would still consider cosmetic surgery, which demonstrates that we were able to include also those without such a current wish. Supporting this are the findings of Sarwer et al. (2005) where 48 percent of female college students said they would consider having cosmetic surgery in the future.

5.2.2 Education

One of the strongest predictors of an interest in cosmetic surgery was low educational level. This finding was consistent throughout all subsamples studied in this thesis and in line with Swami et al. (2008) who found that higher educational level was related to improved body appreciation, and with studies that have found breast augmentation candidates to have lower educational level than controls (Meyer and Ringberg, 1987; Didie and Sarwer, 2003; Sarwer et al., 2003). In general, education is related to better health (Dalgard et al., 2007), and acceptance of one's appearance might be an indicator of general health as well. On the other hand, a higher education implies higher income and thus a bigger opportunity to actually purchase cosmetic surgery. This is indicated by the results of Foustanos et al. (2007) who found that more than half of women who had undergone different cosmetic surgery procedures had a university degree.

5.2.3 Social acceptance of cosmetic surgery

As hypothesized, knowing someone who had undergone cosmetic surgery and having been recommended cosmetic surgery were both strong predictors of an interest in cosmetic surgery. However, knowing someone who had undergone cosmetic surgery did not predict an interest in rhinoplasty or in liposuction in women with eating problems.

Possibly, an interest in cosmetic surgery in these women might be less influenced by peers than by their own personal beliefs of cosmetic surgery being a remedy for their appearance dissatisfaction.

5.3.4 Interpersonal relations

Being divorced or separated was the strongest predictor of an interest in liposuction in the general population sample with an OR above eight in the multiple regression analysis, and was not associated with an interest in any other procedure. One might wonder if the increased interest in cosmetic surgery in these women might be an attempt to relieve a difficult life situation. Future studies may answer this question. To our knowledge, no other studies have investigated the association of being divorced or separated and an interest in liposuction. On the other hand, previous studies suggest that women seeking *breast implants* are more likely to be divorced than controls (Beale et al., 1980; Britchnell et al., 1990). Such an association was however not found in this thesis.

Another main finding was the significant association between a wish for a better relationship with parents, notably father, and an interest in cosmetic surgery throughout all subgroups. This is in line with studies from the earlier era of cosmetic surgery research, where women seeking breast implants tended to come from insecure homes with unsatisfactory relationships with their parents (Edgerton and McClary, 1958; Edgerton et al., 1960; Beale et al., 1980; Meyer and Ringberg, 1987). Although to a lesser extent, wishing a better relationship with one's mother and a perception of not having enough good friends also influenced an interest in cosmetic surgery, but not in the case of women with eating problems interested in liposuction. The findings concerning differences in the relationship with mother and father are in line with the findings of Schlebusch and Mahrt (1993) who found that 50 percent of breast augmentation patients reported to have a

positive attitude towards their mothers compared to only 20 percent with a positive attitude towards their fathers.

Interpersonal attachment security was negatively associated with an interest in cosmetic surgery in the univariate logistic regression analyses, except for women interested in abdominoplasty and for women with eating problems interested in liposuction. However, as described in chapter 5.1.3, the results of this thesis concerning interpersonal attachment style must be interpreted with caution. At best, the results might only give an indication that secure interpersonal attachment style is possibly associated with less interest in cosmetic surgery.

5.2.5 *Physical exercise*

Physical exercise was negatively associated with an interest in cosmetic surgery. It appears that individuals who are exercising on a regular basis and thus are doing something actively to keep in shape are less inclined to wish for more passive surgical solutions for their appearance dissatisfaction. However, the effect of physical exercise in the multiple regression analyses diminished when introducing having children in the regression models, leaving low level of physical exercise as an independent predictor only for women interested in rhinoplasty for whom having children did not predict their interest in surgery. This implies that the association between physical exercise and cosmetic surgery is not strong, possibly because a heightened investment with issues of health and fitness in some cases might be correlated with a similarly heightened investment in appearance and thus cosmetic surgery. Physical exercise was not associated with an interest in liposuction among women with eating problems. This lack of significance might be explained by methodological issues regarding the measure of eating problems. For

instance, having eating problems does not distinguish between anorexia nervosa and binge eating disorder. Future studies may elaborate these questions regarding physical exercise.

5.2.6 Eating problems

Twenty percent of the study population screened positively for having eating problems, amongst whom 52 percent reported an interest in liposuction, which is almost three times the percentage among women without eating problems. One of the strongest predictors of an interest in liposuction within this subgroup was wishing for a better relationship with one's father. Particularly, wishing a better relationship with one's mother showed no association with an interest in liposuction among women with eating problems, even though it was positively correlated with an interest in cosmetic surgery in the full study population, albeit not as strong as wishing a better relationship with father.

5.2.7 Body image and BDD-like symptoms

As hypothesized, body image, measured by appearance orientation and appearance evaluation, predicted an interest in cosmetic surgery in general. However, appearance orientation was not associated with an interest in abdominoplasty although it was a solid predictor of all other procedures, whereas the effect of appearance evaluation was in fact strongest in the abdominoplasty group. It appears that women interested in abdominoplasty may be motivated by bodily changes occurring after pregnancy, and evaluate their appearance as less attractive, yet are less invested and obsessed with their appearance than women interested in other procedures.

BDD-like symptoms was associated with an interest in cosmetic surgery throughout all subgroups, although it did not predict an interest in abdominoplasty and an interest in

liposuction in women with eating problems in the multiple regression analyses. BDD-like symptoms had the highest OR when predicting an interest in rhinoplasty and breast augmentation.

5.2.8 Personality

All the Big-Five personality dimensions, except for extraversion, were associated with an interest in cosmetic surgery in general. However, only agreeability was an independent predictor in the multivariate analysis. When studying personality characteristics of women interested in the specific procedures we found mostly the same results as the predictors of an interest in cosmetic surgery in general, although extraversion was negatively correlated with an interest in rhinoplasty whereas it was not associated with the other procedures. Moreover, agreeability was an independent predictor of an interest in rhinoplasty only. In paper III, agreeability also predicted an interest in liposuction in women with eating problems. However, due to an extremely low cronbach's alpha for this particular subscale, as explained in chapter 3.2.4, we chose to split it up into two variables. Then, only one of the components, namely being critical/quarrelsome, turned out to be an independent predictor. Further, none of the remaining personality variables were significant when predicting an interest in liposuction in women with eating problems, not even in the univariate analyses. In sum, personality appears to influence an interest in cosmetic surgery. At the same time, personality was intercorrelated with various other psychological predictor variables, leading to a reduction of statistical significance when these factors were included in the multiple logistic regression analyses.

6. General conclusions and clinical implications

The findings of this thesis show that almost half of young women between the ages of 18 and 35 years are interested in cosmetic surgery. This indicates a presence of a heightened likelihood of health care workers to encounter with women seeking information and guidance about cosmetic surgery. The most popular cosmetic surgery procedure is liposuction, followed by breast augmentation, rhinoplasty and abdominoplasty. An interest in cosmetic surgery is predicted by various psychological and social factors, such as poor body image, low self-esteem, personality dimensions, BDD-like symptoms, emotional distress, eating problems, teasing history, low educational level, marital status, relationships with parents, having children, physical exercise and social acceptance of cosmetic surgery.

Low educational level, having been recommended cosmetic surgery and low appearance evaluation were common predictors of an interest in all procedures (liposuction, breast augmentation, rhinoplasty, and abdominoplasty) and an interest in cosmetic surgery in general. Low educational level should be kept in mind when presenting information about risks and possible complications of the procedures to women interested in cosmetic surgery. In the study of Meningaud et al. (2001), 40% of patients claimed that they had not been well informed even though all of the patients had consulted their surgeon at least twice before the surgery.

The strongest predictor of an interest in abdominoplasty was having children. In general, an interest in abdominoplasty was associated with relatively less psychological factors compared to an interest in liposuction, breast augmentation or rhinoplasty. These findings may indicate that women seeking abdominoplasty present with relatively few psychological contraindications to performing the procedure.

More than half of women with eating problems were interested in liposuction, and

the predictors of such an interest differed somewhat from the predictors found in the full study sample. The vast majority of women with eating problems were over- or normal weight, which makes them difficult to identify in a cosmetic surgery clinical setting unless specific examinations addressing this matter are performed.

7. Suggestions for future research

This thesis was based on a cross-sectional population study. Consequently, the study design does not allow for any causal inferences between the outcome and the predictor variables. Future research should test the main findings of this thesis in a prospective, clinical study. Particularly, the effect of being divorced/separated merits further research in order to conceptualize how this contributes to an interest in cosmetic surgery, and if being divorced/separated is associated with different preoperative expectations and postoperative satisfaction than controls. Research that studies the development of body image in young women should include questions regarding the relationship with parents, notably the father. The results concerning women with eating problems should be tested in women with clinically diagnosed eating disorders. Furthermore, attitudes towards cosmetic surgery within different groups of eating disorders should be investigated. Finally, comparative studies should take into account that almost half of the young women in a control group might be interested in having cosmetic surgery, even if they have not yet done it.

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9. Errata

Due to a typing error in the dataset, the BMI values of some participants were dramatically incorrect while working on paper I and II. When recalculating the results after removing these values from the data set, BMI was in the univariate logistic regression analysis of paper I a significant predictor of an interest in cosmetic surgery (OR 1.07, $p < .001$, 95% CI 1.05-1.09), but lost its significance in the multivariate model. In paper II however, BMI was a significant predictor of an interest in all procedures in the multivariate logistic regression analyses, without affecting the significance of the remaining predictors. The correlation was negative when predicting an interest in breast augmentation and rhinoplasty, whereas it was positive when predicting an interest in liposuction and abdominoplasty. The updated results for paper II are presented in table 1R.

In paper I and II, missing values were incorrectly reported as ranging from 0-2%. The correct numbers are 0-3% except for the variable measuring teasing history, where missing value was 14%.

In papers I and II, the terms “distorted eating behavior” and “eating disorder” are used instead of “eating problems” as in paper III, which would have been a more correct term considering the changes in score range and hence interpretation of the variable, as discussed in chapter 5.1.3.

In paper I, table 3, BDD-like symptoms was by mistake labeled “serious concerns with appearance”.

In paper I, page 2144, the score ranges of appearance orientation and appearance evaluation were by mistake interchanged.

Table 1R. Revised multiple logistic regression analyses of predictors of an interest in breast augmentation, rhinoplasty, liposuction and abdominoplasty

	Breast augmentation (N=1221)				Rhinoplasty N=(1070)				Liposuction N=(1407)				Abdominoplasty N=(1044)			
	OR	95% C.I.		p	OR	95% C.I.		p	OR	95% C.I.		p	OR	95% C.I.		p
		Lower	Upper			Lower	Upper			Lower	Upper			Lower	Upper	
BMI	0.90	0.85	0.94	<0.001	0.92	0.87	0.98	0.008	1.05	1.02	1.09	0.002	1.07	1.02	1.12	0.006
Education	0.30	0.22	0.43	<0.001	0.39	0.25	0.62	<0.001	0.61	0.45	0.82	0.001	0.43	0.26	0.73	0.002
Been recommended cosmetic surgery	2.82	1.41	5.62	0.003	3.84	1.71	8.62	0.001	2.30	1.25	4.26	0.008	3.50	1.49	8.19	0.004
Appearance evaluation*	0.69	0.58	0.82	<0.001	0.67	0.54	0.83	<0.001	0.60	0.52	0.70	<0.001	0.44	0.34	0.57	<0.001
BDD-like symptoms	2.76	1.44	5.28	0.002	3.39	1.66	6.91	0.001	1.97	1.10	3.53	<0.001	NS			
Knowing someone who has had cosmetic surgery	2.12	1.46	3.06	<0.001	NS				1.89	1.39	2.56	<0.001	2.89	1.57	5.32	0.001
Having children	1.87	1.32	2.65	<0.001	NS				1.43	1.06	1.93	0.018	9.07	4.40	18.7	<0.001
Teasing history	2.26	1.29	3.98	0.005	2.00	1.08	3.70	<0.01	1.87	1.18	2.99	0.008	NS			
Appearance orientation*	1.41	1.25	1.58	<0.001	1.42	1.23	1.65	<0.001	1.38	1.24	1.53	<0.001	NS			
Divorced/separated	NS				NS				7.43	2.11	26.2	0.002	NS			
Eating disorder	NS				NS				1.60	1.04	2.45	0.032	NS			
Agreeability*	NS				0.78	0.68	0.90	0.001	NS				NS			
Exercising	NS				0.63	0.40	0.99	0.047	NS				NS			

*continuous variable

NS = non significant, OR = odds ratio, CI = confidence interval



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