



Published in final edited form as:

Int J Eat Disord. 2018 April ; 51(4): 363–367. doi:10.1002/eat.22839.

On the Measurement of Thin-Ideal Internalization: Implications for Interpretation of Risk Factors and Treatment Outcome in Eating Disorders Research

J. Kevin Thompson, Ph.D.,

Department of Psychology, University of South Florida

Lauren M. Schaefer, Ph.D., and

Department of Psychology, University of South Florida

Robert F. Dedrick, Ph.D.

Department of Educational and Psychological Studies, University of South Florida

Abstract

Objective—Although the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) and Ideal Body Stereotype Scale (IBSS) are used interchangeably to assess thin ideal internalization, limited work has examined the assumption that the two measures index the same construct. The current study utilized confirmatory factor analysis to examine whether these measures capture a single construct (one-factor), two constructs (two-factor), or both shared and unique constructs (bifactor).

Method—The SATAQ-4R-Internalization: Thin/Low Body Fat subscale and IBSS-Revised were administered to 1,114 college females.

Results—A bifactor model provided the best fit to the data. Further, the SATAQ-4R was more strongly related to disordered eating and body satisfaction than the IBSS-R.

Discussion—Results indicate that the two most commonly used measures of internalization capture both shared and unique constructs. While both measures appear to contribute to the assessment of a global internalization factor, the SATAQ-4R may be better suited to assess personal acceptance of and desire to achieve a thin body, while the IBSS-R may be better suited to assess an awareness or acknowledgement of broader sociocultural ideals (e.g., toned, shapely bodies). Continued psychometric investigation of the scales is recommended in order to ensure targeted assessment of the intended constructs.

Internalization of appearance ideals is defined as “the extent to which an individual ‘buys into’ socially defined ideals of attractiveness.”^{1–2} The construct has received an intensive amount of research in the last 20 years, with evidence indicating that internalization of the thin ideal is a causal risk factor for the onset and maintenance of eating disorders.² Indeed, the construct forms a central role in two of the predominant sociocultural theories of

Correspondence concerning this article should be addressed to J. Kevin Thompson, Department of Psychology, University of South Florida, 4202 E. Fowler Avenue, PCD4118G, Tampa, FL, 33620, JKThompson@usf.edu.
Lauren M. Schaefer is now at Neuropsychiatric Research Institute, Fargo, ND.

disordered eating, Stice's Dual Pathway Model³ and Thompson's Tripartite Model,¹ and has been hypothesized as the central change agent produced by dissonance-based interventions for body image and eating disturbance.⁴

Two primary measures are used to assess appearance ideal internalization: the Ideal Body Stereotype Scale (IBSS) and its revision (IBSS-R),⁵ and the internalization scales of the original Sociocultural Attitudes Towards Appearance Scale and its four revisions (SATAQ-R, SATAQ-3, SATAQ-4, and SATAQ-4R).⁶⁻¹⁰ Despite the ubiquity of their use and a tendency for researchers to use the scales interchangeably, only one study has directly tested the assumption that the IBSS and SATAQ assess the same construct. Using exploratory factor analysis (EFA), Thompson and colleagues⁸ found that the two scales did not form a unitary factor, as would be expected if the scales assess the same construct. Instead, SATAQ-3 internalization items formed one factor, while IBSS-R items loaded onto a separate factor, along with the SATAQ-3 items assessing *awareness* of appearance ideals. In social psychology, the term "injunctive norm" refers to one's awareness of socially-approved behaviors.¹¹ While individuals may adhere to injunctive norms to avoid social repercussions, *internalization* of the norm is thought to engender greater personal psychological distress (e.g., guilt) when the norm is violated.¹² Seen from this perspective, awareness of appearance ideals may promote behaviors aimed at achieving the ideal, but be less closely associated with the emotional and cognitive distress inherent in body image and eating disturbance than internalization of those ideals. Consistent with this view, Thompson and colleagues found that SATAQ-3 internalization items correlated more strongly with drive for thinness and body dissatisfaction than IBSS-R items.⁸

Importantly, however, EFA is not able to directly test the appropriateness of different possible factor solutions or examine possible method effects (e.g., shared variance within a measure attributable to similar item wording, format, and scaling). Therefore, the current study utilized confirmatory factor analysis (CFA) to provide a more rigorous evaluation of the distinctiveness of the IBSS-R and SATAQ-4R Internalization: Thin/Low Body Fat subscale. Specifically, we evaluated a one-factor model (all items load onto one factor), a two-factor model (SATAQ-4R and IBSS-R items load onto two separate factors), and a bifactor model (SATAQ-4R and IBSS-R items load directly onto two separate first-order factors and directly onto a first-order general factor). The one-factor model asserts that SATAQ-4R and IBSS-R items assess a unitary general construct, while the two-factor model asserts that the scales assess two specific but related constructs. The bifactor model contains general *and* specific constructs (modeled as orthogonal factors), allowing researchers to parse out shared and unique score variance in order to determine if significant unique variance in each scale remains once the general shared variance is removed.¹³ In addition, we sought to model and therefore reduce the influence of possible method effects by introducing correlated error terms suggested through CFA.

Based on previous work suggesting that the SATAQ and IBSS capture two separate factors, namely internalization and awareness,⁸ we hypothesized that a one-factor model would provide poor fit to the data. Although the two-factor and bifactor models were expected to demonstrate improved fit relative to the one-factor model, no hypotheses were forwarded with regard to the optimal fitting model. Finally, we examined the construct validity of these

two measures by assessing associations with disordered eating and body satisfaction. Consistent with sociocultural theories of disordered eating and sociological perspectives of social norms,¹² measures of *internalization* of the thin ideal were expected to be more highly related to body image and eating pathology than *awareness* of appearance norms.

Method

Participants

Participants were 1,114 female undergraduates ranging in age from 18 to 30 ($M = 20.54$, $SD = 2.48$; 54% Caucasian, 14.9% Hispanic, 14.8% Black, 6.2% Asian, 0.3% American Indian or Alaskan Native, 0.1% Native Hawaiian or Pacific Islander, 9.5% as multiracial or other). Average body mass index (kg/m^2) was 23.62 ($SD = 4.85$) and was calculated based on participants' self-reported height and weight.

Measures

Four measures were used: 4-item Internalization: Thin/Low Body Fat subscale of the female version of the SATAQ-4R,¹⁰ which assesses an individual's desire for a thin physique; 6-item Ideal Body Stereotype Scale-Revised,⁴ which assesses the respondent's acknowledgement that women with specific physical attributes are attractive; 28-item Eating Disorder Examination – Questionnaire,¹⁴ which yields four subscales (Restraint, Shape Concern, Weight Concern, Eating Concern) that assess disordered eating attitudes and behaviors over the last 28 days; and the 7-item Multidimensional Body-Self Relations Questionnaire: Appearance Evaluation subscale,¹⁵ which assesses overall appearance satisfaction.

Procedure

Participants were recruited through the university's undergraduate research pool. Informed consent was conducted electronically and measures were completed online. Participants received extra course credit upon completion.

Data Analyses

One-factor, two-factor, and bifactor models were estimated using CFA. Model fit was evaluated using the comparative fit index (CFI), Tucker-Lewis index, (TLI), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), and chi-square. Guidelines suggest that CFI and TLI values greater than .90 and .95, and RMSEA values less than .08 and .06, indicate adequate and excellent fit, respectively.¹⁶ Values of SRMR less than .08 suggest adequate fit.¹⁶ Although chi-square is often significant with larger sample sizes, smaller chi-square values indicate improved fit.^{17–18} Chi-square difference testing was utilized to identify statistically significant improvements in model fit. Modification indices (MIs) were used to examine sources of model misfit. In view of the problems associated with exploratory, post hoc model modification,¹⁹ only correlated error terms that were conceptually meaningful were added to the model. For each model, estimates of score reliability (omega coefficients) were calculated based on the results of the CFAs.²⁰ Following identification of the optimal-fitting model, correlations between the SATAQ-4R and IBSS-R and criterion variables (MBSRQ-AE and EDEQ

subscales) were examined. All analyses were conducted using maximum likelihood estimation in Mplus 7.4.

Results

Table 1 presents the CFA results. Although the two-factor model provided better fit compared with the one-factor model, $\chi^2(1, N = 1,094) = 860.54, p < .05$, neither model demonstrated adequate fit. Examination of the two-factor model and associated MIs revealed correlated errors between two items pairs with similar wording (i.e., IBSS-R item 3 and IBSS-R item 6; SATAQ-4R item 3 and IBSS-R item 4). Inclusion of these parameters significantly improved model fit, $\chi^2(2, N = 1,094) = 338.08, p < .05$, with adequate fit achieved according to the CFI, TLI, and SRMR. The standardized factor loadings ranged from .58 to .86 ($M = .73$) for SATAQ-4R and from .45 to .87 ($M = .67$) for IBSS-R 4. Model-based score reliability (omega) computed using the formula presented in Table 2 for the values obtained from the two-factor model with two correlated errors was .82 for SATAQ-4R and .84 for IBSS-R.

The baseline bifactor model demonstrated improved fit compared with the baseline two-factor model, $\chi^2(9, N = 1,094) = 258.83, p < .05$, but worse fit compared with the two-factor model incorporating two correlated errors, $\chi^2(7, N = 1,094) = 79.25, p < .05$. The addition of the same two correlated errors to the bifactor model resulted in excellent fit according to the CFI, TLI, RMSEA, and SRMR, and significantly improved fit compared with the two-factor model incorporating two correlated errors, $\chi^2(9, N = 1,094) = 262.34, p < .05$. Results from the bifactor model indicated a well-defined global factor characterized by strong loadings ($M = .51$, range = .08–.83), as well as meaningful levels of specificity for the SATAQ-4R ($M = .49$, range = .33–.65) and IBSS-R ($M = .46$, range = .22–.72). Model-based score reliability (omega hierarchical) for the general and two specific factors (SATAQ-4R and IBSS-R) were .62, .37, and .39, respectively, which are similar to those reported in a review of 50 recent applications of the bifactor model to psychological measures.²⁰ Overall, results suggest the presence of a general construct, as well as two unique underlying factors.^a

Next, we added one criterion variable (MBSRQ-AE and EDEQ subscales) at a time to the bifactor model to evaluate the correlations between the general and specific factors and the criterion variables. When general variance was removed from the specific factors, SATAQ-4R and IBSS-R factors continued to correlate with the criterion variables (see Table 2). Further, SATAQ-4R scores consistently demonstrated stronger correlations with the MBSRQ-AE and EDEQ subscales ($M = .37$, moderate²¹) compared with the IBSS-R ($M = .15$, small²¹).

^aGiven debate regarding the most appropriate estimation method for Likert-scale ordinal data, each model was also examined using robust maximum likelihood and weighted least squares estimation methods. These approaches resulted in only minimal changes to CFI, TLI, SRMR, RMSEA, and factor loadings (all differences < .05) and did not impact conclusions regarding the best-fitting model. Results from these analyses are available from the corresponding author.

Discussion

The current study suggests that the two predominant measures of internalization – the SATAQ and IBSS – may capture both a shared general factor, as well as unique constructs. Factor loadings for the bifactor model provide important information about individual items that contribute most strongly to the general factor and items that contribute more strongly to the unique variance for each scale. Although the SATAQ-4R items demonstrated fairly equivalent loadings onto the shared and specific factors, items 2 (“I think a lot about looking thin”) and 4 (“I think a lot about having very little body fat”) had the strongest loadings onto the specific factor, suggesting that this scale may uniquely capture continual cognitive engagement with the personal pursuit of thinness. In contrast, IBSS-R items 2 (“Women who are in shape are more attractive”), 4 (“Women with toned ‘lean’ bodies are more attractive”), and 5 (“Shapely women are more attractive”) contributed most strongly to its specific factor. Thus, IBSS-R items appear to capture a less personalized acknowledgement that certain body types are more attractive. Moreover, IBSS-R items may more directly assess a belief that toned, shapely, or in shape bodies are desirable, in contrast with bodies that are thin or have low body fat. Supporting the view that the SATAQ-4R may more closely assess internalization of thinness while the IBSS-R may more closely assess awareness of sociocultural ideals, when shared variance was removed in the bifactor model, the SATAQ-4R was more strongly associated with body satisfaction and disordered eating compared to the IBSS-R. This is consistent with social psychological perspectives suggesting that internalization of appearance ideals may be more closely associated with body image and eating disturbance than awareness of appearance norms.¹¹ Moreover, the SATAQ-4R’s focus on thinness may render it a more appropriate tool for assessing pursuit of the thin ideal, while the IBSS-R’s focus on shapely bodies may render it more appropriate for assessing endorsement of broader appearance ideals.

Overall, the current study suggests that although the SATAQ-4R and IBSS-R each contribute to the assessment of appearance ideal internalization, they are not interchangeable measures. While both scales tap a shared general construct, each measure is associated with unique and reliable variance that is unexplained by the general factor. In addition, the SATAQ-4R factor is more strongly associated with theoretically related outcomes than the IBSS-R. Thus, we suggest that the SATAQ-4R may provide a slightly more targeted assessment of the personal pursuit of thinness (i.e., thin ideal internalization), while the IBSS-R may more directly assess a less personalized acknowledgement or awareness of broader cultural appearance ideals (i.e., appearance ideal awareness). Importantly, this distinction is not merely an esoteric matter of measurement. Few theorized risk factors have received the amount of research attention or held the degree of treatment promise as thin ideal internalization. Thus, the careful selection of measures that reflect the intended construct is critical for research seeking to estimate the significance of internalization in the etiology of disordered eating, and its importance in eating disorder interventions. Accordingly, we recommend continued evaluation of the potential for both shared and unique constructs assessed by the SATAQ and IBSS. We further recommend that investigators either utilize the two measures in combination in order to fully assess all aspects of internalization, or carefully select a single

measure best suited to the construct of interest (e.g., personal pursuit of thinness, awareness of appearance ideals).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This work was supported by the National Institute of Mental Health (grant number T32 MH082761).

References

1. Thompson, JK., Heinberg, LJ., Altabe, M., Tantleff-Dunn, S. *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington DC: American Psychological Association; 1999.
2. Thompson JK, Stice E. Thin-ideal internalization: mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Curr Dir Psychol Sci*. 2001; 10:181–183.
3. Stice E, Nemeroff C, Shaw HE. Test of the dual pathway model of bulimia nervosa: Evidence for dietary restraint and affect regulation mechanisms. *J Soc Clin Psychol*. 1996; 15(3):340–363.
4. Stice E, Rohde P, Butryn M, Menke KS, Marti N. Randomized controlled pilot trial of a novel dissonance-based group treatment for eating disorders. *Behavior Research and Therapy*. 2016; 65:67–75.
5. Stice E, Marti CN, Spoor S, Presnell K, Shaw H. Dissonance and healthy weight eating disorder prevention programs: Long-term effects from a randomized efficacy trial. *J Consult Clin Psych*. 2008; 76(2):329–340.
6. Heinberg LJ, Thompson JK, Stormer S. Development and validation of the Sociocultural Attitude Towards Appearance Questionnaire (SATAQ). *Int J Eat Disorder*. 1995; 17:81–89.
7. Cusumano DL, Thompson JK. Body image and body shape ideals in magazines: Exposure, awareness, and internalization. *Sex Roles*. 1997; 37:701–721.
8. Thompson JK, van den Berg P, Roehrig M, Guarda AS, Heinberg LJ. The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and validation. *Int J Eat Disorder*. 2004; 35:293–304.
9. Schaefer LM, Burke NL, Thompson JK, Dedrick RF, Heinberg LJ, Calogero RM, et al. Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). *Psychol Assessment*. 2015; 27:54–67.
10. Schaefer LM, Harriger JA, Heinberg LJ, Soderberg T, Thompson JK. Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire-4-Revised (SATAQ-4R). *Int J Eat Disorder*. 2016; 50(2):104–117.
11. Cialdini RB, Kallgren CA, Reno RR. A focus theory of normative conduct: A theoretical refinement and re-evaluation of the role of norms in human behaviors. *J Pers Social Psychol*. 1990; 58:1015–1026.
12. Etzioni A. Social norms: Internalization, persuasion, and history. *Law Soc Rev*. 2000; 34(1):157–178.
13. Brunner M, Nagy G, Wilhelm O. A tutorial on hierarchically structured constructs. *J Pers*. 2011; 80:796–846.
14. Fairburn, CG., Beglin, SJ. Eating Disorder Examination Questionnaire (EDE-Q 6.0). In: Fairburn, CG., editor. *Cognitive behavior therapy and eating disorders*. New York: Guilford Press; 2008. p. 309-313.
15. Cash, TF. *The Multidimensional Body-Self Relations Questionnaire user's manual*. Available from the author at www.body-images.com
16. Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Modeling*. 1999; 6:1–55.

17. Tabachnick, BG., Fidell, LS. Using multivariate statistics. Boston, MA: Pearson Education; 2007.
18. Morin AJS, Arens AK, Marsh HW. A bifactor exploratory structural equation modeling framework for the identification of distinct sources of construct-relevant and psychometric multidimensionality. *Struct Equ Modeling*. 2015; 23:116–139.
19. Brown, TA. Confirmatory factor analysis for applied research. New York, NY: Guilford Press; 2015.
20. Rodriguez A, Reise SP, Haviland MG. Applying bifactor statistical indices in the evaluation of psychological measures. *J Pers Assess*. 2016; 98:223–237. [PubMed: 26514921]
21. Cohen, J. Statistical power analysis for the behavioral sciences. 2. Hillsdale, NJ: Erlbaum; 1988.
22. Rodriguez A, Reise SP, Haviland MG. Evaluating bifactor models: Calculating and interpreting statistical. *Psychol Methods*. 2016; 21:137–150. [PubMed: 26523435]

Table 1
CFA Fit Indices and Standardized Parameter Estimates (Standard Error) for Estimated Models (n = 1094)

Item	One-Factor		Two-Factor		Two-Factor ^{a,b}		Bifactor		Bifactor ^d	
	General Factor Loading	Uniqueness	Scale Factor Loading	Uniqueness	Scale Factor Loading	Uniqueness	General Factor Loading	Scale Factor Loading	General Factor Loading	Uniqueness
CFI	.69	.86	.93	.92	.98					
TLI	.60	.82	.91	.85	.97					
SRMR	.11	.07	.06	.05	0.02					
RMSEA ^c	.20 (.19, .21)	.13 (.13, .14)	.10 (.09, .11)	.12 (.11, .13)	.06 (.05, .07)					
χ^2 (df)	1563.49 (35)	702.94 (34)	364.87 (32)	444.12 (25)	102.53 (23)					

Item	One-Factor		Two-Factor ^d		Bifactor ^d	
	General Factor Loading	Uniqueness	Scale Factor Loading	Uniqueness	General Factor Loading	Uniqueness
SATAQ-4R 1. I want my body to look very thin.	.53 (.03)	.72 (.03)	.74 (.02)	.44 (.03)	.58 (.04)	.46 (.04)
SATAQ-4R 2. I think a lot about looking thin.	.56 (.02)	.69 (.03)	.86 (.01)	.27 (.02)	.59 (.03)	.65 (.04)
SATAQ-4R 3. I want my body to look very lean.	.49 (.03)	.76 (.03)	.58 (.02)	.66 (.03)	.45 (.03)	.33 (.04)
SATAQ-4R 4. I think a lot about having very little body fat.	.52 (.03)	.74 (.03)	.72 (.02)	.49 (.03)	.49 (.04)	.50 (.04)
IBSS-R 1. Slender women are more attractive.	.77 (.02)	.40 (.02)	.72 (.02)	.48 (.03)	.83 (.04)	.21 (.06)
IBSS-R 2. Women who are in shape are more attractive.	.79 (.02)	.37 (.02)	.86 (.01)	.27 (.02)	.58 (.04)	.64 (.04)
IBSS-R 3. Tall women are more attractive.	.57 (.02)	.68 (.03)	.51 (.03)	.74 (.03)	.45 (.04)	.27 (.05)
IBSS-R 4. Women with toned (lean) bodies are more attractive.	.82 (.01)	.33 (.02)	.87 (.01)	.25 (.02)	.58 (.04)	.65 (.03)
IBSS-R 5. Shapely women are more attractive.	.38 (.03)	.86 (.02)	.45 (.03)	.80 (.02)	.08 (.05)	.60 (.03)
IBSS-R 6. Women with long legs are more attractive.	.66 (.02)	.57 (.03)	.62 (.02)	.61 (.03)	.49 (.04)	.39 (.04)

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; SATAQ-4R = SATAQ-4R-Female Thin/Low Body; IBSS-R = Ideal Body Stereotype Scale-Revised.

^aTwo correlated error terms were added to the model: IBSS-R 3 (Tall women are more attractive) and IBSS-R 6 (Women with long legs are more attractive); SATAQ-4R 3 (I want my body to look very lean) and IBSS-R 4 (Women with toned [lean] bodies are more attractive).

^bCorrelation between the two factors is .54 (standard error = .03; $p < .001$).

^cNumbers in parentheses represent the 90% confidence interval for the RMSEA.

Table 2

Correlations Between Criterion Variables (Appearance Satisfaction and Disordered Eating) and SATAQ-4R Internalization: Thin/Low Body Fat Subscale and Ideal Body Stereotype Scale-Revised (IBSS-R) Using a Bifactor Model (n = 1094)

Criterion Variable	Bifactor Model		
	General $\omega_{\text{Hierarchical}} = .62$	SATAQ-4R $\omega_{\text{Hierarchical Subscale}} = .37$	IBSS-R $\omega_{\text{Hierarchical Subscale}} = .39$
Appearance Satisfaction ^a $\omega = .91$	-.36 *** (.04)	-.30 *** (.04)	-.06 ns (.04)
Restraint ^b $\omega = .85$	.35 *** (.04)	.36 *** (.04)	.15 *** (.04)
Eating Concern ^c $\omega = .84$	.40 *** (.04)	.34 *** (.04)	.09* (.04)
Shape Concern ^d $\omega = .92$	.43 *** (.04)	.43 *** (.04)	.24 *** (.04)
Weight Concern ^e $\omega = .88$	.40 *** (.04)	.40 *** (.04)	.23 *** (.04)

Note. Composite reliability or omega (ω) was computed for the criterion variables from the one-factor confirmatory factor analysis model for each scale.

$$\omega = \frac{(\sum_{i=1}^p \lambda_{ij})^2}{(\sum_{i=1}^p \lambda_{ij})^2 + \sum_{i=1}^p \theta_{ii}}$$

where λ_{ij} is the standardized factor loading of item i on factor j and θ is the standardized unique variance of the item.¹³

$$\omega_{\text{Hierarchical}} = \frac{(\sum \lambda_{\text{General}})^2}{(\sum \lambda_{\text{General}})^2 + (\sum \lambda_{\text{SATAQ}})^2 + (\sum \lambda_{\text{IBSS}})^2 + \sum (1 - h^2)}$$

$$\omega_{\text{Hierarchical Subscale for SATAQ}} = \frac{(\sum \lambda_{\text{SATAQ}})^2}{(\sum \lambda_{\text{General}})^2 + (\sum \lambda_{\text{SATAQ}})^2 + \sum (1 - h^2)}$$

The standardized parameter estimates for the four SATAQ items (general and specific factor loadings and unique variance) are used in the computations.

$$\omega_{\text{Hierarchical Subscale for IBSS}} = \frac{(\sum \lambda_{\text{IBSS}})^2}{(\sum \lambda_{\text{General}})^2 + (\sum \lambda_{\text{IBSS}})^2 + \sum (1 - h^2)}$$

The standardized parameter estimates for the six IBSS items (general and specific factor loadings and unique variance) are used in the computations.²²

^a A parameter estimating the correlation between the errors for MBSRQ-AE 1 and MBSRQ-AE 3 was added to the model.

^b A parameter estimating the correlation between the errors for EDEQ 2 and EDEQ 5 was added to the model.

^c A parameter estimating the correlation between the errors for EDEQ 19 and EDEQ 21 was added to the model.

^d A parameter estimating the correlation between the errors for EDEQ 27 and EDEQ 28 was added to the model.

^e A parameter estimating the correlation between the errors for EDEQ 8 and EDEQ 25 was added to the model.

*
 $p < .05$.

 $p < .001$.

ns = not statistically signifi

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript