

## Relation of Media Exposure to Eating Disorder Symptomatology: An Examination of Mediating Mechanisms

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Although investigators have postulated that the thin ideal for women espoused in the media is related to the high rates of eating disorders among females, little research has examined the relation between media exposure and eating pathology. This study assessed the relation of media exposure to eating disorder symptoms and tested whether gender-role endorsement, ideal-body stereotype internalization, and body satisfaction mediated this effect. In data from 238 female undergraduates, structural equation modeling revealed a direct effect of media exposure on eating disorder symptoms. Furthermore, mediational linkages were found for gender-role endorsement, ideal body stereotype internalization, and body satisfaction. The results support the assertion that internalization of sociocultural pressures mediate the adverse effects of the thin ideal.

Of the variables thought to promote and maintain anorexia and bulimia, sociocultural factors are considered paramount (Striegel-Moore, Silberstein, & Rodin, 1986). The sociocultural influences thought to contribute to eating disorders include the thin ideal body image espoused for women, the centrality of appearance in the female gender role, and the importance of appearance for women's societal success (Striegel-Moore et al., 1986). One of the strongest messengers of these sociocultural pressures may well be the mass media. Several lines of evidence support this contention.

First, the apparent increase in eating disorders over the last several decades (Pyle, Halvorson, Neuman, & Mitchell, 1986) has coincided with a decrease in women's ideal body weight, as portrayed in the media (Wiseman, Gray, Mosimann, & Ahrens, 1992). Consistent with this, bulimics show a hyperinternalization of the thin ideal (Kendler et al., 1991). Second, also paralleling the rise in eating disorders was an increase in the number of articles and advertisements promoting weight-loss diets in women's magazines (Wiseman et al., 1992). Indeed, one study found that women's magazines contained 10.5 times more advertisements and articles promoting weight loss than men's magazines, the same sex-ratio reported for eating disorders (Andersen & DiDomenico, 1992). Third, a study that exposed women to slides of thin, average, and heavy models found that exposure to thin models resulted in lower self-esteem and decreased weight satisfaction (Irving, 1990). Similarly, an experi-

ment that exposed women to pictures of models from women's magazines found that exposure to thin models, rather than average-size models or control photos with no women, produced increased depression, stress, guilt, shame, insecurity, and body dissatisfaction (Stice & Shaw, in press).

Although the literature implicates sociocultural pressures in the promotion of eating disorders, little research has directly examined the relation between media use and eating pathology. Thus, our aims in this study were to assess the relation of media exposure to eating disorder symptomatology and to explore possible mediating mechanisms.

First, we theorized that repeated exposure to the thin ideal portrayed in the media leads women to internalize the thin ideal stereotype. This internalization is thought to produce heightened body dissatisfaction because it sets unrealistic body-dimension goals.<sup>1</sup> Body dissatisfaction in turn was expected to lead to eating pathology; the more dissatisfied a woman is with her body, the more likely she will engage in drastic means to lose weight (e.g., restricting intake or purging). Indeed, research has found strong associations between body dissatisfaction and eating disorders (Katzman & Wolchik, 1984; Leon, Fulkerson, Perry, & Cudeck, 1993). Internalization of the thin ideal may also directly produce eating pathology, because even if a woman is satisfied with her body, she may engage in disordered eating behavior to maintain a low weight. In support, endorsement of the thin ideal predicts both bulimic symptoms (Stice & Shaw, in press) and subsequent diagnosis of bulimia (Kendler et al., 1991).

Gender-role endorsement was also examined as a potential mediator. Because the media bombards audiences with stereotyped images of masculinity and femininity, we theorized that media exposure leads to increased internalization of gender roles. Consistent with this, longitudinal research has found a strong relation between media use and gender-role endorsement (Morgan, 1982). However, we thought that gender-role endorse-

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<sup>1</sup> As any effect of media exposure on body dissatisfaction is theoretically mediated through internalization of the thin ideal, no direct path was predicted from media exposure to body dissatisfaction.

ment would not directly predict eating pathology because these stereotypes focus more on social roles than body dimensions. Additionally, studies that have attempted to link gender-role endorsement to eating pathology have not found significant direct effects (e.g., Katzman & Wolchik, 1984). Instead, we theorized that gender-role endorsement would affect eating pathology through ideal-body stereotype internalization. As one facet of women's role in society is appearance, gender-role endorsement was expected to be related to ideal-body stereotype internalization. In support, research has found positive relations between gender-role endorsement and internalization of the thin ideal (Anderson & Bem, 1981; Timko, Striegel-Moore, Silberstein, & Rodin, 1987). Thus, a second hypothesized route from media exposure to ideal-body stereotype internalization was through gender-role endorsement. As noted previously, we predicted that ideal-body stereotype internalization would lead to body dissatisfaction and eating pathology.

In addition to these mediational paths, we expected that media exposure would be directly related to eating pathology. First, research indicates that many bulimics learn to purge as a means of weight control directly from the media (Fairburn & Cooper, 1982). Second, the overemphasis on dieting in the media may promote dietary restraint, which has been linked to binge eating in controlled experiments (Polivy & Herman, 1985).

In sum, media exposure was expected to directly predict eating pathology, gender-role endorsement, and ideal-body stereotype internalization. Furthermore, we hypothesized that gender-role endorsement would predict ideal-body stereotype internalization, which was expected to lead both directly and indirectly (through body dissatisfaction) to eating pathology. Although these relations theoretically unfold over time, we elected to test them using cross-sectional data as an initial step. If certain assumptions hold (e.g., stationarity and no specification errors), inferences from cross-sectional data can reflect longitudinal processes (Cole & Turner, 1993).

## Method

### Subjects and Procedure

The subjects were 238 women (mean age = 20 years) from introductory psychology and sociology classes, who voluntarily completed a 10-page questionnaire (in groups of 20–60) to earn research participation credit. The study was presented as an investigation of various student attitudes and opinions.

### Measures

**Media exposure.** The media exposure scale was composed of six items intended to sample use of media that have a high proportion of ideal body images. The subjects reported the number of health and fitness, beauty and fashion, and entertainment, arts, and gossip magazines they had looked at over the past month, as well as the number of hours of comedy, drama, and game shows they had watched. This measure improved on previous media exposure scales (e.g., Morgan, 1982) by using multiple items. Standardized scores for each item were summed for analyses. As this variable represents a summation of exposure to various types of media, and media consumption is somewhat mutually exclusive because of the limited amount of time people can devote to media use, a test-retest coefficient was considered a better index of reli-

ability than an internal consistency coefficient (test-retest over a 3-week period,  $r = .76$ ).<sup>2</sup>

**Gender-role endorsement.** Gender-role endorsement was measured with a synthesis of the Attitudes Toward Women Scale (Spence, Helmreich, & Strapp, 1973) and the Attitudes Toward the Male Role Scale (Doyle & Moore, 1978). Redundant items were omitted and confusing questions were rephrased. The resulting 28-item scale measured subjects' endorsement of stereotypes about the appropriate social roles of women and men. It had a Cronbach's alpha of .83 and a test-retest coefficient (over a 3-week period) of .84.

**Ideal-body stereotype internalization.** Subscription to the female ideal-body stereotype was assessed with a measure created for this study. First, a pilot study ( $N = 20$ ) in which subjects generated statements that reflected stereotypes of the ideal female body was conducted. Traits with strong face validity that were mentioned at least twice were validated in a second pilot study ( $N = 49$ ). Items that evidenced weak interitem correlations (.30 or less) in this second study were deleted, and the result was a 6-item scale. Subjects indicated how much they endorsed each item on a 5-point scale ranging from *strongly agree* (1) to *strongly disagree* (5). This scale had a Cronbach's alpha of .86 and a test-retest coefficient (over a 3-week period) of .60. With regard to convergent validity, this scale was found to be positively correlated with the Conformity subscale of the Jackson Personality Inventory ( $r = .37$ ; Jackson, 1976) and the Restrained-Eating Questionnaire ( $r = .38$ ; Herman & Polivy, 1980).

**Body dissatisfaction.** Subjects' satisfaction with their bodies was assessed with the nine-item Body Satisfaction subscale of the Eating Disorders Inventory (Garner, Olmsted, & Polivy, 1983). Cronbach's alpha for this scale was .91. The reliability and validity of this scale have been well documented (Garner et al., 1983).

**Eating disorder symptomatology.** The 26-item Eating Attitudes Test (Garner, Olmsted, Bohr, & Garfinkel, 1982) measures cognitions, emotions, and behaviors associated with anorexia and bulimia. Cronbach's alpha for this scale was .91. Research has found this scale to be reliable and to accurately differentiate bulimics and anorexics from control subjects (e.g., Garner et al., 1982).

## Results

The correlations among the variables are presented in Table 1, along with the means and standard deviations. To investigate the direct and indirect effects of media consumption on eating pathology, we used structural equation modeling with manifest variables. The hypothesized model, depicted in Figure 1, was tested with EQS (Bentler, 1992). To correct for attenuation in parameter estimates resulting from measurement error, the error variances of the observed variables were set to  $(1 - \text{Reliability}) \times \text{Indicator Variance}$  (Bollen, 1989). Because the chi-square goodness-of-fit test is sensitive to sample size, the Tucker-Lewis index (TLI) and the comparative fit index (CFI) were also used to evaluate the model. The model was tested by using the covariance matrix and resulted in  $\chi^2(3, N = 238) = 2.33, p = .51, \text{TLI} = 1.0, \text{CFI} = 1.0$ .<sup>3</sup> Both the TLI and the CFI were well above the .90 cutoff, which indicates that the a priori model fit the data very well. Furthermore, there were no significant chi-

<sup>2</sup> Cronbach's alpha for the media exposure scale was .56. Although this internal consistency coefficient may be considered low from a psychometric standpoint, this factor only served to make the tests of the hypothesized relations more conservative.

<sup>3</sup> We note that the relatively small number of degrees of freedom in this model may have produced slightly inflated goodness-of-fit indices.

Table 1  
Zero-Order Correlations Among the Exogenous and Endogenous Variables

Variable	1	2	3	4	5	M	SD
1. Media exposure	—	.133**	.002	.101*	.250***	4.9	1.0
2. Gender-role endorsement		—	.293***	.072	.128**	2.1	0.5
3. Ideal body stereotype internalization			—	.146**	.133**	4.2	1.0
4. Body dissatisfaction				—	.541***	4.1	1.2
5. Eating disorder symptomatology					—	2.7	1.3

Note. All significance tests were two-tailed.

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .001$ .

square values for the Lagrange multiplier test, and this verifies that the fit of the model would not be significantly improved by freeing additional paths. A check for influential outliers was performed by running the model without observations that exceeded three standard deviations on any variable. Whereas no significance levels changed for any direct or indirect effects and the fit of the model was nearly identical, the model with all cases was retained. Standardized path coefficients and significance levels are reported in Figure 1.

As predicted, there were significant direct effects of media exposure on eating disorder symptomatology and gender-role endorsement. Gender-role endorsement was related to ideal-body stereotype internalization, which in turn predicted body dissatisfaction. There was also a significant relation between body dissatisfaction and eating pathology. However, neither the path from media exposure to ideal-body stereotype internaliza-

tion nor the path from ideal-body stereotype internalization to eating disorder symptoms reached significance. The variance accounted for was 43.5% for eating disorder symptoms, 4.6% for gender-role endorsement, 13.3% for ideal-body stereotype internalization, and 2.8% for body dissatisfaction.

Although most of the individual mediational links between media exposure and eating disorder symptoms were significant, this did not guarantee that the overall mediational pathways were statistically significant (Bollen, 1989). To test the significance of the mediational paths, we used  $t$  ratios based on the estimates of the indirect effects and the corresponding standard errors provided by EQS.<sup>4</sup> Tests were performed for the six indi-

<sup>4</sup> Although Baron and Kenny (1986) proposed three logical conditions that should be satisfied if mediation is present, this approach does not provide an inferential test of the mediated effect. Furthermore,

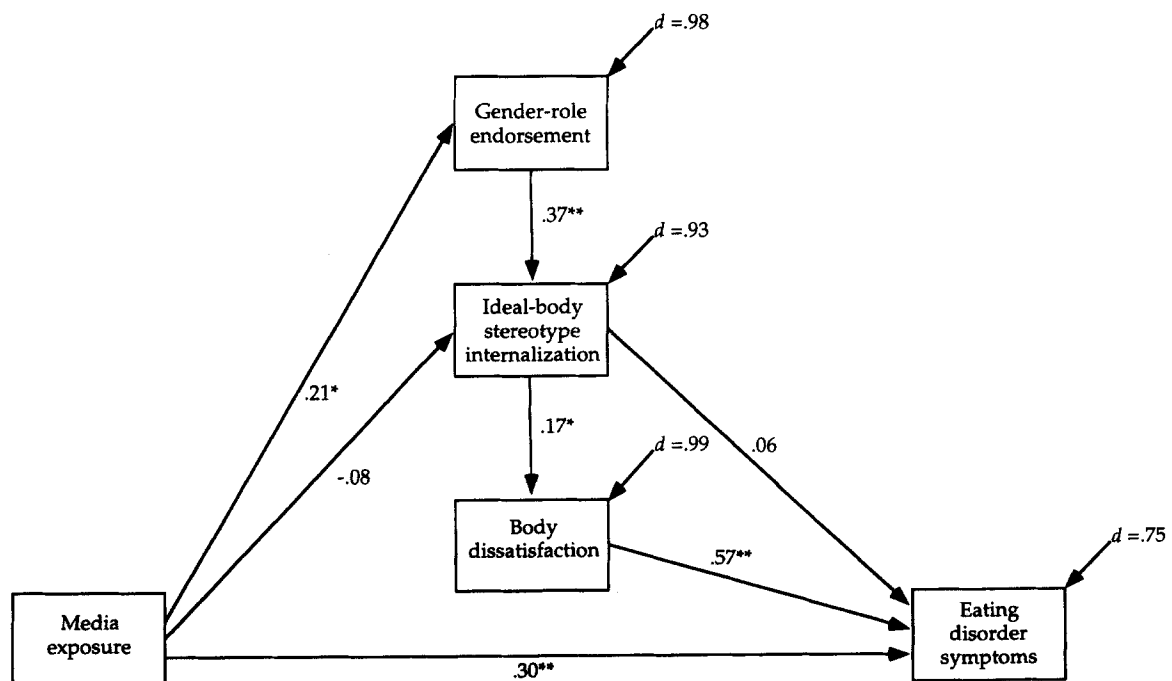


Figure 1. Relation of media exposure to eating disorder symptomatology in a test of mediating mechanism. (\* $p < .05$ ; \*\* $p < .001$ .)

rect effects possible from the significant direct effects. Media exposure was indirectly related to ideal-body stereotype internalization,  $\beta = .08$ ,  $t(238) = 1.92$ ,  $p < .06$ , through gender-role endorsement. Gender-role endorsement showed indirect relations to both body dissatisfaction through ideal-body stereotype internalization,  $\beta = .06$ ,  $t(238) = 2.11$ ,  $p < .05$ , and to eating disorder symptoms through ideal-body stereotype internalization and body dissatisfaction,  $\beta = .04$ ,  $t(238) = 1.96$ ,  $p < .05$ . There was also a significant indirect effect of ideal-body stereotype internalization on eating disorder symptoms through body dissatisfaction,  $\beta = .10$ ,  $t(238) = 2.27$ ,  $p < .05$ .

### Discussion

The direct relation between media exposure and eating disorder symptomatology was a novel finding. This effect supports the assertion that exposure to the media-portrayed thin ideal is related to eating pathology and suggests that women may directly model disordered eating behavior presented in the media (e.g., fasting or purging). Additionally, the focus on dieting in the media may promote dietary restraint, which appears to increase the risk for binge eating (Polivy & Herman, 1985).

The results also support the hypothesis that internalization of sociocultural pressures mediates the relation between media exposure and eating pathology. Consistent with past research (Morgan, 1982), media exposure predicted increased gender-role endorsement. Gender-role endorsement was in turn related to heightened ideal-body stereotype internalization, which is also consonant with past findings (Anderson & Bem, 1981). The indirect effect of media exposure on ideal-body stereotype internalization through gender-role endorsement achieved statistical significance. Greater ideal-body stereotype internalization predicted increased body dissatisfaction, which was related to heightened eating disorder symptoms. The path from body dissatisfaction to eating pathology is also consistent with previous research (Leon et al., 1993). Furthermore, gender-role endorsement showed significant indirect effects on body dissatisfaction (through ideal-body stereotype internalization) and on eating pathology (through both ideal-body stereotype internalization and body dissatisfaction). Finally, there was a significant mediational effect of ideal-body stereotype internalization on eating disorder symptoms through body dissatisfaction. However, the relatively small magnitude of the indirect effects should be noted when one interprets these mediational findings.

These findings suggest that internalization of the thin ideal partially mediates the effects of exposure to ideal body images contained in the media. These results also support the assertion that body dissatisfaction is an important mediator of the effects of these sociocultural pressures. These findings are consistent with theories in which it is proposed that body satisfaction is a primary determinant of eating disorder symptoms (Striegel-Moore et al., 1986).

The data did not support the predicted direct effect from media exposure to ideal-body stereotype internalization. This may have resulted from the rather broadband nature of the media-exposure measure. Although the measure assessed types of media with high ideal body content (e.g., fashion and beauty magazines), this scale may not have been precise enough to detect all of the possible influences of exposure to the thin ideal. Alternatively, it may be that other socialization agents, such as family and peers, play a larger role than the media in promoting the thin ideal. Second, although there was a significant zero-order correlation between ideal-body stereotype internalization and eating pathology, the direct path between them was not significant in the larger model. This implies that the effects of internalization of the thin ideal on eating pathology are primarily mediated through body dissatisfaction.

It is also important to consider some of the limitations of the study. First, the cross-sectional design precludes strong causal inferences and may not adequately reflect the temporal relations among these variables. Second, as we indicate earlier, the measure of media exposure may not have been precise enough to optimally capture the effects of exposure to the thin ideal. Third, the reliance on self-report data limits the confidence that can be placed in the conclusions. Stronger inferences could have been drawn if behavioral observations were also used. Finally, the model does not draw distinctions among different types of eating pathologies, such as bulimia and anorexia. It is likely that somewhat different factors are etiologically related to these two disorders.

As this is the first study to report a relation between media exposure and eating disorder symptomatology, it has important implications for prevention and directions for future research. Prevention programs might attempt to decrease internalization of the thin ideal and increase body satisfaction, as these factors appear to be important proximal variables in the etiology of eating pathology. With regard to future research, experimental investigations of the effects of media exposure on endorsement of the thin ideal would be helpful in verifying the direction of influence. Future studies might also examine variables that moderate the effects of sociocultural pressures. Although most women are exposed to the media-portrayed thin ideal, only a small proportion develop eating disorders. Such moderators may include biological, cognitive, and personality factors. For example, a woman biologically predisposed toward a heavier body weight may have a particularly difficult time achieving a thin figure and may resort to extreme dieting or purging to control her weight. Furthermore, women with low self-esteem or identify deficits may be more likely to internalize sociocultural standards (Katzman & Wolchik, 1984; Schupak-Neuberg & Nemeroff, 1993). In sum, future research should explore the factors that interact with sociocultural influences to ultimately produce eating pathology.

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Baron and Kenny's method has not been extended to mediational chains in excess of three variables, such as the ones hypothesized in our model. Accordingly, we elected to test directly the significance of the mediational effects with Sobel's (1982) derivation of the standard error for indirect effects (available through EQS).

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