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Sculpting the Body Beautiful: Attachment Style, Neuroticism, and Use of Cosmetic Surgeries

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Use of cosmetic surgeries has increased steadily over the last decade, and continues to rise in young and old alike. The purpose of present research was to investigate the relationship of personality to use of cosmetic procedures of various kinds. It was expected that adult *attachment style*, in particular *attachment anxiety*, would be positively related to use of cosmetic procedures. "Attachment anxiety" involves excessive approval seeking and concern over achieving and maintaining the love of significant others (such as romantic relationship partners). Such concerns could, in turn, lead to use of a variety of strategies for maintaining positive regard, including cosmetic surgeries to enhance physical appearance. Results supported this hypothesis, particularly among women. Neuroticism was also related to some procedures, though the relationships were generally weaker than those for attachment anxiety, and largely disappeared in regression analyses that controlled for the separate influence of the two variables.

KEY WORDS: cosmetic surgery; personality; attachment style; attachment anxiety.

A growing body of research over the last two decades has addressed the role of adult *attachment style* in romantic relationship behavior. Generally, this research has shown that attachment style is related to virtually all aspects of romantic relationship behavior, including preferences for whether to have a relationship at all, what kind of relationship or partner to pursue (Davis, 2000), communication/ interaction processes within the relationship (e.g., Dutton, 1998; Feeney, 1999), and eventual relationship success or termination processes through dissolution (e.g., Davis, Shaver, & Vernon, in press) or death (e.g., Fraley & Shaver, 1999).

Relatively little attention has been devoted, however, to the relationship of attachment style to the nature of a person's efforts either to attract or retain romantic partners. The present study was designed to address this question, in particular with regard to the use of cosmetic surgeries or other procedures to enhance physical attractiveness. We will first provide a brief review of the nature of attachment style, and then turn to the theoretical link between attachment style and attempts to enhance physical appearance.

Attachment Theory and the Assessment of Attachment Style

Attachment theory was introduced by Bowlby (1973, 1980, 1982/1969) in a well-known series of volumes entitled *Attachment and Loss*. Empirical tests of the theory were initially conducted by Ainsworth and her colleagues (Ainsworth, Blehar, Waters, & Wall, 1978) in studies of infant–mother attachment, and were later extended to the domain of romantic and marital relationships by Hazan and Shaver (1987). According to the theory, evolution has equipped human beings with a number of behavioral systems that increase the likelihood of survival and reproductive success. Among these behavioral systems are an attachment system, an exploratory system, a sexual mating system, and a caregiving system.

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Beginning in infancy, most people form emotional attachments to one or more caregivers on whom they rely for protection, comfort, and support. A security-enhancing caregiver is one who provides what Bowlby and Ainsworth called a *safe haven* in times of danger or stress and a *secure base* of operations when exploration is undertaken. If a person's *attachment figures* are sufficiently sensitive and responsive, the person will develop what the theory refers to as positive internal working models of self and relationship partners. These models have been shown to provide a foundation for healthy peer relations and personal competence (see review by Weinfield, Sroufe, Egeland, & Carlson, 1999). If one or more attachment figures are generally insensitive or unresponsive, the individual who is attached to them develops negative internal working models of self, relationship partners, or both. Different patterns of insecure attachment can be identified based on anxious or avoidant behaviors in close relationships, anxious or avoidant responses to self-report questionnaires, and both conscious and unconscious anxious or avoidant responses in laboratory situations (see Feeney, 1999; Mikulincer & Florian, 2001; Mikulincer, Gillath, & Shaver, 2002; Shaver & Clark, 1994, for reviews).

Brennan, Clark, and Shaver (1998) factor-analyzed a large number of self-report measures of adult attachment style and confirmed that all of them loaded highly on two orthogonal dimensions, which Brennan et al. called attachment-related *anxiety* and attachment-related *avoidance.* These authors created two highly reliable 18-item scales to measure the two dimensions. Adults low in *attachment anxiety* differ from those high in anxiety in having more positive models of self and in being less dependent on partners' approval and less anxious about abandonment. Adults low in *avoidance* differ from highly avoidant adults by being more interested in and comfortable with closeness, intimacy, and interdependence.

The Theoretical Link Between Attachment Style and Efforts to Enhance Appearance

Physical appearance has been linked to positive reactions from others, including simple liking or romantic attraction, promotion and success in business, verdicts and sentencing in legal settings, and many others (see reviews by Collins & Zebrowitz, 1995; Davis, 1991; Hatfield & Sprecher, 1986). Generally, appearance is more strongly linked to evaluation and outcomes for women than for men. Our culture socializes women to internalize an observer's perspective on their bodies, and therefore to experience more shame and distress over bodies that do not fit the cultural ideal (e.g., Fredrickson & Roberts, 1997; Huebner, & Frederickson, 1999). In response to this dissatisfaction, women are more likely to suffer from eating disorders in an effort to control their appearance (e.g., Noll & Fredrickson, 1998; Tiggemann & Lynch, 2001).

Of particular importance for the link between attachment style and appearance enhancing strategies, *mate value*, or desirability to potential romantic partners, is known to depend in large part on physical attractiveness, particularly for women (e.g., Buss & Schmitt, 1993). In part for this reason, men and women report use of various procedures for enhancing physical attractiveness as strategies for attracting and retaining mates (e.g., Buss & Schackelford, 1997). Although awareness of the impact and importance of physical attractiveness is widespread among all men and women, and to some degree most attempt to maximize their physical attractiveness, there is reason to expect that some will be more concerned with the potential impact of their physical appearance than others.

There are many reasons for enhanced concern with appearance (e.g., Haiken, 1997). Some may wish to enhance their appearance for purely practical reasons, such as the need to maintain physical attractiveness in a profession where appearance is central to success or where ageism may affect opportunities for success. Others may simply find aesthetic pleasure in looking good. Of particular concern here is that some persons are clearly driven by underlying low self-esteem or insecurity regarding others' reactions to them. However, no matter what their specific reason for concern with appearance is, those characterized by greater degrees of any of the above concerns would be expected to go to greater lengths to enhance or maintain physical appearance.

Attachment anxiety (see Bowlby, 1973, 1980, 1982/1969; Brennan et al., 1998; Feeney, 1999; Mikulincer & Florian, 2001; Shaver & Clark, 1994, for reviews) involves excessive approval seeking and concern or worry over the reactions or potential loss of significant others. Thus, it would be expected that those high in attachment anxiety would go to greater lengths in many arenas to enhance or maintain the interest and commitment of those they care about. Such strategies would likely include those to enhance or maintain physical appearance—including use of more

extreme measures such as cosmetic surgeries or other procedures (e.g., laser or chemical peels, liposuction, muscle/shape enhancing steroids or implants).

Although we expect both men and women to use plastic surgery as a strategy to attract or retain mates, consistent with results of previous investigations, we expect women to be more likely to do so (see review, Gilman, 1999). It is well known that men place greater weight than women on the physical attractiveness of their mates (e.g., Buss, 1998, 2001; Buss & Schmitt, 1993), and that women are generally more likely to be dissatisfied with their bodies (e.g., Tiggemann & Lynch, 2001), and to engage in appearance enhancing strategies to attract or retain a mate (e.g., Buss & Schackelford, 1997), to steal another's mate (Schmitt & Buss, 2001), or to promote sexual encounters (e.g., Greer & Buss, 1994). Thus, it would follow that women would be more likely to use appearance enhancing procedures than men, including extreme measures such as plastic surgery—as indeed has historically been the case (Gilman, 1999).

Because of this gender difference, we also expect the link between attachment anxiety and use of plastic surgery to be greater among women. Persons who are concerned about the potential loss of their mate would tend to use strategies they expect to be effective. Women accurately believe their physical appearance is important to their mates, and to other people more generally. Thus, those who are more concerned about their appearance generally, or specifically about retaining their mates—such as those high in attachment anxiety—would be relatively more likely to try to maintain or enhance their physical appearance. In contrast, because men do not expect their mates or others to react as strongly to their physical appearance, men who are high in attachment anxiety would be less likely to choose appearance enhancing strategies than their female counterparts. Instead, they may choose to try strategies known to be more valued by women, or to be viewed as reflections of success for men—such as resource provision or financial displays (Buss & Schmitt, 1993).

The Potentially Confounding Role of Neuroticism

Attachment anxiety is positively associated with neuroticism (e.g., Shaver & Brennan, 1992), which suggests that neuroticism may likewise be associated with the use of cosmetic procedures. In fact, some clinical literature has suggested that neuroticism may be associated with propensity toward use of cosmetic surgeries and procedures. Most studies that document this relationship were based on clinical interview diagnoses of neurosis or neuroticism, however, and did not include standardized measures (see review by Sarwer, Wadden, Pertschuk, & Whitaker, 1998). The present study includes the NEO measure of neuroticism (Costa & McRae, 1985). We expect, however, that although neuroticism may be associated with the use of cosmetic procedures, this relationship may disappear when attachment anxiety is controlled for. Whereas attachment anxiety is uniquely associated with concern about loss of romantic partners, neuroticism is not.

The Present Study

To summarize, we expected that attachment anxiety and neuroticism would be positively related to the propensity to use appearance enhancing cosmetic surgeries and other procedures, particularly among women. Further, we expected the effects of neuroticism to disappear when attachment anxiety was controlled.

To test these hypotheses, we asked respondents in a larger survey (in which we assessed relationships between attachment, neuroticism, and sexual preferences and behavior in romantic relationships) a series of questions concerning the use of cosmetic surgeries/procedures to enhance physical attractiveness.

METHOD

Participants

Study participants were 681 men and 1,157 women (plus 9 with unidentified gender), who ranged in age from 15 to 71 years, and were distributed across the age decades as follows: teens (38.1%), 20s (45.5%), 30s (10.5%), 40s (4.4%), 50 and up (1.2%). The majority were European American (76.3%), followed in order of frequency by African American (6.2%), Other (7.3%), Asian American (4.4%), Hispanic American (4.6%), and Native American (1.1%); 89.2% described themselves as heterosexual, 7.6% as bisexual, and 3.2% as homosexual.

Measures

Attachment Style

Attachment-related anxiety and avoidance were measured by heterogeneous 9-item subsets of the two

18-item scales that compose the Experiences in Close Relationships measure (Brennan et al., 1998). Alphas for the two shortened scales were .90 and .85, only slightly lower than the usual reliabilities for the full scales. The correlation between the two scales, which are meant to tap orthogonal dimensions, was small, $r(1846) = .076$.

Neuroticism

Neuroticism was assessed by use of the 12-item scale from the NEO Personality Inventory (Costa & McRae, 1985).

Measures of Use of Cosmetic Surgeries/Procedures

Participants were asked: "Have you ever had or wanted to have the following kinds of surgery or other activities/techniques to enhance your physical/sexual attractiveness?"

They were asked this question regarding (1) procedures for enhancing the face (face lift, chemical peel, laser peel, collagen injections, and botox), (2) procedures for enhancing body shape (liposuction, tummy tuck, butt implants, breast enhancement, and use of steroids to enhance muscles or shape), and (3) procedures for filling out hair (hair implants, toupees).

For each procedure, participants could respond either (a) "I have done this," (b) "I would like to do this now, if I could," (c) "I plan to do this in the future when I have the money," (d) "I plan to do this in the future when or if I need it," or (e) "I never plan to do this under any circumstances." Because the number of respondents who had already undergone any of the procedures in question was relatively small, for the analyses reported herein, the first four alternatives were combined as *yes* and the last as *no.*

Procedure

Our survey questionnaire was posted on the Internet with the title *The Dating Survey IV: Sex in Our Relationships.* Links to the on-line survey were located in three different subcategories of the Yahoo search engine. Invitations to visit the Internet site were phrased as follows: *Dating Survey—Participate in the first study of internet singles.* The categories with links to the survey included Dating (under the parent category *Society and Culture/Relationships*), Tests and Experiments (under the parent category *Psychology/Research*), and Surveys (also under the parent category *Society and Culture/Relationships*). People participated voluntarily. The survey included assurances that responses would be completely anonymous once transmitted. However, it also included a warning that (like all on-line communications) responses were not secure until transmitted.

The questionnaire included the questions "Are you alone at the computer?" and "Have you ever responded to this survey before?" Those who were not alone or who had responded before were excluded from the analyses. Further, the survey was programmed to reject duplicate IP addresses.

The survey included a number of questions regarding sexual preferences and activities (not discussed here). The measures of interest were embedded in the overall questionnaire.

RESULTS

Gender Differences

Our first hypothesis was that women would be more likely to undergo cosmetic surgery/procedures than men. Table I presents the percent of men and women who have had or intend to have facial, body, or hair procedures, and any procedure at all. Women were significantly more likely to have or intend to have facial and body procedures. However, men were more likely than women to have or intend to have hair procedures. Although these results are consistent with our hypotheses, any gender differences obtained in our Internet sample must be considered with caution, as the samples of men and women obtained in this fashion may be differentially representative of their respective populations.

Associations Between Personality Measures

Before turning to tests of the hypotheses regarding the personality measures, it is important to examine the associations between the personality variables

Table I. Percent of Men and Women Who Have Had, or Intend to Have, Cosmetic Procedures

Procedure	Men (%)	Women (%)	χ^2, $p<$
Any face	11.4	34.3	94.12****
Any body	28.2	59.0	125.59****
Any hair	21.6	9.7	43.12****
Any at all	42.2	67.8	84.26****

****$p < .0001$.

Table II. Correlations Between Age, Attachment Anxiety, Attachment Avoidance, and Neuroticism

	Age	Anxiety	Avoidance	Neuroticism
Age	1.00	−.103****	.004	−.180****
Men	1.00	−.130****	.039	−.154****
Women	1.00	−.087***	.016	−.171****
Anxiety			.076***	.561****
Men			.075*	.578****
Women			.077**	.562****
Avoidance				.186****
Men				.208****
Women				.153****
Neuroticism				1.00
Men				1.00
Women				1.00

*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

of interest. Table II presents zero-order correlations between the personality measures.

Consistent with previous research (e.g., Shaver & Brennan, 1992), attachment anxiety was strongly associated with neuroticism, $r(1802) = .56$, $p < .0001$, as was attachment avoidance to a lesser degree, $r(1846) = .19$, $p < .0001$. There was a small positive correlation between attachment anxiety and avoidance, $r(1846) = .08$, $p < .001$, and negative correlations between age and both anxiety, $r(1881) = -.10$, $p < .0001$, and neuroticism, $r(1906) = -.18$, $p < .0001$.

Tests of Attachment Hypothesis

Our primary hypothesis was that attachment anxiety would be associated with greater propensity to employ cosmetic surgeries of various kinds. This hypothesis was tested through two analyses. First, attachment anxiety was treated as the dependent variable, and gender and whether or not the person used or intended to use the procedure were independent variables. This analysis tests the hypothesis that those who use (or intend to use) cosmetic procedures are higher in attachment anxiety than those who do not. This analysis was also performed with attachment avoidance and neuroticism as dependent variables. Second, regression analyses were performed with use of (or intention to use) cosmetic procedures as the dependent measure, and age, attachment anxiety, avoidance, and neuroticism as predictors.

Table III presents the analyses of variance for attachment anxiety for men and women for each category of procedure and all procedures combined. For a number of procedures, age made a difference in the relationship between personality and use of cosmetic procedures. Thus, to illustrate this, we included an additional analysis for participants age 30 and over for some procedures. Thirty was chosen arbitrarily, in part because out of almost 2,000 participants, only approximately 250 were over 30. Otherwise, we would have examined older age groups.

Table III. Attachment Anxiety in Men and Women Who Have or Have Not Had/Intended to Have Cosmetic Work on Any Body Part

	Actual/intended procedure		
	No	Yes	*F*
Any face	5.26 (1.83) 1107	5.37 (1.82) 394	(1, 1497) = 0.81, *ns*
Men	5.20 (1.90) 456	5.37 (1.92) 58	(1, 512) = 0.47, *ns*
Women	5.29 (1.78) 651	5.36 (1.81) 336	(1, 985) = 0.37, *ns*
Any body	5.07 (1.85) 745	5.56 (1.77) 723	(1, 1464) = 17.32****
Men (see steroids only)	5.23 (1.93) 340	5.50 (1.81) 132	(1, 470) = 1.87, *ns*
Women	4.93 (1.77) 405	5.58 (1.78) 591	(1, 994) = 32.16****
30 and over	4.38 (1.99) 45	5.30 (1.88) 86	(1, 129) = 6.80**
Any hair	5.26 (1.81) 1329	5.61 (1.80) 214	(1, 1539) = 7.34**
Men	5.19 (1.89) 418	5.63 (1.79) 116	(1, 532) = 5.23*
30 and older	4.93 (1.98) 99	5.70 (1.69) 27	(1, 124) = 3.89*
Women	5.30 (1.78) 911	5.58 (1.82) 98	(1, 1007) = 2.27, *ns*
30 and older	4.94 (1.94) 114	6.04 (1.90) 15	(1, 127) = 4.34*
Any of above	5.05 (1.85) 558	5.48 (1.79) 827	(1, 1381) = 16.11****
Men	5.13 (1.94) 257	5.52 (1.85) 186	(1, 441) = 4.51*
30 and over	4.89 (1.96) 66	5.66 (1.93) 31	(1, 95) = 3.33, $p < .07$
Women	4.98 (1.78) 301	5.47 (1.77) 641	(1, 940) = 14.89****
Men/steroids	5.18 (1.91) 465	5.83 (1.66) 97	(1, 560) = 5.70**
30 and over	4.93 (1.92) 119	6.49 (1.44) 14	(1, 131) = 8.69**

*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

Table IV. Attachment Avoidance in Men and Women Who Have or Have Not Had or Intended to Have Work on Any Body Part

	Actual/intended procedure		
	No	Yes	F
Any face	3.69 (1.61) 1112	4.15 (1.63) 405	$(1, 1531) = 8.60^{**}$
Men	3.57 (1.59) 458	3.88 (1.48) 61	$(1, 517) = 2.04$, *ns*
30 and over	3.69 (1.42) 109	4.52 (2.02) 11	$(1, 118) = 3.10$, $p < .09$
Women	3.79 (1.63) 654	4.20 (1.65) 344	$(1, 996) = 14.31^{****}$
Any body	3.72 (1.66) 752	3.95 (1.59) 729	$(1, 1477) = 3.05$, $p < .08$
Men	3.55 (1.61) 341	3.76 (1.54) 132	$(1, 471) = 1.51$, *ns*
Women	3.85 (1.69) 411	3.99 (1.59) 597	$(1, 1006) = 1.83$, *ns*
Any hair	3.85 (1.65) 1344	3.75 (1.58) 217	$(1, 1557) = 0.01$, *ns*
Men	3.58 (1.58) 420	3.70 (1.57) 119	$(1, 537) = 0.53$, *ns*
Women	3.97 (1.66) 924	3.82 (1.58) 98	$(1, 1020) = 0.69$, *ns*
Any of above	3.61 (1.65) 561	3.95 (1.60) 835	$(1, 1392) = 10.12^{***}$
Men	3.43 (1.57) 255	3.81 (1.68) 187	$(1, 440) = 6.51^{**}$
Women	3.76 (1.70) 306	3.99 (1.58) 648	$(1, 952) = 3.84^{*}$
Men/steroids	3.60 (1.59) 470	3.72 (1.49) 98	$(1, 566) = 0.53$, *ns*
30 and over	3.79 (1.52) 123	3.93 (1.59) 13	$(1, 134) = 0.10$, *ns*

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. $^{****}p < .0001$.

Unexpectedly, those who had or planned to have facial procedures were no higher in attachment anxiety than those who did not, but they were higher in attachment avoidance (see the first section of Table IV). Avoidance was unrelated to use of any other procedures.

For all other procedures, the results supported the hypothesis. Those who had undergone a procedure of any kind, and those who had (or planned to have) any body or hair procedure, were significantly higher in attachment anxiety than those who did not (see the third through sixth sections of Table III). As can be seen in Table III, many of these differences were larger for respondents over age 30, who might be expected to be more interested in cosmetic surgeries/ procedures.

It should be noted that men and women differed in the nature of the procedures they had undergone or planned to undergo. Men generally do not have liposuction, breast enhancement, butt implants, or tummy tucks. However, they do more often use steroids to enhance muscles or body shape. Thus, although men who used at least one body procedure did not differ in anxiety from those who did not, those who used steroids were significantly higher in attachment anxiety than those who did not (see last section of Table III).

Similarly, women are less in need of toupees or hair implants, and, when they do need them, it is, on average, at a much older age than men. Thus, attachment anxiety was higher in women who used hair procedures only for women age 30 or over.

Table V. Attachment Anxiety in Women Who Have or Have Not Had/Intended to Have Work on Torso or Hair

	Actual/intended procedure		
	No	Yes	F
Breast implants	5.18 (1.75) 741	5.68 (1.84) 30	$(1, 1040) = 17.14^{****}$
30 and over	4.94 (1.96) 104	5.26 (2.03) 35	$(1, 137) = 0.68$, *ns*
Liposuction	5.12 (1.83) 610	5.59 (1.71) 421	$(1, 1029) = 16.87^{****}$
30 and over	4.66 (2.00) 79	5.53 (1.88) 59	$(1, 136) = 6.70^{**}$
Tummy tuck	5.11 (1.80) 622	5.61 (1.74) 410	$(1, 1030) = 19.56^{****}$
30 and over	4.41 (1.91) 67	5.61 (1.86) 69	$(1, 134) = 13.77^{****}$
Butt implants	5.30 (1.78) 965	5.79 (1.99) 62	$(1, 1025) = 4.44^{*}$
30 and over	4.93 (1.96) 120	6.01 (2.13) 14	$(1, 132) = 3.85^{*}$
Steroids	5.26 (1.79) 982	5.61 (1.74) 38	$(1, 1018) = 3.88^{*}$
30 and over	4.92 (1.96) 127	6.61 (1.24) 8	$(1, 133) = 5.77^{*}$
Hair implants	5.31 (1.79) 928	5.47 (1.80) 87	$(1, 1013) = 0.64$, *ns*
30 and over	4.96 (1.94) 117	6.05 (1.96) 12	$(1, 127) = 3.42$, $p < .06$

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. $^{****}p < .0001$.

Table VI. Neuroticism in Men and Women Who Have or Have Not Had/Intended to Have Work on Any Body Part

	Actual/intended procedure		
	No	Yes	*F*
Any face	2.83 (.73) 1105	2.91 (.74) 393	(1, 1494) = 0.45, *ns*
Men	2.71 (.71) 452	2.76 (.80) 59	(1, 509) = 0.20, *ns*
Women	2.92 (.73) 653	2.95 (.73) 334	(1, 985) = 0.36, *ns*
Any body	2.76 (.71) 751	2.96 (.75) 711	(1, 1458) = 15.29****
Men	2.69 (.73) 334	2.87 (.71) 133	(1, 465) = 6.45**
Women	2.83 (.69) 417	2.98 (.76) 578	(1, 993) = 10.99***
Any hair	2.84 (.73) 1327	2.93 (.74) 209	(1, 1532) = 5.90*
Men	2.68 (.71) 417	2.89 (.74) 112	(1, 527) = 7.93**
Women	2.91 (.73) 910	2.97 (.73) 97	(1, 1005) = 0.44, *ns*
Any of above	2.77 (.71) 566	2.93 (.75) 813	(1, 1375) = 11.15***
Men	2.64 (.70) 255	2.86 (.77) 182	(1, 435) = 9.55**
Women	2.87 (.70) 311	2.95 (.74) 631	(1, 940) = 2.04
Men/steroids	2.70 (.73) 459	2.93 (.64) 96	(1, 553) = 8.34**
30 and over	2.54 (.72) 120	3.06 (.70) 13	(1, 131) = 6.01*

*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

Table V presents the results of analyses of variance for women only, for the various body procedures. Two things are noteworthy. First, for all body procedures, women who had used or intended to use them were higher in attachment anxiety than those who had not.

Second, the extremely high proportion of women who have used or who intend to use liposuction (40.8%) and tummy tucks (39.7%) is noteworthy. Among those age 30 or over, the proportions were even higher (42.8% and 50.7%, respectively)

Generally, the results of the analyses of variance clearly supported the hypothesized relationship between attachment anxiety and propensity toward cosmetic procedures. However, it is important to examine the relationship between neuroticism (which is strongly associated with attachment anxiety) and propensity to engage in cosmetic procedures. Analyses of variance results for neuroticism are presented in Table VI.

Results were very similar to those for attachment anxiety. That is, except for facial procedures, those who had used or who intended to use body, hair, or any procedures were higher in neuroticism than those who did not.

Regression analyses were conducted to examine the separate contributions of neuroticism and anxiety to tendency to engage in cosmetic procedures (see Table VII). It can be seen that results differed for men and women. For men, anxiety predicted use of

Table VII. Regression Coefficients for Men and Women Varying in Age, Attachment Anxiety, Attachment Avoidance, and Neuroticism as Predictors of Use of Various Cosmetic Procedures

	Age	Anxiety	Avoidance	Neuroticism	*F*
Men					
Procedure					
Any face	.00	.03	.06	−.01	(4, 488) = 0.57, *ns*
Any body	.00	.00	.03	.11*	(4, 448) = 1.68, *ns*
Steroids	−.07	.09	.02	.06	(4, 531) = 3.51**
30 and over	.04	.20*	−.04	.12	(4, 121) = 2.56*
Any hair	−.03	.04	.01	.09	(4, 506) = 2.15, *ns*
30 and over	−.02	.20*	.05	−.05	(4, 115) = 0.90, *ns*
Any at all	−.06	.03	.10*	.10	(4, 420) = 3.73**
Women					
Procedure					
Any face	.18****	.01	.11**	.03	(4, 949) = 10.97****
Any body	.04	.18****	.03	.01	(4, 957) = 8.45****
30 and over	−.02	.27*	.15	−.10	(4, 120) = 2.96*
Any hair	.01	.05	−.03	−.001	(4, 968) = 0.81, *ns*
Any at all	.10**	.15****	.06	−.03	(4, 905) = 6.64****

*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

hair procedures and steroids, but only for men age 30 and over. Neuroticism predicted the use of at least one body procedure. For women, age and attachment avoidance predicted use of facial procedures. Attachment anxiety predicted use of body procedures, particularly among older respondents, and overall use of at least one procedure.

Neuroticism, on the other hand, did not predict any procedure among women. Thus, it appears that although attachment anxiety and neuroticism are highly related, it is attachment anxiety that drives the use of cosmetic surgeries/procedures. When anxiety is controlled for, the effects of neuroticism largely disappear.

DISCUSSION

The last decade has witnessed a virtual explosion of popularity of cosmetic surgery (see review in Gilman, 1999). According to the American Society for Aesthetic Plastic Surgery (Cutchin, 2001), for example, the rate of such procedures rose 173% in the short span between 1997 and 2000, even after having already increased exponentially throughout the last two decades. American Academy of Cosmetic Surgery (2002) statistics for the last 2 years indicate that the number of persons who have had many of the procedures has continued to rise by 10% or more for each of the last 2 years. Clearly, the age old concern with appearance has found a new mode of expression, among the upper and middle classes alike. Despite the expense, as of 1994, 65% of cosmetic procedures were performed on those with annual family incomes of less than 50 thousand dollars (Siebert, 1996).

Although there are many motives to improve appearance, fear of rejection or loss of a current spouse or lover is clearly among them. Those whose resting level of concern with rejection or loss of romantic partners is high (for example, those high in attachment anxiety) would be expected to engage in a variety of measures to ward off rejection or loss, including attempts to maximize physical attractiveness. Our data provide the first demonstration of attachment anxiety as a motive for body sculpting through surgery or steroids.

The observed relationships between attachment anxiety and tendency to engage in cosmetic procedures were small, but significant. However, our sample was very young, with more than 80% under age 30. It will be of interest in the future to examine the relationship of attachment anxiety and other indices of rejection sensitivity or *appearance anxiety* (e.g., Dion, Dion, & Keelan, 1990) to use of cosmetic procedures among older populations.

In our sample, anxiety was related to cosmetic procedures primarily among women, as we expected. Our survey included the top three procedures (American Academy of Cosmetic Surgery, 2002) for both men (chemical peel, hair transplant, and liposuction) and women (chemical peel, botox, and liposuction). Nevertheless, in part, stronger results for women may be the result of our failure to include other procedures more popular among men. We recently learned, for example, that although such procedures are relatively rare, men get implants for pectorals, and other muscle groups, as well as penile surgeries of various sorts, and other procedures not included in our survey. Also, unknowingly, we omitted one of the most frequently performed procedures for both men and women (eyelid surgery, or *blepharoplasty*; Gilman, 1999). We plan to conduct follow-up research to investigate a wider variety of procedures in populations greater in age range.

Further, cosmetic surgeries and body sculpting drugs are among a vast array of techniques—some healthier than others—for enhancing physical appearance. One would expect to find attachment anxiety related to other relatively extreme strategies for body enhancement, such as eating disorders or drugs other than steroids. Indeed, although the nature of the mediating processes or concerns have not been definitively identified, evidence is accumulating that insecure attachment is linked to eating disorders (e.g., Cole-Detke & Kobak, 1996; O'Kearney, 1996; Ward, Remsay, & Treasure, 2000), particularly *preoccupied* attachment or high relationship anxiety (e.g., Friedberg & Lyddon, 1996; Suldo & Sandberg, 2000). In fact, consistent with our argument that relationship anxiety would be associated with increased concern over looks, Hamernik (1996) found that *fearful* and *preoccupied* attachment types (both high in anxiety) were characterized by greater fear of negative evaluation, greater perceived importance of sociocultural norms of thinness and attractiveness, greater perceived importance of physical appearance and grooming, less comfort when viewing oneself in the mirror, dissatisfaction with overall physical appearance and one's body, and greater disordered eating.

Clearly, attachment anxiety has thus far been empirically related to both relatively safe cosmetic procedures, as well as more extreme attempts to control appearance, such as eating disorders or use of steroids. It remains for future researchers to address

the relationship of attachment anxiety to use of other body sculpting procedures or drugs in greater detail. Both eating disorders and cosmetic surgeries (and the link between them and attachment anxiety) appear more strongly among women than men, which perhaps reflects the greater link between physical appearance and the way society values women (e.g., Fredrickson & Roberts, 1997), including sexual/romantic attractiveness (or mate value, Buss & Schmitt, 1993)—and the way women value themselves (e.g., Tiggemann & Lynch, 2001).

Unexpectedly, attachment avoidance (rather than anxiety) was related to use of face lifts and other face procedures. Although we were unable to locate any research that related attachment avoidance to cosmetic procedures of any kind, Passman (1995) found that avoidant women (classified by the Hazan and Shaver, 1987, three category prototypes) were more disturbed by bodily changes associated with aging and felt significantly more negatively about the condition of their bodies than did those of other attachment styles. Procedures for wrinkle reduction are perhaps the only procedures included in our research for which need is uniquely associated with aging. Perhaps for this reason, facial procedures were the only procedures predicted by age or by avoidance.

Although a fair number of researchers have attempted to link psychopathology to use of cosmetic surgeries, very few have employed standardized measures of any kind, many have focused on the effects of cosmetic procedures on self-esteem or other underlying pathology (see review by Sarwer, Wadden, Pertschuk, & Whitaker, 1998), and results have been mixed. The results of the present study suggest that use of cosmetic surgeries may be more clearly linked to individual differences associated with concern over appearance. Primary among these is gender, as reflected in the previously discussed vast literature linking gender to concern with appearance. Others may be dysfunctional in nature, such as attachment insecurity, whereas still others may be linked to practical concerns such as ageism, or simple healthy enjoyment of looking good.

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