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Test-retest reliability and internal consistency of a variety of measures of dietary restraint and body concerns in a sample of adolescent girls.

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This study formed part of the first author's Master of Psychology Thesis. A copy of the glossary used in this study is available by writing to the authors.

RUNNING HEAD: Test-retest reliability in adolescent girls

Abstract

Internal consistency and test-retest reliability were examined in a variety of measures relating to body concerns and dieting and eating behaviours. Grade 9 females ($n = 363$) from nine schools completed questionnaires with the aid of a definitions glossary at Time One including the five subscales of the Eating Attitudes Test, the Dutch Eating Behaviour Questionnaire- Restraint Scale, a variety of measures of current size and ideal size (self, parents) based on the Figure Rating Scales, the Appearance Evaluation and Appearance Orientation subscales of the Multidimensional Body-Self Relations Scale, and the Weight Loss Behaviours Scale. Four to five weeks later, 164 girls completed the questionnaires again. Findings indicated adequate internal consistency and high test-retest correlations for all measures. Some measures, particularly those related to body size and dietary restraint, showed a slight increase in group means over time.

Test-retest reliability and internal consistency of a variety of measures of dietary restraint and body concerns in a sample of adolescent girls.

A large amount of research into eating behaviors and attitudes and body concerns has been conducted on adolescent girls using a variety of assessment instruments, mostly developed on adult samples. However, surprisingly few of those assessment instruments have been examined to ascertain whether they are actually reliable when applied to an adolescent sample.

In the present study, reliability in adolescent girls was examined in a number of measures assessing dietary restraint and body concerns, specifically: the Drive for Thinness and Dieting, Food Preoccupation and Binge Eating, Avoidance of Fattening and Sweet Foods, Vomiting, and Social Pressure to Eat subscales of the Eating Attitudes Test (EAT-26; Garner & Garfinkel, 1979), the Restraint subscale of the Dutch Eating Behaviour Questionnaire (DEBQ-R; Van Strien, Frijters, Bergers & Defares, 1986), the Appearance Concerns and Appearance Evaluation subscales of the Multi-Dimensional Body Self-Rating Questionnaire (MBSRQ; Cash, 1990), the Extreme Weight Control Behaviours Scale (EWCB: Paxton, Wertheim, Gibbons, Szmulker, Hillier & Petrovich, 1991) and Current and Ideal Ratings derived from the Figure Rating Scale (FRS; Stunkard, Sorenson & Schulsinger, 1980; Fallon & Rozin, 1985).

Three questions related to reliability were asked. First, internal consistency indicates whether the items in a scale all measure the same construct. Internal consistency, (using Cronbach's alpha), has been assessed in adolescents for the EAT (Steiger, Leung, Ross, & Gulko, 1992; Wood, Waller, Miller, & Slade, 1992), and for

the Appearance Evaluation subscale of the MBSRQ (Thompson, Altabe, Johnson, & Stormer, 1994), but not the DEBQ-R or the EWLB. Very few measures have been examined for test-retest reliability, for which two further questions are relevant. First, correlations between two testing occasions indicate whether the relative ordering of individuals is stable over time. While several studies have examined this sort of reliability in female college students (Allison, et al., 1992; Carter & Moss, 1984; Steinhausen, 1984), adolescents have not been assessed. Second, tests of differences between means across two testing occasions are important to indicate whether repeated administration of a test leads to a general increase or decrease in scores in the sample as a whole. If there are tendencies for full sample scores to change over time this is useful information for researchers conducting intervention programs in which they are assessing change and assuming a sample without the intervention would have remained stable. This second sort of test-retest question has rarely been examined in the literature.

Finally, our experience with adolescents is that they often do not understand some of the terms used in commonly administered questionnaires, resulting in experimenters continually answering definitional questions in class administrations. This issue of adolescent uncertainty in interpreting key terms has also been noted by Neumark-Sztainer and Story (1998). One solution to the problem of adolescents not understanding specific words in questionnaires is to offer a glossary of terms that pose particular difficulties. In this study, such a glossary was part of the testing process.

Method

Participants

Grade 9 female adolescents ($N = 393$; mean age = 14.5 years, $SD = .53$) from nine public high schools in the state of Victoria, Australia, completed questionnaires at Time One. Of these, 191 were invited to take part in a test-retest assessment 4-5 weeks later, and 165 girls (86%) took part in that session. The Time Two sample mean age was 14.5 years ($SD = .56$ years, age range 13-16).

Assessment Instruments

The five subscales of the Eating Attitudes Test (EAT-26; Garner & Garfinkel, 1979) were completed: Drive for Thinness and Dieting, Food Preoccupation and Binge Eating, Avoidance of Fattening and Sweet Foods, Vomiting, and Social Pressure to Eat. The Restraint scale of the Dutch Eating Behaviour Questionnaire-Restraint Scale (DEBQ-R; Van Strien, Frijters, Bergers & Defares, 1986) assesses the intention and degree of restriction of food intake (eating less than desired) for weight control reasons, including cognitive control of food intake and behavioural consequences (i.e., actual dieting behaviour). The Figure Rating Scales (FRS; Stunkard, Sorenson & Schulsinger, 1980; Fallon & Rozin, 1985) consisted of two rows of female body figure drawings ranging from emaciated (1) to obese (17) with odd numbers placed under figures and even numbers half-way between figures. Participants circled the number (in each row) which corresponded to the body figure which approximates their present size (Current Figure) and the size they would like to be (Ideal Figure). Four further rows of figure drawings assessed (1) mother's current figure (Mother's Figure), (2) father's current figure (Father's Figure), (3) the body shape and size the subject perceives their mother would want them to look like (Mother's Ideal Figure), and (4) the body shape and size the subject perceives their father would want them to look like (Father's Ideal Figure). The separate ratings of Mother's Ideal Figure and Father's Ideal Figure were averaged to form an index of

Parental Ideal Figure. The Appearance Evaluation and Appearance Orientation subscales of the Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 1990) were administered. The Appearance Evaluation subscale provides a global measure of liking and satisfaction with one's looks and attractiveness related to general physical appearance. The Appearance Orientation subscale measures the extent of cognitive investment and behavioural involvement in physical appearance. The Extreme Weight Loss Behaviours Scale (Paxton, et al., 1991) assesses frequency of use of crash dieting, fasting, vomiting, laxatives, diet pills and 'fluid tablets' (diuretics).

Procedure

Following receipt of parental informed consent, testing was completed at each school. Standard instructions were administered orally to each class, before the completion of the questionnaires. In addition, clear and simple definitions of terms contained in the questionnaires which could be ambiguous or unfamiliar to adolescents was provided. This glossary of terms included: diet, crash diet, binge eat, vomit, laxatives, fast, fluid tablets, diet pills, calorie, carbohydrate, preoccupied, self-control, impulse, desire, seldom, avoid, self-conscious, grooming, grooming products, and physique. The test-retest sample was assessed at two time points, four to five weeks apart.

Results

Internal Reliability- Cronbach Alpha

Table 1 presents the obtained Cronbach Alpha Coefficients and the range of the Item-Total Correlations for each measure using the entire sample ($N = 393$).

These Alphas were all highly significant ($p < .0000$), and ranged from .70 to .94, suggesting that all measures possessed adequate internal consistency.

External Reliability - Test-Retest

As seen in Table 1, all Test-Retest r s between Time One and Time Two were highly significant and ranged from .82 to .90 ($p < .0000$). This indicates that the relative position and rank ordering of the individuals' scores and the distribution of scores on these measures remained highly constant over a four to five week period.

Table 1 presents a summary of the paired t -test results for group means at Time One and Time Two for each measure. There were no significant differences observed across Time One and Time Two group mean scores on: EAT-26 Avoidance of Eating Fattening and Sweet Foods, Vomiting, and Social Pressure to Eat subscales; MBSRQ Appearance Evaluation and Appearance Orientation subscales; and FRS Ideal Figure and Parental Ideal Figure. This indicates that the group mean scores on all these measures remained stable over time. Significant, but small, increases in group means from Time One to Time Two were found for the following measures: DEBQ Restrained Eating subscale, EAT-26 Total Score, Drive for Thinness and Dieting, and Food Preoccupation and Binge Eating subscales; Extreme Weight Loss Behaviours, and Current Figure, Mother's Figure, and Father's Figure.

Discussion

The findings of this study support the reliability of a variety of measures of body image and dietary restraint in adolescent girls. They suggest that many of the measures developed on adults can be applied to middle adolescent girls (Grade 9), when care is taken to ensure that the girls understand the terms used in the assessment

instruments. Specifically, when used together with a glossary, all the measures were shown to have adequate internal consistency and very high test-retest reliability as determined by correlations over a four to five week period. Thus the relative ranking of girls over that period of time was stable between two testing occasions, supporting the reliability of the instruments.

In addition, the body satisfaction and body ideal measures, and some of the eating behaviour measures, demonstrated stability of group means over the test-retest period. However, for other measures, particularly those related to weight loss behaviours and body size, group means increased over time. While these increases were not large they were significant, confirming the importance of including non-treatment control groups in intervention and prevention studies of adolescent girls.

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Table 1

Internal Consistency, and Test-Retest Results for All Measures

Measure	Time One <u>M</u>	SD	Time Two <u>M</u>	<u>SD</u>	<u>t</u>	<u>p</u>	Cronbach Alpha <u>N=393</u>	Test- Retest <u>r</u>
DEBQ-R	2.67	.82	2.78	1.13	2.01	.046	.94 (.65-.84)	.85
EAT-26 Total Score	52.86	15.57	54.35	16.27	3.83	.000	.87 (.23-.69)	.89
Drive for Thinness/Diet	28.60	11.10	29.42	11.86	2.80	.006	.91 (.58-.77)	.88
Food Preoccupation/ Binge Eating	8.02	3.59	8.41	3.96	2.86	.005	.77 (.51-.61)	.87
Avoid Fat / Sweet Food	7.41	3.09	7.19	3.04	1.80	.07	.70 (.50-.55)	.84
Vomiting	2.52	1.20	2.44	1.18	1.64	.10	.75 (.59-.59)	.84
Social Pressure to Eat	6.59	3.57	6.61	3.56	-.23	.82	.77 (.55-.71)	.82
Extreme Wt. Loss Behav.	1.18	.24	1.21	.27	-2.78	.006	.70 (.26-.49)	.79
MBSRQ								
Appearance Evaluation	2.62	.72	2.59	.71	1.11	.27	.76 (.39-.59)	.89
Appearance Orientation	3.80	.57	3.79	.58	.46	.64	.78 (.20-.63)	.90
FRS Current Figure	6.28	1.90	6.82	1.99	-7.22	.000	-	.87
FRS Ideal Figure	4.93	1.13	5.00	1.20	-1.38	.169	-	.83
FRS Parental Ideal	5.91	1.14	6.04	1.13	-1.85	.070	-	.82
FRS Mother's Figure	8.52	2.38	9.11	2.38	-4.85	.000	-	.78
FRS Father's Figure	8.87	2.34	9.39	2.45	-4.23	.000	-	.76