Biopsychosocial correlates of dietary intent in middle school girls

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ABSTRACT

Adolescent girls commonly engage in weight management and dietary restriction with the hopes of changing their bodies to more closely approximate social body ideals. The purpose of this study was to examine biopsychosocial factors that predict dietary restraint. Participants ($n = 774$, $M_{age} = 12.38$) completed measures of dietary intent, pubertal status, sociocultural pressures, body comparison, internalization, body dissatisfaction, social support, and general self-esteem. Height, weight, and cardiorespiratory fitness were objectively measured. Pressures to lose weight and gain muscle mass, internalization of social body ideals, and friend support predicted higher levels of dietary intent; cardiorespiratory fitness predicted lower levels of dietary intent. Girls who experience pressure, adopt social body ideals as their own, and experience social support from friends may be at increased risk for disturbed eating attitudes and behaviors. Fitness may offer a protective effect against psychological and social risk factors. Additional research is needed to establish the causal nature of these relationships and determine effective methods for reducing disordered eating risk among adolescent girls.

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1. Introduction

Over 50% of adolescent girls engage in dieting (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011), which is associated with negative health outcomes, including depression and disordered eating (Crow, Eisenberg, Story, & Neumark-Sztainer, 2006). Thus, it is important to determine biopsychosocial variables that may increase (or decrease) risk. Biopsychosocial predictors of dieting and dietary intent include BMI, social pressures about losing weight and gaining muscle, internalization of sociocultural values regarding weight/appearance, physical appearance comparisons, body dissatisfaction, and low self-esteem (Halliwell & Harvey, 2006; Ricciardelli, McCabe, Holt, & Finemore, 2003).

BMI is positively associated with dietary restriction (Halliwell & Harvey, 2006; Ricciardelli et al., 2003); however, a substantial number of non-overweight girls also engage, or intend to engage, in dietary restriction (Crow et al., 2006). Pressures to attain and maintain an idealized physique can include perceived expectations of weight loss, exercising, and gains in musculature and are associated with weight management strategies (McCabe & Ricciardelli, 2005; McCabe, Ricciardelli, & Holt, 2010). Internalization of the thin ideal, social comparison, and body dissatisfaction also are related to heightened risk of dieting and dietary restraint (e.g., Rodgers, Paxton, & McLean, 2014; Vartanian & Hopkinson, 2010). Support for these predictors of disordered eating behaviors is strong; however, there has been limited

study of psychological and physical variables that may protect against pathogenic approaches to eating.

Three potential protective factors are social support (Houldcroft, Haycraft, & Farrow, 2014; Huon, Lim, Walton, Hayne, & Gunewardene, 2000), cardiorespiratory fitness (CRF; Petrie, Greenleaf, & Martin, 2010), and self-esteem (Barker & Bornstein, 2010). Positive family social support is associated indirectly with dietary restriction via lower levels of vulnerable disposition and higher levels of protective skills and modeling of dieting behaviors (Huon et al., 2000). CRF is associated with physical and mental health (e.g., Greenleaf, Petrie, & Martin, 2010; Moliner-Urdiales et al., 2011; Rieck, Jackson, Martin, Petrie, & Greenleaf, 2013). Through high levels of CRF, girls' self-concept, self-esteem, and body satisfaction are likely to be elevated, which could protect against social pressures. Indeed, self-esteem appears to be associated with lower levels of dietary restraint and less frequent dieting (Barker & Bornstein, 2010). To date, there has been limited research examining the extent to which social support, general self-esteem, and CRF are associated with dietary restraint, particularly considered simultaneously with psychosocial risk factors.

Our purpose was to determine the relative strength of association of biopsychosocial variables in predicting dietary restraint, after controlling for physical size (i.e., BMI), race/ethnicity, socioeconomic status (SES), and pubertal development. We hypothesized that pressures, social comparisons, internalization, and body dissatisfaction would be related to higher dietary restraint, whereas social support, cardiorespiratory fitness, and self-esteem would be associated with lower intention to restrict.

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2. Method

2.1. Participants

Females ($n = 774$; $M_{age} = 12.38$, $SD = .98$; $M_{BMI} = 21.19$ kg/m^2, $SD = 4.81$) from six suburban Texas middle schools participated. Girls, in 6th (38.8%), 7th (35.5%), or 8th (25.7%) grades, were White/NonHispanic (61.1%), Hispanic/Latina (26.9%), or Black/NonHispanic (12.0%). Based on free or reduced lunch federal guidelines, 28.2% were low, 4.5% middle, and 63% high SES.

2.2. Measures

Internal consistency and scale information is provided in Table 1.

2.2.1. Dietary restraint

The 9-item Dietary Intent Scale (DIS; Stice, 1998) assesses intention to restrain eating and reduce caloric intake. Items, such as "I take small helpings in an effort to control my weight," were rated from 1 to 5. Higher scores indicate greater intention to restrict food intake.

2.2.2. Body composition

The FITNESSGRAM® (Cooper Institute, 2007) assesses body composition through body mass index (BMI). A Seca digital scale (Model 882) was used to measure weight and recorded to nearest 0.1 lb; BMI was computed within the FITNESSGRAM® program.

2.2.3. Pubertal status

The 5-item Pubertal Development Scale (PDS; Peterson, Crockett, Richards, & Boxer, 1988) measures physical, pubertal development. Physical change statements, such as "Would you say your growth in height…," were rated on degree of completeness, from 1 to 4. Higher scores indicate greater development.

2.2.4. Sociocultural pressures

Based on past research (e.g., McCabe & Ricciardelli, 2003), our 12-item Perceived Sociocultural Pressures Scale (PSPS) assesses pressures experienced in three areas — to lose weight, have bigger muscles, and exercise. Pressures were rated from 1 to 5. Higher scores indicate more perceived pressure.

2.2.5. Social body comparison

The 5-item Physical Appearance Comparison Scale (PACS; Thompson, Heinberg, & Tantleff, 1991) assesses individuals' tendency to compare appearance and body size/shape to others. We slightly modified the scale to be more appropriate for a young adolescent sample. Each item was rated from 1 to 5. Higher scores indicate a stronger tendency to socially compare oneself to others.

2.2.6. Internalization

The 9-item Internalization-General scale from the Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) assesses internalization of societal messages about beauty, attractiveness, and body size/shape. Items such as "I would like my body to look like the people who are in the movies" were rated from 1 to 5. Higher scores indicate greater internalization.

2.2.7. Body dissatisfaction

The 7-item body factor from the Body Parts Satisfaction Scale-Revised (BPSS-R; Petrie, Tripp, & Harvey, 2002) measures level of satisfaction through ratings of body parts (e.g., arms, stomach). Girls rated each body area from 1 to 6. Lower scores reflect greater dissatisfaction.

2.2.8. Social support

Eight items from the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) measure how much help and support participants believe they receive from friends and family. Items, such as "My family helps me make decisions," were rated from 1 to 7. Higher scores represent more perceived social support.

2.2.9. Cardiorespiratory fitness

PACER (Progressive Aerobic Cardiovascular Endurance Run), part of the FITNESSGRAM® (Cooper Institute, 2007) test protocol, objectively assessed aerobic capacity. PACER comprises the number of 20-meter laps the students completed within a specified timeframe and pace.

2.2.10. General self-esteem

The 10-item general self-esteem scale from the Self-Description Questionnaire II (SDQII-GSE; Marsh, 1992) measures how strongly

Table 1
Means, standard deviations, Cronbach's alphas, and Pearson product–moment correlations for the continuous criterion and predictor variables (N = 774).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. DIS	–												
2. PDS	.12	–											
3. BMI	.34	.32	–										
4. PACS	.45	.19	.18	–									
5. SATAQ	.51	.10	.15	.63	–								
6. PSPS-LW	.59	.14	.42	.52	.56	–							
7. PSPS-Mus	.27	−.06	−.07	.21	.26	.81	–						
8. PSPS-Exer	.52	.10	.33	.46	.48	.32	.39	–					
9. PACER	−.25	−.004	−.37	−.09	−.16	−.21	−.04	−.18	–				
10. SDQ	−.35	−.06	−.17	−.36	−.34	−.42	−.23	−.35	.27	–			
11. MSPSS-Fam	−.17	−.10	−.08	−.20	−.18	−.20	−.16	−.13	.11	.45	–		
12. MSPSS-Friend	−.09	.01	−.09	−.13	−.15	−.19	−.14	−.14	.14	.38	.54	–	
13. BPSS-Body	−.41	−.15	−.36	−.46	−.43	−.50	−.12	−.42	.25	.49	.29	.24	–
Mean	1.73	2.66	21.19	2.45	1.88	1.48	1.25	1.61	29.75	4.91	5.26	5.65	4.24
(SD)	(.80)	(.69)	(4.81)	(1.15)	(1.04)	(.77)	(.52)	(.79)	(14.39)	(.89)	(1.65)	(1.49)	(1.23)
Cronbach's alpha	.91	.74	na	.90	.95	.78	.76	.77	na	.88	.86	.89	.90

Note: The means and standard deviations presented were derived from the non-standardized variables. DIS — Dietary Intent Scale (Range = 1, *low intent*, to 5, *high intent*); PDS — Pubertal Development Scale (Range = 1, *no development*, to 4, *development already past*); BMI — body mass index (expressed in kg/m^2); PACS — Social Body Comparison (Range = 1, *low social comparison*, to 5, *high social comparison*); SATAQ — Sociocultural Attitudes Toward Attractiveness Questionnaire-Internalization of Societal Ideals About Attractiveness (Range = 1, *no internalization*, to 6, *high internalization*); PSPS-LW, Mus, and Exer. — Perceived Sociocultural Pressures Scale — Lose Weight, Gain Weight/Muscularity, and Exercise (Range = 1, *no pressure*, to 5, *high pressure*); PACER — Progressive Aerobic Cardiovascular Endurance Run (Range = 1, *low*, to 85, *high*); SDQ — Self-Description Questionnaire (Range = 1, *low self-esteem*, to 6, *high self-esteem*); MSPSS–Fam and Friend (Multidimensional Scale of Perceived Social Support from Family and Friends) (Range = 1, *low* to 7, *high*); BPSS — Body — Body Parts Satisfaction Scale (Range = 1, *highly dissatisfied*, to 6, *highly satisfied*). The ranges listed reflect the potential scores for each scale.
Correlations > .14 or <−.14 are significant at $p < .0001$.