The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and Validation

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Abstract: **Objective:** *The goal of this investigation was to develop and validate a revision of a widely used measure of societal influences on body image and eating disturbances—the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ).* **Method:** *Two independent samples of college females completed a revision and extension of the SATAQ and factor analyses were conducted to determine the underlying structure of the revised scale.* **Results:** *Factor analyses indicated two distinct internalization factors: one appeared to reflect a generic media influence related to TV, magazines, and movies. A second factor clearly reflected internalization of athletic and sports figures. Two other factors, reflecting media pressures and media as an informational source, also emerged. Another widely used measure of thin-ideal internalization, the Ideal Body Internalization Scale-Revised (IBIS-R), was included in factor analyses to determine its empirical relationship with the revised SATAQ. None of the IBIS-R items loaded with any of the internalization items or items reflective of media pressures or information. Instead, the IBIS-R appeared to tap into an awareness of appearance norms dimension. The SATAQ-3 subscales had excellent convergent validity with measures of body image and eating disturbance. Eating-disturbed and eating-disordered samples had higher scores on SATAQ-3 subscales than a control sample.* **Discussion:** *The SATAQ-3 measures multiple aspects of a societal influence and should prove useful for basic risk factor work as well as for gauging the efficacy of prevention and treatment programs.* © *2004 by Wiley Periodicals, Inc.* Int J Eat Disord 35: 293–304, 2004.

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INTRODUCTION

A great deal of contemporary work in the area of eating disorders and body image disturbance focuses on the identification of risk factors for the development and main-

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tenance of these clinical conditions (Field, 2004; Stice & Hoffman, 2004). Some of the risks that have received attention in research reports include (a) an interpersonal history of negative verbal comments (i.e., teasing) targeted at appearance, (b) psychobiological risk factors (i.e., early physical maturation), (c) psychological variables (i.e., low self-esteem), (d) family and peer modeling of disturbed eating patterns, and (e) media images and messages (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Identification of risk factors for body dissatisfaction and eating disturbances is essential to the development and implementation of effective prevention and treatment programs (Field, 2004; McKnight Investigators, 2003; Stice & Hoffman, 2004).

One measure of risk that has received a great deal of attention is an internalization of the thin ideal (Durkin & Paxton; 2002; Stice & Shaw, 2002; Thompson & Stice, 2001). Internalization is the incorporation of specific values to the point that they become guiding principles or as Thompson and Stice (2001, p. 181) noted, ''the extent to which an individual cognitively buys into'' societal norms of size and appearance, to the point of modifying one's behavior in an attempt to approximate these standards. Recent work in the preventive arena has demonstrated that internalization may be a causal risk factor for the onset of eating and shape-related disturbances (Thompson & Stice, 2001) and a significant predictor of treatment success among adolescent girls and women with anorexia nervosa (Heinberg, Guarda, & Haug, 2001). Importantly, it is possible to modify such internalization and changes in this risk factor appear to be related to changes in levels of body dissatisfaction (Stice & Hoffman, 2004). Given the importance of internalization to prevention and treatment, an accurate, contemporary, and multidimensional measurement of the variable is essential.

Currently, two scales exist for the measurement of internalization. The Sociocultural Attitudes Towards Appearance Questionnaire-Revised (SATAQ-R; Cusumano & Thompson, 1997) is an updated version of the scale first reported by Heinberg, Thompson, and Stormer (1995). This scale has separate factors of internalization and awareness (which is an index of simple acknowledgement of societal appearance norms, as opposed to internalization of the standards). A second measure of internalization is the 10-item Ideal Body Internalization Scale-Revised developed by Stice and colleagues (IBIS-R; Stice, 2001; Stice & Agras, 1998; Stice & Bearman, 2001). Although internalization has been shown to be an important risk factor and is responsive to intervention strategies designed to reduce levels of the variable, important limitations exist in the measurement of the specific construct and, more generally, the assessment of sociocultural influences.

For instance, researchers have noted that a societal influence is likely multidimensional, potentially consisting of variables such as pressures or information from the media (Levine, Smolak, & Hayden, 1994; Thompson et al., 1999). Although a number of individual instruments focus on media consumption, media pressure, and internalization of media-communicated ideals, these constructs have not been well defined and no scale development study has incorporated multiple facets of a media influence to determine the relative overlap or distinctiveness of the constructs. From a clinical and preventive perspective, the identification of other media influence variables beyond internalization may prove useful in the search for additional risk factors or intervention targets.

In addition, in the years since the earlier publication of the SATAQ and the SATAQ-R (Cusumano & Thompson, 1997; Heinberg et al., 1995), a relatively new form of media influence has emerged for young women—a focus on athleticism and sports. At the time of its development, much of the mass media and body image literature focused on the influence of women's fashion magazines (e.g., Vogue, Glamour). However, over the past decade, the

popularity of newer magazines (e.g., Shape, Fitness, and even Fit Pregnancy) speaks to a shifting ideal body type. Recent work suggests that media exposure does not just influence the dieting behavior of adolescent girls, but the initiation of an exercise program as well (Field et al., 1999). Further, studies have demonstrated a historical increase in the percentage of magazine articles and advertisements focusing on muscle development and toning (Thompson et al., 1999). Indeed, it has been noted that ''exercise is promoted as an optimal means to achieve the ideal physique'' (Lindeman, 1999, p. 1135). Although societal ideals of beauty shift over time, the focus on exercise, muscularity, and athleticism for both men and women does not appear to be a transient fad. The addition and psychometric evaluation of this aspect of media influence might prove useful in identifying a new component of media influence.

Another reason for revising and expanding the SATAQ-R involves the issue of the conceptual overlap of the SATAQ-R Internalization subscale with the IBIS-R. The measures share the same name (i.e., internalization), however, no psychometric study has directly evaluated the SATAQ Internalization subscale and the IBIS-R to determine the degree to which they actually assess the same construct. For instance, all internalization items, to meet our definition of internalization, contain phrases such as ''I would like my body to look like,'' ''I wish I looked like,'' ''I compare my body,'' and ''I try to look like.'' These phrases, which focus on subjective appearance, do not appear in IBIS-R items. Instead, each of the 10 items is a general statement of what constitutes attractiveness (e.g., ''Thin women are more attractive. Tall women are more attractive. Slim women are more attractive. Curvy women are more attractive.''). In fact, these items appear, a priori, to be most similar to our SATAQ and SATAQ-R awareness items, which were designed to capture not internalization, but a simple recognition or acknowledgement of societally based appearance norms. For instance, examples of our awareness items are: ''Attractiveness is very important if you want to get ahead in our culture. People think that the more attractive you are the better you look in clothes'' (Thompson et al., 1999). Therefore, it is important to psychometrically evaluate the two measures of internalization to determine the empirical relationship between the two instruments.

In sum, the current scale development study was designed to extend and update the measurement of a sociocultural influence on body image and eating disturbance by (1) including a relatively new focus on athleticism for women, (2) examining media influences beyond internalization, such as pressures and information, and (3) evaluating the factorial similarity/distinctiveness of the SATAQ-R Internalization subscale with the other widely used indicator of this construct, the IBIS-R. In addition, because no specific normative data are available for eating-disturbed or eating-disordered samples for the SATAQ-R, we sought to provide such data for the new scale of media influence.

STUDY 1

Method

Participants

The participants were 175 female undergraduates at the University of South Florida (age range, 17–25 years).

Construction of the Sociocultural Attitudes Towards Appearance Scale-3

A review of the literature indicated that items comprising at least four dimensions of a media influence should be created: awareness, internalization, pressures, and information.

Additional items were added to indicate a media influence related to sports, athleticism, or exercise. Items were generated by a body image research group whose members reviewed previously published indices of media influence. They also considered contemporary forms of media exposure, such as magazines, movies, and TV. Forty items were developed and considered for initial factor analyses.

Measures

Measures included the IBIS-R (Stice & Agras, 1998) and the Eating Disorder Inventory (EDI; Garner, 1991) Body Dissatisfaction (EDI-BD) and Drive for Thinness (EDI-DT) subscales.

The IBIS-R assesses participants' ''level of agreement with 10 statements concerning what attractive women look like (e.g., 'slender women are more attractive')'' (Stice, 2001, p. 126). Stice and Agras (1998) found an internal consistency of .89 and Stice (2001) found a test-retest reliability of .63. In this sample, Cronbach's alpha was .89.

The EDI-BD is a seven-item subscale that assesses overall satisfaction with various weight-related body sites. It has demonstrated good reliability (alphas above .80) across varied samples in previous studies (Garner, 1991). Its alpha in the current sample was .90. All six response options for this subscale were scored, rather than only considering the three scores in the disturbed range, given the nonclinical nature of the current sample.

The EDI-DT assesses restriction of intake, the desire to be thin, and the fear of gaining weight. It has demonstrated adequate reliability in nonpatient and eating-disordered samples (Cronbach's alpha = .85; Garner, 1991). In the current sample, the EDI-DT had a Cronbach's alpha of .93. All six response options for this subscale were scored, rather than only considering the three scores in the disturbed range, given the nonclinical nature of the current sample.

Procedure and Data Analyses

Participants completed the measures in classrooms and received extra course credit for their efforts. An exploratory principal axis factor analysis using a promax rotation was conducted on the new media scale and the IBIS-R to determine empirical distinctiveness of the hypothesized media dimensions and the relationship between the SATAQ-3 factors and the IBIS-R items. The rotated pattern matrix was evaluated for factor loadings. Initial criteria for the determination of factors involved an analysis of eigenvalues and scree plot. Criteria for factor loadings included at least a .40 on the primary factor and no more than .25 on any other factor. Reliability was computed using Cronbach's alpha.

Results

Table 1 contains the findings from the exploratory factor analysis. Based on the scree plot, eigenvalues, and the hypothesized number of factors, a five-factor model appeared to be the best fit to the data. From these factor loadings, the following findings are evident: (a) the SATAQ-3 internalization items load cleanly on one factor and none of these items cross-load on any other factor, (b) none of the IBIS-R items load with the SATAQ-3 internalization items; instead, these items form a distinct factor from the Internalization subscale; (c) the IBIS-R items appear to load somewhat with the awareness items (specifically, Items 4, 9, 24, 34), and (d) three other subscales emerged as distinct dimensions of a media influence: Information, Pressures, and Athlete Internalization.

After determining that the IBIS-R was not a measure of internalization and did not load on the other strong factors, that is, pressures and information, the SATAQ-3 items were

evaluated for their utility. Several items that did not meet a priori criteria due to cross-loadings or had very low factor loadings (i.e., <.40) were deleted. Because the elimination criteria effectively removed about one half of the awareness items, the remaining aware-

Table 1. Initial factor analysis of the SATAQ-3 and IBIS-R

	Factor				
Items	Information	Awareness	Pressures	Internalization-Athlete	Internalization-General
SATAQ3-1	**.96**	.08	−.01	−.19	−.13
SATAQ3-2	−.01	−.02	**.95**	−.07	−.05
SATAQ3-3	.05	.07	.25	.06	**.51**
SATAQ3-4	−.14	**.37**	−.01	.13	**.41**
SATAQ3-5	.12	.07	−.06	.08	**.68**
SATAQ3-6	**.79**	.01	−.05	.01	.04
SATAQ3-7	−.05	−.04	**.73**	−.01	.26
SATAQ3-8	−.01	.18	.06	−.01	**.68**
SATAQ3-9	−.09	**.54**	.18	.08	.20
SATAQ3-10	.06	.07	−.05	−.02	**.83**
SATAQ3-11	**.77**	−.13	.08	.02	.06
SATAQ3-12	−.06	−.02	.00	−.09	.01
SATAQ3-13	.03	.14	.10	.01	**.70**
SATAQ3-14	−.02	.19	−.05	**.79**	−.13
SATAQ3-15	.05	.06	.10	.02	.75
SATAQ3-16	**.74**	.09	−.02	−.03	.10
SATAQ3-17	−.04	−.11	**.87**	−.03	.11
SATAQ3-18	.04	.04	−.01	.06	**.71**
SATAQ3-19	.27	26	.24	.24	−.34
SATAQ3-20	.15	−.04	.15	.09	**.61**
SATAQ3-21	**.90**	−.07	−.14	.09	.09
SATAQ3-22	−.05	−.07	**.86**	−.01	.11
SATAQ3-23	−.02	−.03	.14	**.63**	.15
SATAQ3-24	−.02	**.53**	.09	.22	.03
SATAQ3-25	.02	−.07	.02	**.52**	.29
SATAQ3-26	**.89**	−.03	.06	.02	−.02
SATAQ3-27	.01	−.09	**.63**	.27	−.01
SATAQ3-28	−.06	−.27	−.11	**.86**	.25
SATAQ3-29	−.05	.23	−.11	**.84**	−.07
SATAQ3-30	−.04	−.19	−.07	**.93**	.10
SATAQ3-31	**.89**	.04	−.02	.00	.03
SATAQ3-32	.15	−.04	**.91**	−.13	−.02
SATAQ3-33	.12	.11	.15	.05	**.51**
SATAQ3-34	.05	**.41**	.10	**.51**	−.16
SATAQ3-35	**.80**	.01	.05	−.05	.14
SATAQ3-36	.29	−.06	.05	.15	**.45**
SATAQ3-37	.13	.23	.15	.23	−.11
SATAQ3-38	**.88**	−.03	−.04	.01	.08
SATAQ3-39	.05	−.18	−.06	**.77**	.13
SATAQ3-40	.24	.28	.15	.17	−.06
IBIS-R1	.05	**−.73**	.04	.02	−.20
IBIS-R2	.07	**−.83**	.13	.19	−.17
IBIS-R3	.01	**−.50**	−.06	−.36	.19
IBIS-R4	−.03	**−.87**	−.07	.11	.01
IBIS-R5	.07	**−.50**	−.07	−.33	.18
IBIS-R6	−.06	**−.84**	−.04	.11	−.02
IBIS-R7	−.02	**−.86**	.04	.20	−.10
IBIS-R8	−.15	−.38	.22	−.06	−.06
IBIS-R9	−.14	−.23	.29	−.06	−.02
IBIS-R10	.06	**−.80**	.21	.09	−.17

Note: SATAQ-3 = Sociocultural Attitudes Towards Appearance Questionnaire; IBIS-R = Ideal Body Internalization Scale-Revised. Bold factor loading reflects loading on the relevant factor.

ness items were deleted. A four-factor solution was run on the remaining measures and all items replicated (Table 2). Eigenvalues were 14.6, 3.2, 2.5, and 1.6 and the cumulative variance accounted for was 65%.

The resulting subscales consisted of 30 items (Internalization-General, nine items; Information, nine items; Pressures, seven items; Internalization-Athlete, five items). Cronbach's alphas on these subscales were uniformly high: Information (.96), Pressures (.92), Internalization-Athlete (95), Internalization-General (96), and Total subscale (.96). Table 3 contains the correlations between the SATAQ-3 subscales and the measures chosen to evaluate convergent validity (the EDI subscales). These correlations reveal excellent convergence for all subscales, with the ratios generally higher for the Internalization-General subscale. Correlations among the SATAQ-3 factors reveal a moderate overlap. The highest shared variance ($R^2 = .52$) was exhibited by two correlations (Internalization-General and Pressures; Internalization-General and Information). The *r*s for age and body mass index (BMI) indicate a very low association between these two variables and the SATAQ-3 subscales, with only one correlation being significant (SATAQ-3 Pressures and BMI = .18). (Note that Tables 2 and 3 contain the findings for Study 1 and Study 2, to allow direct comparisons. Study 2 is discussed shortly.)

Simultaneous multiple regressions were used to determine the unique ability of the SATAQ-3 subscales to predict variance associated with the disturbance measures. The total IBIS-R score was entered as a predictor to determine if it also contributed unique variance. The overall effect for EDI-DT was significant, $F(4, 155) = 21.24$, $p < .0001$, and a total R^2 of .35 was obtained. The SATAQ-3 Pressures and Internalization (General and Athlete) subscales explained significant variance associated with the EDI-DT scores beyond that accounted for by the SATAQ-3 Information and IBIS-R. The Pressures subscale contributed 7% unique variance (beta = .41, $t = 4.35$, $p < .001$) and the Internalization subscale explained 1% unique variance (beta = .24, $t = 2.09$, $p = .038$). For EDI-BD, the overall effect was also significant, $F(4, 155) = 10.51$, $p < .0001$, and a total R^2 of .21 was obtained. The SATAQ-3 Pressures subscale was the only one to contribute significant variance associated with body dissatisfaction, with 13% of the unique variance explained (beta = .54, $t = 5.22$, $p < .0001$).

Discussion

The results of Study 1 offered support for the conceptual distinctiveness of the SATAQ-3 Internalization subscales from the IBIS-R. In addition, the factor analyses revealed unique subdimensions of a sociocultural influence. In particular, the Pressures subscale emerged as an important correlate of body dissatisfaction and eating disturbance and as an independent predictor in regression equations. Cross-validation of initial scale development findings in an independent sample is strongly recommended to provide a fuller test of the replicability of a subscale's factor structure (e.g., Nunnally & Bernstein, 1994, p. 333). Therefore, Study 2 was conducted to further evaluate the psychometric status of the SATAQ-3.

STUDY 2

Method

Participants

The second sample consisted of 195 undergraduate women from the University of South Florida (age range, 18–22 years). In addition, a comparison sample of 15 inpatients

Table 2. SATAQ-3 factor loadings for studies 1 and 2

Item	Information	Pressures	Internalization-General	Internalization-Athlete
TV programs are an important source of information about fashion and ''being attractive.''	**.96/.73**	−.02/.06	−.10/.10	−.16/−.02
I've felt pressure from TV or magazines to lose weight.	−.00/−.03	**−.94/.86**	−.05/.05	−.07/−.06
I would like my body to look like the people who are on TV.	.03/.08	.22/.03	**.60/.76**	.01/.08
I compare my body to the bodies of TV and movie stars.	.07/−.09	−.11/.06	**.81/.89**	.04/−.05
TV commercials are an important source of information about fashion and ''being attractive.''	**.79/.76**	−.05/−.06	.02/.13	.03/.01
I've felt pressure from TV or magazines to look pretty.	−.06/.07	**.67/.76**	.28/.01	−.00/.01
I would like my body to look like the models who appear in magazines.	−.02/.14	.04/−.03	**.85/.69**	−.08/.05
I compare my appearance to the appearance of TV and movie stars.	−.01/−.02	−.12/.04	**.99/.88**	−.06/−.05
Music videos on TV are an important source of information about fashion and ''being attractive.''	**.79/.75**	.12/−.03	−.05/.08	−.00/−.00
I've felt pressure from TV and magazines to be thin.	−.04/.06	**.99/.88**	−.02/.14	−.07/−.10
I would like my body to look like the people who are in the movies.	.03/.17	.08/−.05	**.80/.77**	−.02/.06
I compare my body to the bodies of people who appear in magazines.	−.00/−.07	.04/.04	**.89/.89**	.00/−.06
Magazine articles are an important source of information about fashion and ''being attractive.''	**.75/.86**	−.04/−.04	.20/.04	−.08/.00
I've felt pressure from TV or magazines to have a perfect body.	−.06/.04	**.86/.79**	.07/.03	−.04/−.01
I wish I looked like the models in music videos.	.04/.05	.03/−.11	**.72/.69**	−.00/.15
I compare my appearance to the appearance of people in magazines.	.07/−.05	.10/.05	**.71/.93**	.06/−.06
Magazine advertisements are an important source of information about fashion and ''being attractive.''	**.90/.87**	−.11/−.05	.01/.06	.10/−.04
I've felt pressure from TV or magazines to diet.	−.05/−.01	**.84/.82**	.05/.03	.04/.01
I wish I looked as athlethic as the people in magazines.	.00/−.01	.17/−.02	.11/.09	**.57/.71**
I compare my body to that of people in ''good shape.''	−.01/.03	.01/−.03	.28/.06	**.49/.85**
Pictures in magazines are an important source of information about fashion and ''being attractive.''	**.90/.87**	.07/.06	−.03/.07	.00/−.04
I've felt pressure from TV or magazines to exercise.	.05/.06	**.68/.81**	−.20/−.11	.35/.15
I wish I looked as athletic as sports stars.	−.08/.01	−.06/−.00	.01/.02	**.89/.76**
I compare my body to that of people who are athletic.	−.03/−.04	−.04/−.00	−.07/−.02	**.95/.93**
Movies are an important source of information about fashion and ''being attractive.''	**.90/.76**	−.01/.10	.02/−.03	.03/.01
I've felt pressure from TV or magazines to change my appearance.	.15/.03	**.91/.72**	−.05/.02	−.09/.08
I try to look like the people on TV.	.13/.00	.16/.13	**.47/.69**	.14/.03
Movies stars an important source of information about fashion and ''being attractive.''	**.80/.85**	.06/.04	.11/−.07	−.02/.02
Famous people are an important source of information about fashion and ''being attractive.''	**.87/.77**	−.03/−.00	.02/−.01	.05/.00
I try to look like sports athletes.	.05/.02	−.05/−.10	−.06/.03	**.83/.83**

Note: SATAQ-3 = Sociocultural Attitudes Towards Appearance Questionnaire-3. Study 1 correlations are to the left of the diagonal. Primary factor loadings in bold.

Table 3. Correlations among SATAQ-3, IBIS-R, and EDI for studies 1 and 2

	SATAQ								
	Internalization-General	Internalization-Athlete	Pressures	Information	Total	IBIS-R Total	EDI-DT Total	EDI-BD Total	BMI
SATAQ-3									
Internalization-General	—								
Internalization-Athlete	.64**/.55**	—							
Pressures	.72**/.54**	.58**/.39**	—						
Information	.72**/.36**	.50**/.23**	.54**/.37**	—					
Total	.92**/.85**	.74**/.66**	.83**/.79**	.85**/.66**	—				
IBIS-R Total	.53**/NA	.37**/NA	.38**/NA	.44**/NA	.51**/NA	—			
EDI-DT Total	.55**/.57**	.38**/.37**	.58**/.54**	.36**/.17*	.54**/.57**	.32**/NA	—		
EDI-BD Total	.32**/.40**	.17*/.31**	.48**/51**	.19*/.22**	.32**/.49**	.21*/NA	.58**/.63**	—	
BMI	−.07/.02	−.06/.07	.18*/.16*	.02/.03	.03/.09	.08/NA	.20**/.21**	.44**/.47**	—
Age	.14/−.01	−.07/.07	−.07/.06	−.01/−.06	−.09/.02	.08/NA	.07/.03	.12/−.00	.26**/.01

Note: SATAQ-3 = Sociocultural Attitudes Towards Appearance Questionnaire -3; IBIS-R = Ideal Body Internalization Scale-Revised; EDI-DT = Eating Disorders Inventory-Drive for Thinnes subscale; EDI-BD = Eating Disorders Inventory-Body Dissatisfaction subscale; BMI = body mass index; NA = not administered. Study 1 correlations are to the left of the diagonal.

*$p < .05$; **$p < 01$.

with eating disorders from the Johns Hopkins Hospital (Baltimore, MD) were evaluated. Seven of these patients met criteria for bulimia nervosa, purging subtype; 1 met criteria for bulimia nervosa, nonpurging subtype; 4 met criteria for anorexia nervosa, purging subtype; and 3 met criteria for anorexia nervosa, restricting subtype as outlined in the 4th ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). Their ages ranged from 17 to 37 years with a mean age of 23.4 years (7.2).

Measures

The measures included the SATAQ-3 and the EDI-DT and EDI-BD subscales.

Procedure and Analyses

Students completed the measures in classrooms and received extra course credit. Patients completed the measures as part of the clinical assessment. (Unfortunately, a copy error deleted two of the five Internalization-Athlete items for the patient testing. Therefore, this subscale was not included in the analyses.) As in Study 1, a principal axis factor analysis and Cronbach's alpha were used to evaluate the scale. A four-factor solution, with promax rotation, using the rotated pattern matrix was used to evaluate the factor structure. (Patient data were not included in the factor analysis.)

Results

Findings from the factor analysis on the second sample are contained in Table 2. All scales replicated cleanly, indicated by high loadings on the primary factor and very low cross-loadings. Eigenvalues were 16.9, 3.0, 1.9, and 1.5 and the cumulative variance was 75%. Alphas included the following values: Information (.94), Pressures (.94), Internalization-Athlete (.89), Internalization-General (.92), and Total scale score (.94). Convergence correlations were also high (Table 3). The interfactor correlations are somewhat lower in Study 2. The highest correlation of .54 (Pressures and Internalization-General) indicates a moderate degree of overlap. Simultaneous regressions were conducted again to determine the unique predictive nature of the SATAQ-3 subscales. The overall effect for EDI-DT was significant, $F(3,190) = 43.44$, $p < .0001$, and a total R^2 of .41 was obtained. All three subscales contributed unique variance: Internalization (General and Athlete; beta = .41, $t = 6.02$, $p < .0001$, 11% unique variance), Pressures (beta = .37, $t = 5.33$, $p < .0001$, 9% unique variance), and Information (beta = $-.12$, $t = -1.99$, $p = .048$, 1% unique variance). For EDI-BD, the overall effect was also significant, $F(3,192) = 25.38$, $p < .0001$, and a total R^2 of .29 was obtained. The Pressures subscale contributed 11% significant variance beyond that accounted for by Internalization (General and Athlete) and Information (beta = .402, $t = 5.34$, $p < .0001$).

To further evaluate the construct validity of the SATAQ-3, we conducted analyses to discern known groups validity. First, using norms for the mean score for eating-disturbed and control samples based on Garner (1991), we merged the nonpatient data from Studies 1 and 2 to create a sample of 33 participants who met normative criteria for an eating-disturbed sample. with EDI-DT scale and EDI-BD subscale scores above the means of 14.5 and 16.6, respectively. A second sample of 15 eating-disordered inpatients was described previously. These samples were compared with a control sample of 160 participants from Studies 1 and 2 who met a very conservative criterion of scoring below the mean on the DT (5.5) and BD (12.2) measures (Garner, 1991, p. 20). One-way analyses of variance (ANOVAs) were conducted to determine if there were significant differences

on the Information, Pressures, and Internalization-General subscales among controls, eating-disturbed, and eating-disordered samples. A Bonferroni correction was used to control for Type I error, reducing the p value needed for significance to .017 (.05/3).

There was a significant main effect for Information, $F(2, 197) = 7.33$, $p < .01$, $\eta^2 = .04$. Fisher's LSD test indicated that the eating-disturbed sample ($M = 36.28$) had significantly higher levels than the eating-disordered patients ($M = 31.13$) and the controls ($M = 28.67$). A significant main effect was also found for Pressures, $F(2, 205) = 43.12$, $p < .0001$, $\eta^2 = .17$. Fisher's LSD test revealed that the eating-disturbed sample ($M = 39.06$) and the eating-disordered patients ($M = 37.0$) reported significantly higher scores on the Pressures subscale than the control group ($M = 17.98$). There was also a significant main effect for Internalization-General, $F(2, 205) = 59.25$, $p < .0001$, $\eta^2 = .22$, with the eating-disturbed sample ($M = 39.06$) and eating-disordered patients ($M = 37.0$) reporting significantly higher levels than the control subjects ($M = 23.76$). Because the Internalization-Athlete subscale was not administered to the eating-disordered patients, a t test was performed to analyze for differences between the control and eating-disturbed samples on this subscale. The t test was significant, $t(190) = 4.46$, $p < .001$, $\eta^2 = .09$, indicating that the eating-disturbed sample endorsed higher levels ($M = 18.85$) than the control sample ($M = 14.74$).

Discussion

Risk factor work is extremely important in the determination of potential avenues for intervention or prevention. Media influences have received a great deal of attention as putative causal factors. One specific dimension of a media influence—internalization of images and messages—appears to meet criteria for a causal risk factor (Thompson & Stice, 2001). Previous psychometric work in this area has been lacking because of the limited evaluation of a variety of potential media influence factors and the lack of a specific examination of the relationship between two widely used indices of thin-ideal internalization. Findings from the current studies indicated that there was virtually no overlap between the SATAQ-3 Internalization subscale and IBIS-R items. Rather, there was a moderate relationship between the IBIS-R items and items reflective of an awareness of societal attitudes regarding appearance.

Results from the current study also indicate the potential importance of dimensions of a media influence that assess the role of information gleaned from the media as well as direct pressures generated from the media regarding meeting appearance standards. Each of these subscales, along with the two internalization factors (general, athlete), showed good convergent validity. In addition, samples of eating-disturbed and eating-disordered individuals scored higher on the Internalization and Pressures subscales than control samples.

It is noteworthy that the controls and patients did not differ on Information scores. Patients also scored less than the eating-disturbed sample. Perhaps, the inpatient status of these individuals, who were undergoing treatment at the time of administration, might explain this finding. It may be that treatment addressed the role of the media in perpetuating dieting, leading to a reduction in the patients' endorsement of media as an important source of information.Internalization of media and felt pressures to respond to media messages may be more resistant, needing longer-term or specific media-countering strategies, such as dissonance reduction methods (Stice & Hoffman, 2004). It is also noteworthy that the convergence correlations between the Internalization subscales and the restricting measure are higher than those for Internalization and body dissatisfaction.

Clearly, more work needs to be undertaken to document the relative contribution of media influences as distinct from the variety of other risk factors, such as peer and parental influences (van den Berg, Thompson, Brandon, & Coovert, 2002). Our preliminary work with adolescents indicates that media influences predict variance associated with eating and body image problems beyond those associated with peer and parental influences (Shroff & Thompson, 2003; Keery & Thompson, 2003). It might also be useful to conceptualize media as a type of overarching influence, perhaps playing a formative role in the adoption of idealized standards of appearance by parents, peers, and other influential social agents (teachers, coaches). Research designed to evaluate how early media internalization, information, and/or pressures lead an individual to communicate negative comments or messages to other individuals regarding appearance would be a useful test of the role of media as a risk factor.

Exploring the connections between the SATAQ-3 subscales and dimensions of body image other than dissatisfaction, such as body image investment and appearance-related schemas, is also a potentially fruitful avenue of research. For instance, Cash, Melnyk, and Hrabosky (in press) recently found that the Internalization subscale of the SATAQ-3 was more highly associated with body image investment than dissatisfaction.

It is possible that the SATAQ-3 may be helpful in identifying groups at greater risk for developing eating and body image-related disturbances. Given the strong evidence that the internalization dimension is predictive of the onset of eating disturbances and responsive to intervention techniques (Levine & Harrison, 2004; Stice & Hoffman, 2004; Thompson & Stice, 2001), it would appear relevant to evaluate these new dimensions of athlete-internalization, pressures, and information in future work. Future studies might also examine the SATAQ-3 in terms of its sensitivity to treatment change and its influences on specific dieting, bulimic, or body image behaviors. Another avenue of future work might address a slight modification to the scale to include reverse-keyed items. All of the items on the current version are worded in a positive direction.[1] Such a modification would improve the detection of response bias on the part of some participants. Further work on the SATAQ-3 measure with diverse samples differing in age, gender, and ethnicity is also indicated.

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[1]Subsequent to the acceptance of this article, we collected additional data to address this limitation. Specifically, we reverse-keyed 8 of the 30 items and had 100 females (ages 18–25) complete the measures. Alphas were once again excellent: Information (.91), Pressures (.91), Internalization-General (.92), and Internalization-Athlete (.87). This slight revision is perhaps preferable because response bias can be assessed. Contact the author for more information.

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