Investigating the Impact of Pro-Anorexia Websites: A Pilot Study

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Objective: This pilot study examined the affective and cognitive consequences of exposure to a pro-anorexia website.

Method: Young women (N = 24) were randomly assigned to view one of three websites created by the investigators: a prototypical pro-anorexia website, a website about female fashion using average-sized models, or an appearance-neutral website about home décor. Participants completed a set of questionnaires assessing mood and cognitions pre- and post-website.

Results: Trends indicated that women who viewed the pro-anorexia website decreased in self-esteem, appearance self-efficacy, and perceived attractiveness, and increased in negative affect and perception of being overweight. This pattern was not found among women who viewed the control websites.

Discussion: Preliminary data suggest that viewing pro-anorexia websites has negative affective and cognitive effects on young women. Future directions are discussed. Copyright © 2006 John Wiley & Sons, Ltd and Eating Disorders Association.

Keywords: media; pro-anorexia; self-esteem; negative affect; body image

INTRODUCTION

‘Nothing tastes as good as thin feels’. (quote from a pro-anorexia website)

The mass media has been argued to be the most powerful and influential sociocultural factor contributing to body dissatisfaction in Western society by being the strongest proponent of the thin standard of beauty (Groesz, Levine, & Murnen, 2002). Naturalistic and experimental research repeatedly finds that the media, in the form of magazines, television and film, play a significant role in negatively influencing body image and eating for many individuals.

A newer media communication form, websites explicitly encouraging extreme thinness and espousing eating disorders as a lifestyle (pro-anorexia websites), has not been empirically examined to assess impact. The current pilot study presents a first foray into evaluating the affective and cognitive consequences of exposure to a pro-anorexia website.

Numerous naturalistic studies have found a relationship between media exposure and levels of body dissatisfaction and disordered eating (Becker, Burwell, Gilman, Herzog, & Hamburg, 2002; Field et al. 1999; Stice, 1994). For example, among preadolescent and adolescent girls, Field et al. (1999) found that frequent readers of fashion magazines (e.g. Seventeen, Glamour) were more likely to report dieting to lose weight because of a magazine article and to want to lose weight because of pictures in magazines. Prospective research has shown that perceived pressure to be thin (including...
pressure from the media) predicts increases in body dissatisfaction which in turn increases dieting and eating pathology (Stice, 2001). Experimental studies assessing the immediate impact of exposure to thin-ideal media images have found that these media images elicit body dissatisfaction and negative mood (Irving, 1990; Pinhas, Toner, Ali, Garfinkel, & Stuckless, 1999; Tiggemann & Slater, 2004). A meta-analysis by Groesz et al. (2002) reviewed 25 such experimental studies and found small but consistent negative effects of media exposure for females, with body image generally worsening significantly after viewing thin media images, as compared to after viewing any control condition.

Researchers have generally appealed to social comparison theory (Festinger, 1954) in trying to understand the underlying processes by which media communication of the thin-ideal creates body dissatisfaction. According to this theory, individuals are motivated to self-evaluate, which can be accomplished by comparison with similar others. Images from fashion magazines are regularly used as standards of self-appraisal, with both qualitative and quantitative research finding that women and girls report comparing themselves with thin models in magazines (Martin & Kennedy, 1993; Milkie, 1999). When a girl or woman compares herself to models and actresses, who may devote inordinate amounts of time to exercise and diet and who have assistants to help them look attractive, a low self-evaluation about her own attractiveness is likely to result (Irving, 1990).

While the meta-analysis by Groesz et al. (2002) underscores the pervasive influence of the media-endorsed thin-ideal via magazines and television, little is known about the influence of a newer brand of mass communication: pro-anorexia websites (commonly referred to as pro-ana websites). Conservative estimates put the number of operational pro-anorexia websites at approximately 400 (Dolan, 2003; Quinn, 2002). These websites have created a controversial, yet flourishing, community of individuals who advocate anorexia and other eating disorders as a lifestyle choice, rather than a psychological disorder. With names like Ana’s Underground Grotto and Ana-by-Choice, these websites communicate that they are pro-anorexia websites rather than websites promoting recovery from eating disorders, and they are seen as safe havens in which to connect with similar others away from the judgemental eyes of the rest of the world (Dias, 2003). In 2001, the National Association of Anorexia Nervosa and Associated Disorders put pressure on popular, widely used servers like Yahoo to shut down pro-anorexia websites using their server (Dolan, 2003). However, many of these websites resurfaced under different names or using private servers, insuring continued operation and access of these websites by the public.

Though the rise and proliferation of pro-anorexia websites has received attention from the print media (e.g. The New York Times, The San Francisco Chronicle) and television shows (e.g. The Oprah Winfrey Show, The Today Show, Judging Amy), no empirical study has yet examined the effects of viewing pro-anorexia websites. And yet, the abundance of very thin and anorexic images of women on these websites, the information on how to engage in bulimic behaviours, and the encouragement of extreme dieting practices are just some of the aspects of pro-anorexia websites that potentially pose a great deal of harm. It would seem that the anonymity, accessibility, and acceptance that this means of mass communication offers individuals would be appealing to those with disordered eating and a strong drive for thinness by providing a way to connect with other like-minded individuals. However, while perhaps feeling ‘supported’, individuals visiting pro-anorexia websites likely become further entrenched in their disordered eating behaviours and thoughts. Indeed, clinicians have generally expressed concern about these websites for these reasons and have called for their removal (Dias, 2003; Dolan, 2003; Payne, 2004). The purpose of this pilot study is to begin to examine the effect of viewing a pro-anorexia website. It is important to understand the influence of these websites on young women given that girls and young women represent these websites’ clientele and given the known negative impact of other media sources. It is also important to begin to identify the impact that different medium may have (Tiggemann, 2003). We created a prototypic website following intense research on existing pro-anorexia websites, and hypothesized that viewing the website would negatively influence mood and cognitions of young women.

**METHOD**

**Participants**

Twenty-six female undergraduates in an introductory psychology course randomly signed up for this pilot study. Due to technical difficulties, two could not view the website, so data presented reflect 24 participants. Participants ranged in age from 18 to 20 with a mean age of 18.67 years (SD = 0.58 years). The majority of the participants (83.3%) self-reported as Caucasian, 8.3% as African-American, and 8.3% as biracial.
Procedure
Participants were told they would be participating in a study examining perceptions of Internet websites. They completed a set of (pre-website) questionnaires, then viewed a website for 25 minutes, and then completed a second set of (post-website) questionnaires. Participants were randomly assigned to website condition resulting in nine women viewing the pro-anorexia website, six viewing a comparison website focused on the female image, and nine viewing a neutral comparison website. At the end of the study, participants were debriefed. Those who viewed the pro-anorexia website were given an extensive and sensitive psychoeducational debriefing and were provided with local and national contact numbers in case they had eating disorder concerns.

Measures
Positive and negative affect was assessed using the brief Positive and Negative Affect Schedule scales (PANAS; Watson, Clark, & Tellegen, 1988). This scale is widely used with adequate psychometrics and is often used to assess the impact of experimental manipulations on affect (Watson et al., 1988). In the current study, coefficient alpha ranged from 0.86-0.87 for positive affect (pre- and post-website) and from 0.88-0.90 for negative affect. State self-esteem was assessed using the State Self-Esteem Scale (SSSE; Heatherton & Polivy, 1991). This scale is sensitive to fluctuations and is often used to measure self-esteem changes in laboratory manipulations. Psychometrics are adequate (Heatherton & Polivy, 1991). In the current study, alpha was 0.89 pre-website and 0.94 post-website. Appearance self-efficacy was assessed using a modified version of the general subscale of the Self-Efficacy Scale developed by Sherer et al. (1982). A sample item is: ‘I feel insecure about my ability to develop my desired body weight and shape’. The general self-efficacy subscale has demonstrated good psychometrics (Sherer et al., 1982), and prior use of this appearance self-efficacy scale yielded a coefficient alpha of 0.93 (Bardone-Cone & Cain, 2006). In the current study, alpha was 0.90 pre-website and 0.86 post-website. Perceived weight status was assessed by asking participants to describe their current weight using one of five categories: very underweight (1), underweight, average, overweight, and very overweight (5). Perceived attractiveness to opposite sex was assessed by asking participants how attractive they feel the opposite sex views them. A 5-point response scale was used ranging from very unattractive (1) to very attractive (5).

Websites
Pro-anorexia Website
A prototypic pro-anorexia website was developed by the authors after an extensive Internet search of over 300 existing pro-anorexia websites. The prototype reflected the most commonly seen parts of pro-anorexia websites: a disclaimer (see Appendix); autobiographical information about the website designer; the ‘Ana Creed’ and the ‘Thin Commandments’ (see Appendix); information related to anorexia, bulimia, and exercise; a ‘Tips and Tricks’ section (including tips for restricting, purging, making excuses for not eating, and hiding an eating disorder from others); a ‘Thinspirations’ photo gallery including photos of thin models and celebrities, severely emaciated women, and morbidly obese women; quotations meant to inspire weight loss; a forum including posts about binge eating, vomiting, and signing-up to have a ‘fasting buddy’ (with current weight, goal weight, and lowest weight included with each post); and links to other pro-anorexia websites. Feedback from undergraduate students who viewed both the prototype and existing pro-anorexia websites suggested that the prototype well represented the common themes in pro-anorexia websites. The authors did not want the pro-anorexia website developed to be accessible on the Internet for anyone to view, thus the pro-anorexia website (and the comparison websites) were placed on the Internet but made accessible only via the computers used in the study. An existing pro-anorexia website was not used in this study due to intellectual property issues and the need to have a website under the experimenters’ control so that all participants would see the same content and so that there was no danger of the website shutting down.

Comparison Websites
Once the pro-anorexia website had been fully developed, a similar format was used to create two comparison websites: one on female fashion (to test if viewing the pro-anorexia website would have effects beyond those from viewing a website focused on the female figure) and one on home décor (an appearance-neutral website). Topics covered on the female fashion website included dressing for job interviews and dressing for seasons; images in this website were chosen to represent average-sized women rather than typical models. Topics covered
in the home décor website included setting up a dorm room and decorating different types of rooms. The visual layout of the comparison websites was identical to the layout of the pro-anorexia website; all websites had the same number of links and about the same amount of text and images. Also, the components were kept as similar as possible (e.g. both comparison websites have photo galleries and forums). When an exact parallel was not possible, similar sections appeared in the comparison websites. For example, instead of the Thin Commandments, the comparison websites have content-appropriate ‘Do’s and Don’ts’.

RESULTS

The intent of this pilot study was to test out websites for larger subsequent studies. Only a small sample size was needed for this purpose. Means and standard deviations for variables expected to be affected by website viewing are presented along with change scores (see Table 1). While the sample size precludes the informative use of inferential statistical tests, interesting trends are apparent. Negative affect increased at the post-website assessment only among women who viewed the pro-anorexia website, while positive affect decreased or remained about the same for women in each website condition. Fluctuations in state self-esteem were evident, with only women viewing the pro-anorexia website demonstrating decreased self-esteem. Similarly for appearance self-efficacy, only the women in the pro-anorexia website condition demonstrated decreases in appearance self-efficacy (i.e. felt less confident in their abilities to attain a desired weight/shape). Interestingly, while women who viewed the comparison websites indicated no change in their perceived weight status or perceived attractiveness to the opposite sex, women who viewed the pro-anorexia website reported an increase in their perceived weight status and a decrease in how attractive they felt.

DISCUSSION

Preliminary data suggest that viewing pro-anorexia websites has negative affective and cognitive effects on women, even when compared to viewing a website focused on the female figure. Pro-anorexia websites convey the message that being thin is highly desirable and that not being thin (in particular, being heavy) is something to avoid at all costs. They con-

Table 1. Means and change scores (and standard deviations) for measures pre- and post-website.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-Anorexia (n = 9)</th>
<th>Female Fashion (n = 6)</th>
<th>Home Décor (n = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative affect</td>
<td>16.44 (5.60)</td>
<td>20.33 (11.15)</td>
<td>12.22 (2.86)</td>
</tr>
<tr>
<td>Change</td>
<td>1.67 (2.66)</td>
<td>1.33 (8.48)</td>
<td>0.44 (2.40)</td>
</tr>
<tr>
<td>Positive affect</td>
<td>30.56 (8.88)</td>
<td>28.78 (9.56)</td>
<td>25.67 (6.87)</td>
</tr>
<tr>
<td>Change</td>
<td>1.78 (9.19)</td>
<td>1.33 (8.48)</td>
<td>0.56 (7.45)</td>
</tr>
<tr>
<td>State self-esteem</td>
<td>68.33 (12.74)</td>
<td>31.17 (3.06)</td>
<td>70.44 (5.79)</td>
</tr>
<tr>
<td>Change</td>
<td>3.67 (15.80)</td>
<td>1.33 (10.64)</td>
<td>0.89 (3.99)</td>
</tr>
<tr>
<td>Appearance self-efficacy</td>
<td>50.11 (12.66)</td>
<td>24.67 (12.89)</td>
<td>51.89 (5.90)</td>
</tr>
<tr>
<td>Change</td>
<td>2.44 (12.98)</td>
<td>1.33 (10.64)</td>
<td>0.56 (7.45)</td>
</tr>
<tr>
<td>Perceived weight status</td>
<td>3.44 (0.88)</td>
<td>3.67 (0.52)</td>
<td>3.33 (0.52)</td>
</tr>
<tr>
<td>Change</td>
<td>0.33 (0.50)</td>
<td>0.00 (0.00)</td>
<td>0.89 (3.99)</td>
</tr>
<tr>
<td>Perceived attractiveness to opposite sex</td>
<td>3.11 (1.17)</td>
<td>3.67 (0.52)</td>
<td>3.56 (0.73)</td>
</tr>
<tr>
<td>Change</td>
<td>0.22 (0.44)</td>
<td>0.00 (0.00)</td>
<td>0.89 (3.99)</td>
</tr>
</tbody>
</table>

Note: Higher mean values reflect higher levels of the construct. Change scores were computed by subtracting pre-website values from post-website values, so that positive change scores reflect an increase in the variable.
tain many images of extremely thin women as well as tips for how to restrict or purge food as ways to be thin. While recurring exposure to these messages would seem to assuredly have an effect, it is notable that a single viewing of such a website produced the trends found. In this way, the current findings add to the evidence of the impact of media images/messages related to appearance on body image, self-esteem, and negative affect.

The current study was a pilot study for a larger future study which will permit inferential statistical tests and which will address other issues of interest. In particular, while data from the pilot study suggest that women are negatively affected by viewing a pro-anorexia website, it seems likely that some women would be affected differently than others. An important question to answer with future research is thus: Which individual differences moderate the relationship between exposure to the thin images and messages in pro-anorexia websites and affective and cognitive responses? Possible moderators of a website exposure-body dissatisfaction link include: initial body dissatisfaction level, dieting level, and degree of thin-ideal internalization. For example, based on their meta-analysis, Groesz et al. (2002) reported that the negative effects of thin media images on body image were stronger for those with elevated body dissatisfaction. They propose that exposure to these thin images activates a ‘thinness schema’ among those motivated and cognitively prepared to perceive and evaluate themselves in terms of weight/shape. This is in line with prior findings that a history of body image concerns or eating disorders increases susceptibility to media images (Hamilton & Waller, 1993; Irving, 1990). Moderating factors that promote risk and those that provide resilience are both important to identify to better understand the influence of media images and messages.

In addition to using a larger sample size and identifying important moderators, future research could disentangle which of the many components of pro-anorexia websites have the strongest and most negative effects. While most research has focused on the impact of images, evidence also supports increased body dissatisfaction from exposure to thin women talking about their body dissatisfaction and dieting efforts (Stice, Maxfield, & Wells, 2003), which is akin to the message-board forums on pro-anorexia websites where these topics are discussed by women identifying themselves with their very low weights.

This study has both strengths and limitations. To our knowledge, it is the first study to empirically assess the impact of pro-anorexia websites, a media form that is easily accessible and that has proliferated in recent years. A related strength is the novelty of this study, including the creation of a prototypic pro-anorexia website. Also, the study design of two comparison websites, a neutral one and one focused on the female figure without disordered eating messages, permits both a liberal and a conservative test of the impact of pro-ana websites. Finally, having measures both pre- and post-website is a strength, since it provides an index of change due to the experimental manipulation. The main limitation of the pilot study is the sample size. Another limitation is that only immediate effects were assessed. Future research should test the extent to which immediate affective and cognitive effects linger, and whether behavioral change actually comes out of exposure to pro-anorexia websites.

While it is hard to know exactly the demographics of individuals who visit pro-anorexia websites, names and ages recorded on forum pages of these websites and journalistic reports (e.g. Udovitch, 2002) suggest that girls and young women are the most frequent visitors. Since childhood and adolescence is when initial self-conceptions are formed, the issue of social comparison is of particular relevance to these developmental stages (Ruble, 1983), and thus social comparisons with pro-anorexia images and messages may be especially detrimental to youth. Based on clinical anecdotes and journalistic reports, there is concern about the influence of these websites on vulnerable individuals (e.g. young female teenagers), and concern that these websites sustain eating disorders among those with the disorders, in part via their provision of uncritical ‘support’ (e.g. Jackson & Elliott, 2004; Ryan, 2003). While making pro-anorexia websites illegal is not a likely outcome, there are actions that can be taken that might minimize damage. From a prevention perspective, parents could be encouraged to use the technology available to ‘block’ pro-ana websites from being viewed on home computers, or to place home computers with Internet access in a public part of their home where monitoring could occur. Also, media literacy, which encourages critical evaluation of the media and its messages and appears to help decrease the impact of thin-ideal images on body dissatisfied women (Posavac, Posavac, & Weigel, 2001), may be helpful in countering messages conveyed in pro-anorexia websites.

In sum, preliminary data suggest that viewing pro-anorexia websites has negative effects on how young women feel about themselves. Future research should extend the work of this pilot study by using a larger sample size, testing for moderating
effects to identify who is most vulnerable to the negative effects of this relatively new form of mass communication, and developing ways to counter the pro-anorexia messages.

REFERENCES


APPENDIX

Disclaimer

This is a pro-Ana site. If you are recovering from an eating disorder or hate the fact that pro-Anas exist, I suggest you leave! Now!!! This site is for those who feel that Anorexia is a life-style, and that we should
have a choice to leave Ana or take comfort in that
which defines us. WARNING!!! SOME MATERIAL
MAY BE TRIGGERING.

Ana Creed

1. Thin is beauty; therefore I must be thin, and
remain thin, if I wish to be loved. Food is my ulti-
mate enemy. I may look, and I may smell, but I
may not touch!
2. I must think about food every second of every
minute of every hour of every day...and ways
to avoid eating it.
3. I must weigh myself, first thing, every morning,
and keep that number in mind throughout the
remainder of that day. Should that number be
greater than it was the day before, I must fast
the entire day.
4. I shall not be tempted by the enemy (food), and I
shall not give into temptation should it arise.
Should I be in such a weakened state and I should
cave, I will feel guilty and punish myself accord-
ingly, for I have failed her.
5. I will be thin, at all costs. It is the most important
thing; nothing else matters.
6. I will devote myself to Ana. She will be with me
where ever I go, keeping me in line. No one else
matters; she is the only one who cares about me
and who understands me. I will honor Her and
make Her proud.

Thin Commandments

1. If you aren’t thin, you aren’t attractive.
2. Being thin is more important than being
healthy.
3. You must buy clothes, cut your hair, take laxa-
tives, starve yourself, do anything to make your-
self look thinner.
4. Thou shall not eat without feeling guilty.
5. Thou shall not eat fattening food without pun-
ishing oneself afterwards.
6. Thou shall count calories and restrict intake
accordingly.
7. What the scale says is the most important
thing.
8. Losing weight is good/gaining weight is bad.
9. You can never be too thin.
10. Being thin and not eating are signs of true will
power and success.