THE ROLE OF MEDIA EXPOSURE IN ADOLESCENT GIRLS’ BODY DISSATISFACTION AND DRIVE FOR THINNESS: PROSPECTIVE RESULTS

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The aim of the study was to investigate prospectively the direction of the relationship between media exposure and body image disturbance. Participants were 214 female high school students (mean age = 14 years) who completed questionnaire measures of media exposure (magazines and television), internalization of appearance ideals, appearance schemas, body dissatisfaction, and drive for thinness at Time 1, and then again one year later at Time 2. It was found that Time 1 reading of appearance magazines and watching of soap operas predicted Time 2 internalization, appearance schemas, and drive for thinness. However, regression analyses controlling for Time 1 body image variables showed that no media exposure variable predicted change in any body image measure. Neither did body image predict change in media exposure. Appearance schemas, however, did predict change in body dissatisfaction. It was concluded that, for this age group, media exposure and body image co-occur, but that neither one is temporally antecedent to the other. Thus the study demonstrated no causal role for media exposure in the body image of adolescent girls.

The mass media (TV, movies, magazines, internet) pervade the everyday lives of people living in Western societies. Undoubtedly one of the effects of such media saturation is the pervasive transmission of societal beauty ideals. Formal content analyses of both women’s magazines and television reveal a preponderance of young, tall, and extremely thin women (Fouts & Burggraf, 1999, 2000; Malkin, Womian, & Chrisler, 1994).

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These epitomes of beauty underscore the desirability of thinness, and thinness at such a level as to be increasingly unrealistic for most women to achieve by healthy means (Spitzer, Henderson, & Zivian, 1999; Sypeck, Gray, & Ahrens, 2004; Wiseman, Gray, Mosimann, & Ahrens, 1992). Thus it is not surprising that the most prominent account of the current high level of body image disturbance and disordered eating observed among women is provided by sociocultural theory (Stice, 1994; Thompson, Heinberg, Altabe, & Tanteff-Dunn, 1999; van den Berg, Thompson, Oremuski-Brandon, & Coevert, 2002), which accords such media-conveyed thin ideal messages prominence. This account holds that the socioculturally transmitted thin ideal becomes accepted and internalized by many women and girls, resulting in the pursuit of thinness, sometimes by extreme and unhealthy means. Thus general public opinion and body image theory alike carry the implicit assumption that the mass media play an important causal role in the development of body dissatisfaction and disordered eating.

There is now a wealth of converging empirical evidence that demonstrates a link between the mass media and body concerns or disturbed eating. First, women and girls' own reports clearly indicate that they hold the media at least partly responsible for their negative feelings toward their bodies (e.g., Milkie, 1999; Tiggemann, Gardiner, & Slater, 2000; Wertheim, Paxton, Schutz, & Muir, 1997). Second, a number of experimental studies have demonstrated immediate negative effects after brief exposure to idealized media images (for a meta-analytic review, see Groesz, Levine, & Murman, 2002). More recently, these negative effects have been shown to persist for at least short periods of time (Hargreaves & Tiggemann, 2003; Haugenblad, Janelle, & Gardner, 2004).

The third line of evidence is provided by correlational research that has investigated the association between independent measures of naturally occurring media exposure and body image. Fashion magazine or television consumption have been found to be correlated with body dissatisfaction (Jones, Vigfusdottir, & Lee, 2004; Tiggemann, 2003), perceptions of overweight (McCreary & Sadava, 1999), and eating disorder symptomatology (Harrison, 2000; Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Thomsen, Weber, & Brown, 2002). Some studies have found the relationship with television viewing to be limited to particular genres that typically present thin ideals, notably soap operas and music videos (Borzekowski, Robinson, & Killen, 2000; Hofschröre & Greenburg, 2002; Tiggemann, 2005; Tiggemann & Pickering, 1996; Van den Bulck, 2000).

Despite this large body of evidence, however, elucidation of the causal role played by the media remains a challenge (Tiggemann, 2002). The experimental studies show immediate effects of acute exposure to ideal-
ized thin images. Here the causal direction is clear, from media exposure to body image. Unfortunately, this does not address the longer term cumulative effect of media exposure on the development of body image which necessarily takes place over time. Naturally occurring media exposure cannot be manipulated and thus, while it is tempting to interpret the correlational results as showing that a large dose of thin idealized images results in body dissatisfaction, this account is likely too simplistic. For example, the reverse causal pathway is equally plausible, that is, it may be those women and girls most dissatisfied or invested in their bodies who seek out particular media content. Most likely the relationships are reciprocal and complex, possibly varying according to media type (Tiggemann, 2003) or developmental stage. Only longitudinal studies that trace the development of both media exposure and body image over time can begin to disentangle causal directions with any confidence.

There have been a small number of longitudinal investigations exploring various aspects of media influence. For example, the large prospective study of Field and colleagues (Field, Camargo, Taylor, Berkley, & Colditz, 1999; Field, Camargo, Taylor, Berkey, Roberts, & Colditz, 2001) demonstrated that girls who reported making a lot of effort to look like the women in the media were more likely to develop weight concern and begin to purge over a one–year period. Likewise, perceived media pressure to be thin has been consistently identified as a risk factor for subsequent body concerns and eating pathology (for a meta–analytic review, see Stice, 2002). However, variables like media involvement and perceived pressure to conform assess people’s beliefs about the extent of media influence and thus reflect characteristics of the individual, rather than reports of their exposure to media.

To my knowledge, there have only been two longitudinal studies of actual media exposure. Stice, Spangler and Agras (2001) conducted a naturalistic experiment in which they randomly assigned adolescent girls to receive a free 15–month subscription to a teenage magazine. They found no main effect of this increased magazine exposure on any body dissatisfaction or dieting variable. However, they did find a moderating effect of social support, whereby subscription to the magazine led to increased body dissatisfaction, dieting, and bulimic symptoms among girls who had low levels of social support. In addition, girls initially high in body dissatisfaction or pressure to be thin experienced increased negative affect. Vaughan and Fouts (2003) assessed media exposure and eating disorder symptomatology in early adolescent girls at two time points 16 months apart. They demonstrated that changes in eating disorder symptomatology were associated with changes in fashion magazine usage. However, as the authors concede, their result does
not address the causal direction of the relationship, a minimal condition for which is temporal precedence, whereby the putative cause must precede the putative effect in time (Menard, 1991).

Temporal precedence can be tested by linear panel analysis with lagged endogenous variables (Menard, 1991), and is established when a variable predicts subsequent increase in another variable, controlling for initial levels of the outcome variable (Stice, 2002). Thus what is required to determine the temporal precedence of media exposure, is that Time 1 media exposure predict subsequent (Time 2) body dissatisfaction, controlling for Time 1 body dissatisfaction; in other words, that Time 1 media exposure predict change in body dissatisfaction. It is crucially important for longitudinal analyses to control for initial levels of the outcome, for otherwise cross-lagged (across time) correlations may simply reflect synchronous correlations (within time). Thus the primary aim of the present study was to investigate the temporal precedence of media exposure, consistent with its postulated causal role.

A secondary aim was to examine prospectively two postulated mechanisms in the general sociocultural model (Thompson et al., 1999; van den Berg et al., 2002) by which media exposure is translated into body concerns and disordered eating behaviors, namely internalization of the thin ideal and development of elaborate appearance schemas. Internalization refers to the extent to which an individual adopts and incorporates the socially defined thin beauty ideal as a goal or standard for herself (Thompson & Stice, 2001), while appearance schemativity refers to the degree of centrality and elaboration of the cognitive structures surrounding appearance, that is, the degree to which appearance becomes a core basis for self-evaluation (Cash & Labarge, 1996). It is argued that these develop over time in response to repeated and cumulative media-presented idealized images (Tiggemann, 2002). To date, there is a small amount of cross-sectional empirical evidence for a mediating role for both internalization (Jones et al., 2004; Stice et al., 1994; Tiggemann, 2003) and appearance schemas (Tiggemann, 2005).

In sum, the present study sought to utilize the capabilities of a longitudinal research design to investigate the directionality of the relationship between media exposure and body image. The specific research question addressed was whether media exposure is temporally antecedent to body dissatisfaction and drive for thinness, consistent with its postulated causal role. A second research question was whether internalization and appearance schemas are temporally antecedent. Early adolescence was the developmental period under study. Not only is it a time of great media exposure, as adolescents typically watch 2 to 4 hours of television per day and up to 83% of adolescent girls read fashion magazines (Levine & Smolak, 1996), but it is also the time when many body con-
cerns emerge. Self-awareness, self-consciousness, introspectiveness, and preoccupation with self-image all dramatically increase in adolescence (Harter, 1999), at a time when puberty moves girls away from rather than toward the thin ideal.

METHOD

PARTICIPANTS

Participants were 214 girls recruited from 11 high schools in South Australia. The girls were initially participants in a larger study (Tiggemann, 2005) who were followed up 12 months later. At Time 1 they were in Grades 8 to 10 with a mean age of 13.98 years (SD = 0.92). At Time 2, one year later, they were in Grades 9 to 11 with a mean age of 14.92 years (SD = 0.92). The sample was overwhelmingly (> 90%) White, reflecting the demographic composition of the schools and their surrounding communities.

MEASURES

A questionnaire (entitled ‘About You’) was administered to participants on two occasions, Time 1 and Time 2.

Media Exposure

*Magazines.* Participants were asked whether or not they had bought a magazine in the past month, and to list any magazines bought. These were subsequently categorized as appearance focused (e.g., Dolly, Girlfriend) or non–appearance focused (e.g., Horsetales). Participants also rated the frequency with which they read fashion magazines on a 5–point scale (from “never” to “more than once a week”). The number of appearance magazines bought and the frequency of fashion magazine reading served as the measures of exposure to idealized magazine images.

*Television.* To assess television viewing, participants were presented with a copy of the previous week’s television guide and asked to circle the programs they had actually watched, following the procedure of Tangney and Feshbach (1988). The use of specific instructions pertaining to a defined time period has demonstrated reliability (Huston and Wright, 1998). From this, total television–viewing hours per week were calculated. In addition, every half-hour of the week’s television viewing was coded for program, and subsequently recoded into one of 20 genres; movies, situation comedies, soap operas, news, sport (events), sport (talk shows), drama, music videos, children’s television, documentary
(educational), documentary (entertainment), live chat shows, lifestyle programs, game shows, reality TV, current affairs, satire, adult cartoons, comedy (sketches) and religious. These were then regrouped into 5 categories: information (news, documentary, current affairs), sport (events plus talk shows), soap operas, music videos, and general entertainment (the remainder). Soaps and music videos were retained as separate categories because these have been particularly identified in some previous studies (Borzekowski et al., 2000; Tiggemann, 2003; Tiggemann & Pickering, 1996; Van den Bulck, 2000). The number of hours per week spent viewing each genre category served as the measure of television exposure.

Internalization of appearance ideals
Three items were used to address internalization of socially accepted standards of beauty, loosely based on items from the Internalization subscale of the Sociocultural Attitudes Toward Appearance Questionnaire (Heinberg, Thompson, & Stormer, 1995). The items in the present study were: “People who appear in TV shows and movies project the type of appearance that I see as my goal,” “I try to look like the people in fashion magazines,” and “I wish my body looked like those of the people in magazines and on TV.” Participants rated their agreement with these statements on 5–point scales from “strongly agree” (5) to “strongly disagree” (1). Internal reliability was moderately high (α = .82).

Appearance Schemas
The Appearance Schemas Inventory (ASI) is a 14–item scale designed to assess core beliefs and assumptions about the importance, meaning, and effect of appearance in an individual’s life (Cash & Labarge, 1996). The present study used Cash’s (1997) slightly simplified 10–item version as more appropriate for adolescent readers. Participants rated their level of agreement with items (e.g., “Physically attractive people have it all”) on 5–point scales that ranged from “strongly disagree” (1) to “strongly agree” (5). Cash and Labarge (1996) reported an alpha coefficient of 0.84 for the 14–item scale. Reliability was similar for the 10–item version in the present sample, α = .82.

Body Dissatisfaction
Body dissatisfaction was assessed by the Figure Rating Scale of Fallon and Rozin (1985) which presents nine silhouette figure drawings ranging from very thin to very fat. Participants were asked to indicate by choosing a number (including intermediate numbers) the figure that approximated their current figure and the one they would like to look like. Body dissatisfaction was then calculated as the discrepancy between current and ideal figure ratings.
Drive for Thinness
Participants completed the Drive for Thinness subscale of the Eating Disorders Inventory (EDI; Garner, Olmsted, & Polivy, 1983). The Drive for Thinness subscale is the EDI’s primary behavioral indicator of characteristics associated with anorexia nervosa and assesses intense pursuit of thinness as well as the fear of being fat. Items are rated from “always” (6) to “never” (1). Untransformed scores were used as recommended for nonclinical populations by Schoemaker, van Strien, and van der Staak (1994). Internal reliability for the present sample was high, α = .90.

RESULTS
CHANGES OVER TIME
Table 1 provides the means for all variables at Times 1 and 2. Repeated measures analyses of the magazine variables indicated that magazine reading remained the same across time, multivariate $F(1, 213) = 0.51, p > .05$. In contrast, there was a significant multivariate effect of time for television viewing, $F(1, 213) = 5.77, p < .01$, whereby total television watching decreased by approximately 3 hours from nearly 21 hours to just over 18 hours per week. Follow-up univariate analyses showed that this decrease was primarily a function of the significant decrease in general entertainment shows, $F(1, 213) = 17.82, p < .001$. There was, however, a significant increase in the time spent watching specifically soap operas, $F(1, 213) = 6.36, p < .05$.

As a set the body image variables had remained stable over time, $F(1, 183) = 0.97, p > .05$, although there was a significant univariate decrease in appearance schemas, $F(1, 207) = 12.32, p < .01$. These scores were generally high, with over two-thirds of girls desiring a thinner figure (Time 1, 66.7%; Time 2, 69%). Nevertheless, the fact that mean scores remained stable does not mean that all individuals stayed the same. For example, 20.3% of the girls had increased by more than 5 points in their scores on drive for thinness over the year.

CROSS-SECTIONAL ANALYSES
In order to test for synchronous relationships within time, the two magazine variables (frequency of fashion magazine reading, number of appearance magazines bought) and five television genre variables (time spent watching sport, information, entertainment, soaps, music videos) were correlated with internalization, appearance schemas, body dissatisfaction, and drive for thinness. Table 2 (a) displays the correlations between magazines and soaps (the only television genre to be related to
TABLE 1. Mean Scores, Univariate $F$-Values for Time Effects, and Correlations for Media Exposure and Body Image at Time 1 and Time 2

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>$F$</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Magazines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>2.7</td>
<td>2.7</td>
<td>0.36</td>
<td>.45**</td>
</tr>
<tr>
<td>No. total</td>
<td>0.9</td>
<td>1.0</td>
<td>0.37</td>
<td>.40**</td>
</tr>
<tr>
<td>No. appearance</td>
<td>0.7</td>
<td>0.8</td>
<td>2.36</td>
<td>.36**</td>
</tr>
<tr>
<td><strong>Television</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sport</td>
<td>1.9</td>
<td>2.0</td>
<td>0.19</td>
<td>.49**</td>
</tr>
<tr>
<td>Information</td>
<td>0.8</td>
<td>0.7</td>
<td>0.47</td>
<td>.43**</td>
</tr>
<tr>
<td>Entertainment</td>
<td>11.9</td>
<td>9.5</td>
<td>17.82**</td>
<td>.52**</td>
</tr>
<tr>
<td>Soaps</td>
<td>3.1</td>
<td>3.6</td>
<td>6.36*</td>
<td>.47**</td>
</tr>
<tr>
<td>Music videos</td>
<td>2.0</td>
<td>1.9</td>
<td>0.67</td>
<td>.38**</td>
</tr>
<tr>
<td><strong>Body image variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internalization</td>
<td>8.0</td>
<td>7.7</td>
<td>2.96</td>
<td>.59**</td>
</tr>
<tr>
<td>Appearance Schemas</td>
<td>28.6</td>
<td>27.0</td>
<td>12.33*</td>
<td>.62**</td>
</tr>
<tr>
<td>Body dissatisfaction</td>
<td>7.6</td>
<td>8.2</td>
<td>0.95</td>
<td>.69**</td>
</tr>
<tr>
<td>Drive for thinness</td>
<td>19.2</td>
<td>19.6</td>
<td>0.81</td>
<td>.73**</td>
</tr>
</tbody>
</table>

*p <.05; **p <.001.

body image) and the four body image variables at Time 1. It can be seen that magazine exposure and soaps were both correlated with internalization and appearance schemas, and magazine exposure with drive for thinness. Within Time 2 correlations displayed in Table 2 (b) show that this pattern was essentially replicated one year later.

CROSS-LAGGED ANALYSES

Correlational analyses were conducted to determine whether Time 1 media exposure was able to predict body image prospectively one year later (Time 2). Again soaps were the only television genre to be correlated. It can be seen from Table 3 which presents the cross-lagged correlations that media exposure at Time 1 did offer significant prediction of internalization, appearance schemas and drive for thinness at Time 2. It did not predict body dissatisfaction one year later.

REGRESSION ANALYSES

In order to explicitly test temporal precedence, a series of hierarchical regression analyses was conducted to determine whether Time 1 media exposure predicted Time 2 body image when Time 1 body image was
TABLE 2. Correlations Between Media Exposure and Body Image at (a) Time 1 and (b) Time 2

<table>
<thead>
<tr>
<th></th>
<th>Internalization</th>
<th>App. Schemas</th>
<th>Body Dissatisfaction</th>
<th>Drive for Thinness</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Time 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency (fashion)</td>
<td>.32**</td>
<td>.24**</td>
<td>.00</td>
<td>.27**</td>
</tr>
<tr>
<td>Number appearance</td>
<td>.27**</td>
<td>.21*</td>
<td>.02</td>
<td>.18*</td>
</tr>
<tr>
<td>Television</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soaps</td>
<td>.15*</td>
<td>.14*</td>
<td>-.10</td>
<td>.07</td>
</tr>
<tr>
<td>(b) Time 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency (fashion)</td>
<td>.33**</td>
<td>.21**</td>
<td>.13</td>
<td>.19*</td>
</tr>
<tr>
<td>Number appearance</td>
<td>.32**</td>
<td>.22**</td>
<td>.14*</td>
<td>.18*</td>
</tr>
<tr>
<td>Television</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soaps</td>
<td>.16*</td>
<td>.20*</td>
<td>-.04</td>
<td>.07</td>
</tr>
</tbody>
</table>

*p < .05; **p < .001.

taken into account. This procedure analyses change in terms of residual gain scores, that is, as the difference between observed values on the outcome variable and those expected based on initial scores (Menard, 1991). Four separate analyses were conducted, one for each of the body image variables (internalization, appearance schemas, body dissatisfaction, drive for thinness). For each regression equation, the corresponding Time 1 body image variable was entered on Step 1, followed by the two magazine and five television variables on Step 2. Table 4 displays the resulting $\beta$, $R^2_{\text{change}}$ and $F_{\text{change}}$ values. It can be seen that in no case did media exposure contribute significant prediction to Time 2 body image.\(^1\)

It is possible that the temporal relation might hold in the opposite direction (in line with reverse causation). Hence another series of hierarchical regression analyses was conducted to investigate whether Time 1 body image predicted Time 2 media exposure, taking into account Time 1 media exposure. Separate regression analyses were conducted for each media exposure (Step 1) and body image variable (Step 2). No body im-

\(^1\) To test the possibility that media exposure might be predictive for only particular subsets of girls, additional analyses were conducted on different age groups and for girls who did change in body image separately. In no case did Time 1 media exposure significantly predict any Time 2 body image variable when the corresponding Time 1 body image was controlled.
TABLE 3. Correlations Between Time 1 Media Exposure and Time 2 Body Image

<table>
<thead>
<tr>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internalization</td>
</tr>
<tr>
<td>Magazine</td>
<td></td>
</tr>
<tr>
<td>Frequency (fashion)</td>
<td>.23**</td>
</tr>
<tr>
<td>Number appearance</td>
<td>.14*</td>
</tr>
<tr>
<td>Television</td>
<td></td>
</tr>
<tr>
<td>Soaps</td>
<td>.17*</td>
</tr>
<tr>
<td>Multiple R</td>
<td>.26*</td>
</tr>
</tbody>
</table>

*p <.05; **p <.001.

age variable significantly predicted change in amount of television watched for any genre, nor frequency of fashion magazine reading. There was, however, marginally significant prediction by internalization of change in number of appearance magazines bought, $R^2_{\text{change}} = .016$, $F_{\text{change}}(1,195) = 3.83$, $p = .052$. The positive sign of the regression coefficient for internalization ($\beta = .13$, $p = .052$) indicates that initial high levels of internalization lead to increased buying of appearance magazines.

THE PREDICTION OF BODY DISSATISFACTION AND DRIVE FOR THINNESS BY INTERNALIZATION AND APPEARANCE SCHEMAS

Correlational analyses showed that Time 1 internalization and appearance schemas were related to Time 2 body dissatisfaction ($r_s = .22, .34; p_s < .01$), and drive for thinness ($r_s = .41, .48; p_s < .001$). Two hierarchical regression analyses were conducted to test whether Time 1 internalization and appearance schemas predicted change in body dissatisfaction or drive for thinness. Time 1 body dissatisfaction (or drive for thinness) was entered on Step 1, followed by Time 1 internalization and appearance schemas on Step 2, to predict the corresponding Time 2 body image variable. Significant prediction was found for Time 2 body dissatisfaction, $R^2_{\text{change}} = .022$, $F_{\text{change}}(2, 191) = 3.88$, $p < .05$, but not for drive for thinness $R^2_{\text{change}} = .011$, $F_{\text{change}}(2, 183) = 2.15$, $p > .05$. The beta values indicated that appearance schemas ($\beta = .18, p < .05$), not internalization ($\beta = -.05, p > .05$), largely carried this prediction. The positive sign of the regression coefficient indicates a relative increase in body dissatisfaction for those girls initially high on appearance schemas.
TABLE 4. Results of hierarchical regressions (beta values) to predict Time 2 body image (controlling for Time 1 body image)

<table>
<thead>
<tr>
<th>Step 2: Media</th>
<th>Internalization</th>
<th>App. Schemas</th>
<th>Body Dissatisfaction</th>
<th>Drive for Thinness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magazine frequency</td>
<td>.02</td>
<td>.05</td>
<td>-.04</td>
<td>-.06</td>
</tr>
<tr>
<td>No. appearance mags</td>
<td>-.04</td>
<td>-.04</td>
<td>.01</td>
<td>.07</td>
</tr>
<tr>
<td>TV (Sport)</td>
<td>.01</td>
<td>.03</td>
<td>.06</td>
<td>.01</td>
</tr>
<tr>
<td>TV (Information)</td>
<td>.08</td>
<td>.05</td>
<td>-.04</td>
<td>.04</td>
</tr>
<tr>
<td>TV (Entertainment)</td>
<td>.07</td>
<td>.03</td>
<td>-.01</td>
<td>.01</td>
</tr>
<tr>
<td>TV (Soaps)</td>
<td>.05</td>
<td>.03</td>
<td>.09</td>
<td>.07</td>
</tr>
<tr>
<td>TV (Music videos)</td>
<td>-.12</td>
<td>-.01</td>
<td>-.01</td>
<td>-.11</td>
</tr>
<tr>
<td>$R^2_{change}$</td>
<td>.03</td>
<td>.01</td>
<td>.01</td>
<td>.02</td>
</tr>
<tr>
<td>$F_{change}$</td>
<td>1.10</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>1.29</td>
</tr>
</tbody>
</table>

*Note. Outcome = Time 2 body image, Step 1 = Time 1 body image.*

MODERATING EFFECTS

The above finding that appearance schemas predicted increases in body dissatisfaction over time raises the possibility that appearance schemas may moderate the effect of media exposure. Hierarchical regression analysis was conducted to test this possible interaction. Following Stice et al. (1994), a composite measure of appearance media exposure was calculated by standardizing and summing the values for frequency and number of appearance magazines and hours spent watching soaps. Following the procedure of Aiken and West (1991), the appearance schemas variable was also centered before creating the product term. For the analysis to predict Time 2 body dissatisfaction (or drive for thinness), Time 1 body dissatisfaction (or drive for thinness) was entered on Step 1, Time 1 appearance media exposure and appearance schemas (the main effects) on Step 2, and the product term (to test the interaction) on Step 3.

Although it was found that the main effects were significant for body dissatisfaction, $R^2_{change} = .023$, $F_{change}(2, 204) = 4.85, p < .01$, confirming the earlier result for appearance schemas ($\beta = .16, p < .05$), the product term did not offer additional prediction for body dissatisfaction, $R^2_{change} = .001$, $F_{change} < 1, p > .05$. The product term did, however, offer significant prediction for drive for thinness, $R^2_{change} = .011, F_{change}(1, 195) = 4.96, p < .05$. The form of the interaction is indicated by the regression coefficient for the product term in the final regression equation, $\beta = -.11, p < .05$. The negative sign indicates that girls high on both appearance schemas and appearance media exposure increased less on drive
for thinness than expected on the basis of their initial scores. To illustrate this differently, girls were divided into appearance schema tertiles (low, medium, high) as is commonly done (Lavin & Cash, 2001) and regression analyses run to predict change in drive for thinness by appearance media exposure. The resulting slopes (beta coefficients) show the changing nature (from positive to negative) of the relationship between appearance media exposure and change in drive for thinness as a function of appearance schemas: low appearance schemas $\beta = .17$, medium $\beta = .08$, high $\beta = -.15$.

DISCUSSION

The study aimed to trace the development of body image in adolescent girls over a one year time period. It has confirmed that adolescence is a time of high body dissatisfaction and drive for thinness for girls. Although there was a small decrease in investment in appearance, there was little difference in overall body image or drive for thinness across time. This is consistent with the results of previous investigations of adolescent girls over a similar time span (Jones, 2004; Stice et al., 2001; Stice & Whitenton, 2002; Vaughan & Fouts, 2003) and suggests that body image may have stabilized by the time girls enter high school.

With respect to media exposure, fashion magazine reading remained stable and television watching decreased over the year. The cross-sectional results replicated the previously established relationship between fashion magazine consumption and body image or disordered eating symptomatology (Harrison, 2000; Jones, Vigfusdottir, & Lee, 2004; Thomsen, Weber, & Brown, 2002; Tiggemann, 2003). There is no doubt that reading fashion magazines presents girls with a plethora of thin ideals, as well as information on how to attain those ideals through dieting and exercise (Nemeroff, Stein, Diehl, & Smilack, 1994). Total television time was not related, but the watching of soap operas emerged as a correlate of internalization and appearance schemas, replicating some previous results (Hofschire & Greenburg, 2002; Tiggemann, 2003; Tiggemann & Pickering, 1996). It is interesting that the time spent watching soaps was the only genre to increase over the year. There is no doubt that the glamorous stars of soap operas, like other genres (e.g., sitcoms, drama, music videos) depict thin ideals. However, what distinguishes soap operas from other genres is their sense of “realness” (Barbatis & Guy, 1991), whereby they present the more complex cultural script that links thinness and attractiveness to happiness, desirability, and status. Thus they reinforce the importance of appearance and implicitly encourage viewers to equate attractiveness with self-worth in both others and in themselves.
The major aim of the study, however, was to investigate the direction of relationships longitudinally across time. Media exposure variables at Time 1 did indeed predict internalization, appearance schemas, and drive for thinness at Time 2 one year later. The lack of prediction for Time 2 body dissatisfaction may be a function of the specific measure. Figure ratings provide a relatively crude and primarily cognitive measure of body dissatisfaction (Tiggemann, 1996) in terms of overall shape and weight. Stronger relationships may have been obtained for other aspects, such as dissatisfaction with specific body parts, or for more affective measures.

It would be wrong, however, to interpret the prediction of Time 2 body image by Time 1 media exposure as evidence for a causal relationship—although many studies do (see critical commentary by Stice, 2002). The hierarchical regression analyses showed that when Time 1 levels of body image were controlled, media exposure did not offer any significant prediction of body image at Time 2. This indicates that the relations across time are largely a function of the synchronous within–time relationships between variables. Thus we can conclude that media exposure was not temporally antecedent to body image in this sample and hence cannot be viewed as causal. The answer to our first research question is negative.

The results of testing the temporal precedence of the body image variables over media exposure are less clearcut. The marginally significant prediction by internalization of number of appearance magazines bought in the previous month clearly warrants replication. Such replication might usefully employ a more detailed measure of magazine exposure, as the number of appearance magazines bought undoubtedly underestimates magazine exposure. The purchase of fashion magazines will be at least partly determined by financial resources, whereas girls can read magazines in the library, in doctors’ or dentists’ waiting rooms, at the hairdresser, and most notably, share copies with their friends. If confirmed, the finding suggests that those girls who have most internalized the thin ideal seek out particular media content, in this case, buy or read more fashion magazines. This is consistent with girls’ self-reports that they read fashion magazines at least partly in order to gain information about beauty, fitness, grooming, and style (Levine & Smolak, 1996; Levine, Smolak, & Hayden, 1994) and in a desire for self-improvement (Thompson, McCoy, Gustafson, & Williams, 2002). Similarly, social learning (e.g., “to learn how people my age behave”) has recently been identified as a motivation among adolescents for viewing television, particularly soap operas (Tiggemann, 2005). These findings serve to remind us that adolescent girls actively make choices about what, when, and for how long to read magazines and watch television. They thereby
control in large part the extent and nature of their own media exposure, in accord with uses and gratification theory (Rubin, 1994).

On balance, the present results should be interpreted as demonstrating that media exposure and body image are certainly correlated, but that neither is temporally antecedent to the other. Most likely the relationship is reciprocal, with girls actively selecting particular media content for particular purposes including body image concerns, but also experiencing body image consequences from that media exposure in an ongoing cyclical fashion. Thus changes in either of media exposure or body image will correlate with changes in the other, as observed by Vaughan and Fouts (2003). The present study was the first to make use of a longitudinal panel design to explicitly test for temporal precedence. Given that temporal precedence is a minimal requirement for causality (Menard, 1991), the results can be interpreted as showing that neither one causes the other. Thus the present study adds to the small number of previous longitudinal studies of actual media exposure. As a set, these indicate that there is as yet no longitudinal evidence for a direct causal effect of media exposure on body image or disordered eating.

Appearance schemas, on the other hand, did predict body dissatisfaction change over one year, thus answering the second research question in the affirmative. Those girls with initially high scores on appearance schemas increased in body dissatisfaction over time, in a way that low scorers did not. This result replicates that of Hargreaves and Tiggemann (2002a) and is consistent with that of Jones (2004) for social comparison. People with highly developed and elaborate appearance schemas will selectively attend to the appearance-related aspects of any presented material. Hence they are liable to be particularly vulnerable to the immediate effects of idealized media images or other appearance messages, as has been experimentally demonstrated (Hargreaves & Tiggemann, 2002b; Lavin & Cash, 2001). On the basis of their finding that responsiveness to experimentally manipulated thin ideals prospectively predicted an increase in body dissatisfaction two years later, Hargreaves and Tiggemann (2003) have suggested that the cumulative effect of appearance processing evoked by recurrent exposure to media images and other appearance-related situations provides a possible mechanism by which appearance schematics develop body dissatisfaction over time. This argument, which holds the nature of the processing engaged in by appearance schematics as critical, rather than simple amount of exposure to media or other images, is also consistent with the initially counter-intuitive moderation results. Girls high in appearance schemas already selectively attend to and react to any appearance-related aspects (including media) of their environment (main effect of appearance schemas). It is for girls low in appearance schemas who are less attuned
overall to appearance aspects of their environment that amount of media exposure has an effect on body image. Our observed prediction by appearance schemas parallels the previous longitudinal results for media involvement and perceived media pressure (Field et al., 1999, 2001; Stice, 2002). Together the findings indicate that particular characteristics and beliefs of the individual surrounding media are important in the development of body concerns.

The fact that actual media exposure was shown not to be causal in the development of body dissatisfaction in this study (or in any other so far), should emphatically not be interpreted as indicating that the media play no role in body image or disordered eating. The correlational results show that media consumption of thin ideals goes hand-in-hand with negative body image in a reflexive relationship. In particular, we need to remember that in the real world, in contrast to experimentally manipulated media exposure, people are active media consumers who exercise considerable choice over the amount and nature of media they read or watch. It also needs to be remembered that the present results are limited to the particular sample under study. Body image seems to already have largely stabilized and media exposure to thin ideals may likewise have reached saturation point by the time girls reach early adolescence, mitigating against finding significant predictors of change. Thus any potential causal effects may have long passed. Future research should target a younger age group to investigate the impact of media exposure on girls whose body image is still developing. More generally, it needs to be recognized that the media form a large part of the sociocultural context or system in which all development occurs. A systems approach (von Bertalanfy, 1968) carries the basic assumption that all parts of the system interact such that change in any one part will influence the other parts. Thus changes in the content of the media, for example, through presentation of a broader range of body shapes, will change the nature of relationships between variables. In addition, the individual characteristics which have been identified as causal in this study (appearance schemas) and in other studies (media involvement, perceived pressure) clearly implicate the media. Future research might usefully address the development of these longitudinally.

The present study offers a number of implications for preventative interventions. The strong correlations and stability across time indicate that body image is well established by early adolescence, and thus may be resistant to intervention. Thus prevention attempts may be more successful when addressed to younger preadolescent children whose attitudes and beliefs about appearance are less consolidated (Smolak and Levine, 2001), and before negative body image becomes so normative. The prospective results suggest that appearance schemas in particular
should be targeted. Cognitive strategies could be directed at challenging the central importance and meaning of appearance to young adolescent girls’ lives, and to encouraging the development of adaptive schemas in other non-appearance related domains. For example, some authors (e.g., Fredrickson & Roberts, 1997) suggest that girls’ involvement in sport can increase body competence and counteract socialization pressures to view the body in objectified appearance terms. Alternatively, media literacy programs might be used to teach both adolescents and children to recognize, think critically about, and resist the pervasive but sometimes subtle media messages that link appearance and body shape with happiness and success, which may become internalized as the equation of a person’s attractiveness with their self-worth. Such media literacy programs have begun to show some success in reducing body concerns and disordered eating (e.g., Levine & Smolak, 1998).

In conclusion, the present longitudinal results indicate that the relation between media exposure and body image is more complex than we may have thought. As yet, there is no evidence that media exposure per se is causal in the development of body image concerns. However, various individual characteristic forms of engagement with the media do appear to play a causal role. Thus it seems that what is most important for the development of adolescent girls’ body image is not the amount of exposure to the media, but rather their processing of and responsiveness to those media.

REFERENCES


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