Does the Internet function like magazines? An exploration of image-focused media, eating pathology, and body dissatisfaction

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ABSTRACT

Research has identified a relation between exposure to thin-ideal magazine and television media images and eating disorder pathology. However, few studies have examined the potential influence of Internet media on eating disorder behaviors and attitudes. This study investigated associations among image-focused media exposure, body dissatisfaction, eating pathology and thin-ideal internalization in a sample of 421 female undergraduates. Undergraduate women spent significantly more time viewing online appearance-oriented media, rather than reading image-focused magazines. Appearance-oriented Internet and television use were associated with eating pathology. Moreover, the association between image-focused Internet use and BD was mediated by thin-ideal internalization. These findings are consistent with those of previous research, and highlight the vulnerability individuals high in thin-ideal internalization might have to media exposure. They also suggest that Internet media use is an important topic to attend to in eating disorders prevention and treatment.

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Western media are saturated with images promoting thinness, and media influences on eating behaviors have long been a focus of psychological research (Marino Carper, Negy, & Tantleff-Dunn, 2010; Slevec & Tiggemann, 2011). Links among disordered eating behaviors, attitudes and exposure to thin-ideal images have been established in both cross-sectional and longitudinal research (Groesz, Levine, & Murnen, 2002; Levine & Murnen, 2009; Tiggemann & McGill, 2004). The majority of this research has focused on ideal images presented in print and television media. Yet media use is rapidly evolving, and the Internet is quickly becoming the primary media source used by young adults (Jones & Fox, 2009). A study of adolescent females found a link between exposure to Internet thin-ideal images and body dissatisfaction (Tiggemann & Miller, 2010). However, to our knowledge, this relation has not been explored in adult populations.

Thin-ideal internalization, an individual’s belief in the socially defined ideals of attractiveness and engagement in behavior focused on achieving that ideal, has been found to affect the relation between media exposure and body dissatisfaction (Dittmar & Howard, 2004; Thompson & Stice, 2001; Tiggemann, 2003). While internalization of the thin-ideal alone does not cause eating disorder symptoms, it is a risk factor (Stice & Shaw, 1994; Thompson & Stice, 2001). Studies have concluded that thin-ideal internalization mediates the relation between exposure to thin-ideal images and body dissatisfaction, and can trigger eating disorder symptoms (Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Tiggemann, 2003).

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Participants were 421 undergraduate women (M_{age} = 19.20 ± 2.81) recruited from the Psychology department participant pool at a large mid-Atlantic university. Undergraduate women are at high

1. Method

1.1. Sample and procedure

Participants were 421 undergraduate women (M_{age} = 19.20 ± 2.81) recruited from the Psychology department participant pool at a large mid-Atlantic university. Undergraduate women are at high
risk for eating disorders (Heatherton, Nichols, Mahamedi, & Keel, 1995). Men were not assessed as most previous research in this area has included women exclusively (e.g., Grabe, Ward, & Hyde, 2008). This study was approved by the university’s Office of Research Subjects’ Protection. Data collection was completed through secure internal systems and participants were identified via a code number to maintain anonymity. Table 1 includes participant demographics.

### 1.2. Measures

Two female graduate students and a female faculty member created a media use questionnaire with entertainment, health/fitness, and fashion categories. All three members of the team achieved consensus for categorization. Two undergraduate females reviewed the questionnaire for content validity. Participants reported their television and Internet use over the past week, and magazine use over the past month due to the monthly cycle of many publications. In each category, image-focused media use was defined as the total time in hours spent with celebrity/entertainment, fashion, or fitness content in the past month. Monthly Internet and television media use was calculated by multiplying weekly totals by 4.2. Each category included an “other” field where participants could add additional media sources.

The top 10 best-selling magazines in each category (entertainment, health/fitness, and fashion) were included (Association of Magazine Media, 2009). Sixteen fashion magazines, five health/fitness magazines, and seven entertainment magazines were included on the final survey. Television viewing habits were assessed by asking participants to list their top 10 most frequently watched programs and hours spent viewing each from the following categories: music videos, fashion/beauty, soap operas, entertainment/celebrity news, and other. Examples drawn from the top rated television shows and consultation with undergraduate students were provided to focus participants on the types of responses that fit. Internet use was assessed by asking participants to indicate the frequency of use for each website, and the duration (in hours). The final questionnaire included 10 entertainment/celebrity news websites, 14 fashion/beauty websites, and six health/fitness Internet websites.

The Eating Disorder Inventory (EDI, Garner, Olmstead, & Polivy, 1983) measures symptoms of anorexia nervosa (AN) and bulimia nervosa (BN). Revised versions of the EDI exist (EDI-2, Garner, 1991; EDI-3, Garner, 2004); however, the subscales measuring attitudes and behaviors concerning eating, weight and shape used in this study (body dissatisfaction, EDI-BD; drive for thinness, EDI-DFT; attitudes and behaviors concerning eating, weight and shape used in this study (body dissatisfaction, EDI-BD; drive for thinness, EDI-DFT; and EDI total scores). Image-focused magazine use was not significantly associated with eating pathology or BD, r (420) = 0.10, p > .10 and r (420) = 0.07, p > .10, respectively. Image-focused television use was associated with eating pathology, r = 0.13, R² = 0.02, p < .05, and BD, r = 0.13, R² = 0.02, p < .01. Image-focused Internet was also significantly associated with eating pathology, r = -0.15, R² = 0.02, p < .01 and BD r = 0.12, R² = 0.01, p < .01. The effect size of each of these associations is considered small (Cohen, 1977). A Fisher transformation determined that there was no significant difference in the associations between image-focused television use and eating pathology, and image-focused Internet use and eating pathology (p > .01). Based on previous research (Tiggemann, 2003), it was hypothesized that thin-ideal internalization (as measured by the SATAQ-3) would mediate the relation between image-focused Internet use and BD. Following the recommended (Baron & Kenny, 1986) mediation model, three regressions were performed, controlling for BMI. First, image-focused Internet use was significantly associated with BD, F(2, 413) = 41.43, p < .001, R² = .18, β = .13, t (414) = 2.85, p < .005. Second, image-focused Internet use was significantly associated with internalization of the thin ideal, F(2, 413) = 11.32, p < .001, R² = .06, β = .15, t (414) = 3.02, p < .003. Finally, image-focused Internet use and thin-ideal internalization together were significantly associated with BD F(3, 412) = 94.93, p < .001; R² = .43; however, image-focused Internet use was not a significant independent predictor

### 2. Results

Descriptive data provide information about image-focused media use in college-aged women (see Table 2). The Internet was the most commonly used media type, and was used 3.93 times as much as magazines by this sample. Magazines were used less frequently than Internet, t (420) = 11.915, p < .001, and television in this sample, t (420) = 10.81, p < .001.

Pearson product–moment correlations were conducted to detect associations between media type (as measured by average hours of media use in each image-focused category), BD (EDI-BD) and ED (EDI total scores). Image-focused magazine use was not significantly associated with eating pathology or BD, r = 0.10, p > .10 and r = 0.07, p > .10, respectively. Image-focused television use was associated with eating pathology, r = 0.13, R² = 0.02, p < .05, and BD, r = 0.13, R² = 0.02, p < .01. Image-focused Internet was also significantly associated with eating pathology, r = -0.15, R² = 0.02, p < .01 and BD r = 0.12, R² = 0.01, p < .01. The effect size of each of these associations is considered small (Cohen, 1977). A Fisher transformation determined that there was no significant difference in the associations between image-focused television use and eating pathology, and image-focused Internet use and eating pathology (p > .01). Based on previous research (Tiggemann, 2003), it was hypothesized that thin-ideal internalization (as measured by the SATAQ-3) would mediate the relation between image-focused Internet use and BD. Following the recommended (Baron & Kenny, 1986) mediation model, three regressions were performed, controlling for BMI. First, image-focused Internet use was significantly associated with BD, F(2, 413) = 41.43, p < .001, R² = .18, β = .13, t (414) = 2.85, p < .005. Second, image-focused Internet use was significantly associated with internalization of the thin ideal, F(2, 413) = 11.32, p < .001, R² = .06, β = .15, t (414) = 3.02, p < .003. Finally, image-focused Internet use and thin-ideal internalization together were significantly associated with BD F(3, 412) = 94.93, p < .001; R² = .43; however, image-focused Internet use was not a significant independent predictor

### Table 1

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total participants</td>
<td>421</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>European-American/White</td>
<td>216</td>
<td>51.3</td>
</tr>
<tr>
<td>African-American/Black</td>
<td>93</td>
<td>22.1</td>
</tr>
<tr>
<td>Asian American</td>
<td>35</td>
<td>8.4</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>6</td>
<td>1.4</td>
</tr>
<tr>
<td>Multiracial</td>
<td>33</td>
<td>7.9</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>5.9</td>
</tr>
<tr>
<td>Declined to respond</td>
<td>13</td>
<td>3.3</td>
</tr>
<tr>
<td>Year in school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>262</td>
<td>62.3</td>
</tr>
<tr>
<td>Second</td>
<td>86</td>
<td>20.3</td>
</tr>
<tr>
<td>Third</td>
<td>46</td>
<td>10.9</td>
</tr>
<tr>
<td>Fourth</td>
<td>27</td>
<td>6.4</td>
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</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>8.80</td>
<td>14.80</td>
</tr>
<tr>
<td>Fashion</td>
<td>2.67</td>
<td>6.61</td>
</tr>
<tr>
<td>Entertainment</td>
<td>3.33</td>
<td>7.28</td>
</tr>
<tr>
<td>Fitness</td>
<td>0.39</td>
<td>1.53</td>
</tr>
<tr>
<td>Other</td>
<td>50.25</td>
<td>21.76</td>
</tr>
<tr>
<td>Television</td>
<td>4.19</td>
<td>7.96</td>
</tr>
<tr>
<td>Music videos</td>
<td>12.7</td>
<td>17.68</td>
</tr>
<tr>
<td>Music videos</td>
<td>10.16</td>
<td>17.12</td>
</tr>
<tr>
<td>Entertainment</td>
<td>6.56</td>
<td>13.58</td>
</tr>
<tr>
<td>Soap opera</td>
<td>2.92</td>
<td>11</td>
</tr>
<tr>
<td>Magazines</td>
<td>2.19</td>
<td>4.75</td>
</tr>
<tr>
<td>Fashion</td>
<td>2.33</td>
<td>6.43</td>
</tr>
<tr>
<td>Entertainment</td>
<td>1.97</td>
<td>4.42</td>
</tr>
<tr>
<td>Fitness</td>
<td>0.81</td>
<td>4.58</td>
</tr>
</tbody>
</table>
of BD in this simultaneous multiple regression model, \( \beta = 0.6, t(413) = 1.38, p = .18 \). A Sobel test showed that the magnitude of the relation between image-focused Internet use and BD decreased when the thin-ideal internalization pathway was controlled \( (Z = 3.28, p < .001) \). Thus, thin-ideal internalization fully mediated the relation between image-focused Internet use and BD.

3. Discussion

Prior research has established a relation between exposure to image-focused media and BD for young women (Cohen, 2006; Groesz et al., 2002; Stice & Shaw, 1994; Tiggemann & McGill, 2004). However, this connection has not been explored with Internet media in young women. Consistent with previous findings (Zickuhr, 2010), participants reported using the Internet more than any other media source. This is significant as there is a seemingly endless supply of image-focused verbal and visual data on the Internet (Levy & Strombeck, 2002). These findings are consistent with prior research indicating that college students spend more time on computers than watching television (Alloy Media Marketing, 2009).

The current study found a link between Internet and television use and BD, although no such association was detected for magazine use. Although the magnitude of these associations was small (Cohen, 1977), they warrant more investigation. These findings contrast with previous research that found strongest associations between magazine use and BD (Levine & Murnen, 2009). A possible explanation for this discrepancy is the changing nature of the media landscape, as young adults use the Internet as their primary news source (versus newspapers or magazines; Pew Internet & American Life Project, 2011). Young adults’ new preference for Internet media may explain the changing associations of different media types on eating pathology. Although this study was cross-sectional and therefore cannot offer any definitive conclusions regarding causality, it is important to consider characteristics shared by television and Internet media that might explain their similar association with BD. Both television and the Internet provide constant access to image-focused content, whereas magazine content is limited to the images and articles included in a specific issue. Time-shift television technology (e.g., streaming programming on the Internet) is growing in popularity (e.g., Burbules, 2011). It is possible this television content is selected more intentionally than traditional methods. Time-shift technology was not measured, but it is recommended for future research. Recent reports indicated that over 70% of consumers ages 18–33 use the Internet to watch videos (Zickuhr, 2010). Therefore, there may be less of a distinction between television and Internet within this age group, and young adults may be using their computers to meet most of their media interests.

3.1. Limitations and future research

Limitations to this study include the sample of exclusively female college students from a mid-Atlantic university. As with most media studies (Groesz et al., 2002), information was collected retrospectively via self-report. Future research should use more precise and impartial methods of collecting data (e.g., use of objective technology to record media use). As this study was cross-sectional in design, no causal conclusions can be drawn. Although it is possible that media exposure causes BD, the converse is also possible. Research has suggested (Tiggemann & Miller, 2010) that women who are particularly unhappy with their bodies may intentionally pursue thin-ideal images, and this could be particularly likely for Internet use as it is a medium viewers are able to fully control. Indeed, recent research has shown that use of social networking websites is associated with eating disorder risk among adolescent girls (University of Haifa, 2011). Experimental research is needed to investigate the causal relations among these variables.

3.2. Implications

Current findings have a number of practical implications. Media literacy programs have yielded promising results in the prevention of BD (Levine & Murnen, 2009). Nonetheless, the Internet is unique in that it can provide instantaneous access to a large cache of image-focused content. This is particularly concerning as the Internet is now used in work, social and leisure activities (Pew Internet & American Life Project, 2010). Further, 43% of undergraduates attending the university where the present study was conducted reported using their personal mobile devices as their primary source of Internet (Kapsidelis, 2011), highlighting the omnipresent nature of the Internet. As such, targeted prevention for image-focused Internet should be incorporated into current prevention programs.

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There was no funding source for this research project.

Contributors

Nichole Kelly and Kasey Serdar designed the study and wrote the protocol. Carrie Bair conducted literature searches, statistical analyses, and wrote the manuscript. Suzanne Mazzeo supervised the study. All authors contributed to and approved the final manuscript.

Conflict of Interest

All authors declare that they have no conflicts of interest.

References


