

Deakin Research Online

This is the published version:

Ha, My Trinh, Marsh, Herbert W., Martin, Andrew J. and Halse, Christine 2006, Body image and self-concept in adolescent girls [R], in *SELF 2006 : Self-concept, motivation, social and personal identity for the 21st century : Proceedings of the 4th International Biennial SELF research conference*, SELF Research Centre, [Sydney, N.S.W.], pp. 1-11.

Available from Deakin Research Online:

<http://hdl.handle.net/10536/DRO/DU:30034900>

Every reasonable effort has been made to ensure that permission has been obtained for items included in Deakin Research Online. If you believe that your rights have been infringed by this repository, please contact drosupport@deakin.edu.au

Copyright : 2006, SELF Research Centre

Body Image and Self-concept in Adolescent Girls [R]

My Trinh Ha¹, Herbert W. Marsh^{1,2}, Andrew J. Martin³, and Christine Halse⁴
¹SELF Research Centre, Australia, ²Oxford University, UK, ³University of Sydney, Australia, ⁴University of Western Sydney

Anorexia Nervosa has been recently recognized as one of the most common chronic illnesses that affects the female adolescent population today. Although there has been an abundance of research into eating disorders in a variety of fields, significant limitations within the research still exist. Since very early descriptions of the disorder, self-concept and body image have been identified as core components of the anorexia nervosa. However, research has been somewhat limited in that there have not been any consistent theoretical underpinnings for self-concept and body image within the eating disorders field. Furthermore, researchers have tended to adopt traditional inferential statistics and multivariate methods to assess the role of self-concept and body image. As a result there has been very little consistency in research results. The current paper summarizes the significant findings from a doctoral thesis that attempted to address current limitations in self-concept and body image literature within the field of eating disorders.

Since early reports about eating disorders, the factors that underlie the motivation for individuals to engage in the damaging and harmful eating behaviours has baffled researchers, doctors and health professionals alike. Classified as an eating disorder, anorexia nervosa, like many mental illnesses, is recognised as a multifactorial disorder, in which the development and maintenance of the disorder and its symptoms involves a complex interplay of biological, socio-cultural, and individual psychological factors. Amongst the biological risk factors, researchers have identified that there is a level of genetic heritability associated with anorexia nervosa and eating disorder symptomatology (see Polivy & Herman, 2002 for a review, see also Wren & Lask, 1993; Winchester & Collier, 2003). Furthermore, it has been shown that patients with anorexia nervosa have abnormal levels of serotonin, a neurotransmitter that has a role in controlling appetite and mood (see de Zwann, 2001; Jacobi, Hayward, de Zwann, Kraemer, & Agras, 2004). In terms of socio-cultural factors, three major factors have been investigated throughout history: the influence of the thin ideal that is portrayed in the media, the influence of parents and peers in the internalisation process (see Ghaderi, 2001; Stice, 2002; White 2000). Finally, most of the eating disorders research has focused on individual psychological factors including personality, self-esteem, and body image. To date, researchers have identified a myriad of factors that may contribute to the onset and maintenance of anorexia nervosa and other related eating disorders. Amongst an array of risk factors, two of the most common individual psychological factors cited as risk and causal factors are low self-esteem and high levels of body image dissatisfaction. As a result there has been a large volume of research investigating these factors.

Although there has been an abundance of literature addressing body image and body image distortion across populations, results have been inconsistent. For example, although a commonly cited diagnostic criterion for anorexia nervosa is body image disturbance/distortion, some researchers have indicated that patients with anorexia nervosa in fact do not overestimate their body size (see Smeets, Smit, Panhuysen, & Ingleby, 1998; Slade & Russell, 1973), whilst others have found that patients and non-eating disordered individuals overestimate their body shapes to the same extent (eg Ben-Tovim & Crisp, 1984; Cash & Deagle, 1997; Henninghausen, Enkelman, Wewetzer, & Remschmidt, 1999).

Despite the wealth of research that has been conducted in the area, the complex relations between identified risk factors remain elusive, and as a result researchers continue to investigate and develop new models in attempts to gain a better understanding of anorexia nervosa and the individuals that are affected by it. However much research has centred on self-esteem and body image, and only a limited number of studies have capitalised on recent developments in self-concept theory and research to account for the multidimensional nature of the self-concept construct. Hence, there are significant gaps and limitations within the body of literature, and questions still remain as to how these factors can explain anorexia nervosa, and how clinical and non-clinical samples differ. Furthermore, the eating disorders field has been heavily reliant on the unidimensional approach to the self, examining self-esteem and eating disorders symptomatology and body image. Hence, very little research has investigated how these factors may be related to the multiple dimensions of self-concept. This study therefore attempts to investigate the body image and its relation to the multiple dimensions of the self-concept.

The Multidimensional Self-concept and Mental Health

Although many authors have associated perceptions of the self to psychological and psychiatric problems, researchers have traditionally employed the unidimensional approach to the self-concept and thus very little research has utilised the multidimensional model of the self-concept. In one of the first studies conducted in the mental health sector, Marsh,

Parada, & Ayotte (2004) investigated how the different facets of the self-concept are related to various aspects of mental health (as measured by the Youth Self-Report). This study provided strong support for the multidimensional model of the self-concept in mental health, by showing that the different dimensions of the self-concept were differentially related to the various scales of the YSR. Surprisingly, despite the recent emphasis on the multidimensional model of the self-concept in other fields of research (particularly in educational psychology), investigators within the mental health sector are yet to adopt the more descriptive model to assist them in the development of more sophisticated and specific aetiology and treatment models.

The benefits of adopting such a model are obvious, as Marsh and Craven (1997) state

“if the role of self-concept research is to better understand the complexity of self in different contexts, to predict a wide variety of behaviours, to provide outcome measures for diverse interventions, and to relate self-concept to other constructs, then the specific domains of the self-concept are more useful than a general domain” (p. 191)

Furthermore, understanding the relations between the different facets of the self and other constructs would advantage clinicians and researchers alike, as it would enable them to gain a deeper understanding mental health issues and how they are related to the various dimensions of the self. One particular field within the mental health sector that has been heavily reliant on the unidimensional approach of the self-concept and instruments such as the Rosenberg Self-esteem Scale and Coopersmith Self-esteem Inventory is the eating disorders field (see for example Ha, 2006 for review). As a result, little is known about the relations between eating disorders and body image and the multiple dimensions of the self-concept.

Body Image and Self-concept: How are they related?

The association between body image and self-esteem has been emphasised in eating disorders (e.g. APA, 2000; Geller, Johnston, & Masden, 1997), developmental psychology (e.g. Arnett, 2004), and within self-concept literature. According to the multidimensional model of self-concept, evaluations of physical appearance are an integral part of self-concept, and hence strongly associated with global evaluations of the self (self-esteem). And further, as Geller and colleagues (1997) emphasise, concerns about body shape and weight have a significant influence on feelings of self-worth (Geller et al., 1997; Ross & Wade, 2004; Rodin, Silberstein, & Stiegel-Moore, 1985; Tiggemann & Stevens, 1999). Not surprisingly then, many researchers investigating body image have investigated the association between body image and self-esteem, and have consistently demonstrated that there is a significant and positive association between body image and self-esteem. For example, in a study investigating weight concerns in older women, Tiggemann and Stevens (1999) found that weight concerns were negatively associated with self-esteem. That is, for women who exhibited higher weight concerns, their level of self-esteem was shown to be lower. Furthermore, Tiggemann (2001) demonstrated that although intelligence and academic achievement were rated by adolescent girls as more important aspects of life compared to slimness, slimness had greater influence on self-esteem than intelligence and academic achievement. These results suggest that physical appearance and body image are very important aspects of the self, particularly during the adolescent period.

Much like the research within the body image and self-esteem field, the findings with regard to the association between self-esteem and body image have not been consistent. As opposed to the findings of Tiggemann and Stevens (1999) and Tiggemann (2001) for adult populations, Tiggemann and Wilson-Barrett (1998) determined that body dissatisfaction, as calculated by the discrepancy between actual and ideal figure ratings, was not significantly related to self-esteem for girls. Perhaps then, the pattern of relations fluctuates as a function of age. To explore this, Lowes and Tiggemann (2003) suggested that the association between self-esteem and body image may not be stable throughout the lifespan, particularly during the developmental progression from child to adolescent. In support of this assertion, Tiggemann (2004) demonstrated that the importance of physical appearance self-concept diminishes with age. In contrast, Webster and Tiggemann (2003) found evidence to suggest that judgments of the importance of the body remained stable throughout adulthood, as body dissatisfaction did. Their results also indicated that with age, women's cognitive abilities and strategies in relation to body image changed. In explaining their findings in relation to other research, Webster and Tiggemann argued that women were able to adopt cognitive strategies that allowed them to increase their level of acceptance of their body shapes in an attempt to maintain their self-esteem, despite having high levels of body image dissatisfaction. Hence, although their levels of dissatisfaction may have changed slightly, their cognitive strategies may mask the changes and the effects of those changes on self-concept.

Although research has been able to establish that there is an association between self-esteem and body image, there is a large gap in the literature regarding the link between body image and the various dimensions of the self-concept. Furthermore, as a result of the multitude of instruments that have been utilized to assess and evaluate both self-concept and body image, there has been some inconsistency in the findings. This study therefore attempts to bridge this gap in the literature by examining the various relations between body image variables and the multiple dimensions of self-concept.

Furthermore, this study attempts to examine the differing relations between actual, ideal and body image dissatisfaction and self-concept.

Methodology

Participants and Recruitment

Clinical Sample: The clinical sample comprised of 76 adolescent girls who had received a medical diagnosis of anorexia nervosa. All girls were recruited from adolescent medicine units in two western Sydney public hospitals, and were receiving either inpatient or outpatient treatment at the time of the recruitment. Girls were approached during their consultations with their treatment team and questionnaires were administered on a one on one basis with the researcher. Girls were aged between 12 and 18 years of age, and had an average BMI of 17.27 kg/m². A total of three girls were excluded from this analysis as a result of incomplete questionnaire responses.

Non-clinical Sample: The non-clinical sample comprised of 823 adolescent girls aged between 12 and 19 years. Girls were recruited from three different private schools in Sydney, two of which were single sex schools, and the third, a coeducational school. Girls in this non-clinical sample were aged between 12 and 19 years ($M= 14.08$, $SD= 1.59$), and were recruited from grades 7 through to 12. The largest proportion of this sample was in enrolled in year 9 (accounting for 27.6% of the sample) at school. Only 6.50% of this non-clinical sample was enrolled in year 12. Participants were relatively evenly distributed across years 7 (22.8%), 8 (19.4%), 10 (10.5%) and 11 (13.0%). As compared to the clinical sample, whose average BMI was below the healthy range, the non-clinical population had an average BMI within the healthy range for adolescent girls ($M= 20.35$ kg/m², $SD= 3.24$).

Instrumentation

Participants were asked to complete a battery of questionnaires as a part of a larger study. Amongst the questionnaires that were completed, participants completed a silhouette matching task (also known as a figure rating scale) to examine body image and the short version of the SDQII to evaluate the multiple dimensions of the self-concept.

The silhouette matching task was an adapted version of the task originally developed by Stunkard, Sorenson, and Schulsinger (1976). The questionnaire included a rating scale of 12 body silhouettes ranging from very thin to obese (see Marsh, 1999). Participants were asked to respond to a series of questions about their body, which were developed to include both meta and self perspectives of body image. Two modified versions of the questions were developed, however for the purposes of this study, only actual and ideal ratings of body image were utilised in the analysis and comparison of the two adolescent samples. Ratings for actual body image has been found to be very well correlated with objective measures of body composition, with correlations ranging from 0.57-0.65 (Marsh & Roche, 1996; See also Ha, 2006).

The SDQII-S is a well-known and established instrument that is often utilized to assess the multiple dimensions of the self-concept in adolescents. The instrument consists of 51 items that measure 11 different dimensions of the self-concept. Previous reliability estimates have indicated that all the SDQII-S scales (including the general scale) have high internal consistency levels with Cronbach's α ranging from .80-.90 (Marsh, Ellis, Parada, Richards, & Huebeck, 2003). For clinical samples, the SDQII-S has also been shown to have strong psychometric properties, with Cronbach's α estimates for scales ranging from .80-.93 (Ha, Marsh, & Halse, 2004).

Results

A preliminary CFA was conducted for the SDQ to determine whether the data obtained from the current sample of adolescents fits the a priori structure of the instrument. The factor loadings indicated that there was a good fit between the data and the a priori structure, with each variable loading highly on the factors that it was designed to measure (see table 1). Furthermore, the goodness of fit indices indicated an excellent fit between the data and the 11-factor a priori structure for the SDQII-S ($Chi-square= 2936.52$, $df= 1169$, $RMSEA= 0.04$, $TLI= .98$, $CFI=.98$).

The analysis also revealed that the correlations between each of the self-concept domains ranged from $r = .03$ to $.77$, thus highlighting the distinctiveness of the factors measured by the SDQII-S. Furthermore, the results indicate that the highest correlations existed between self-esteem and other self-concept scales, hence supporting previous research that highlights the global nature of the self-esteem factor (Marsh, Parker, & Barnes, 1985). Furthermore, the factor correlations for the total sample also provided support for the hierarchical structure of the self-concept as proposed by the Marsh/Shavelson model (Marsh & Shavelson, 1985) which hypothesizes that the non-academic scales of the self-concept should be generally more correlated with each other, but not highly correlated with the academic dimensions of the self-

concept. The correlations between the 11 factors indicated that much as the model hypothesizes: math and verbal self-concepts were highly correlated to general school self-concept, but not highly correlated to each other. Additionally, in support of previous literature, the correlations indicate that physical appearance (Marsh, Craven & Debus, 1998) and school self-concepts (Marsh et al., 2005) are the most important dimensions in determining global self-esteem ($r = .70$ for physical appearance and self-esteem and $r = .77$ for school self-concept and self-esteem).

A further CFA was conducted to examine the relations between various body image variables and self-concept domains. Within the analysis, the SDQ scales, body image variables, group and BMI were entered. As group, BMI and body image variables were measured without error, their factor loadings were fixed to one and their error terms to zero. The analysis indicated that there was a good fit between the a priori model and the data for the total sample, as indicated by the goodness of fit indices ($\chi^2 = 2936.52$, $df = 1169$, $TLI = .98$, $CFI = .98$, $RMSEA = .04$). As the factor loadings and correlations for the SDQ were presented earlier, only the factor correlations between the SDQ and body image items are presented in table 2.

Factor correlations revealed that the largest correlations were between the actual ratings of body image and self-concept. More specifically, actual body image ratings had strong negative associations with all domains of self-concept (correlations ranged from $r = -.13$ to $r = -.45$); particularly physical appearance ($r = -.45$) and self-esteem ($r = -.41$) domains of self-concept (indicating that the larger the rating the lower the self-concept score). Thus, consistent with prior predictions actual ratings of body image for the total sample of adolescent girls were negatively related to self-concept, that is, the larger the actual body image the lower the self-concept score.

Although the various models such as the discrepancy model and other body image theories, specify that ideal ratings of body image are positively related to evaluations of the self, results indicated that they were in fact negatively associated, hence suggesting that the smaller the ideal body image ratings the higher the self-concept.

Body dissatisfaction is generally associated with low self-concept (see Ghaderi, 2001, Sheffield, Tse, & Sofronoff, 2005; Ricciardelli & McCabe, 2001, Smolak & Levine, 2001) and is conceptualized as the discrepancy between the actual and ideal ratings for body image. In recent research however, Marsh (1999, see also Marsh & Roche, 1996) argued that positive body image dissatisfaction should also have a negative affect on self-concept. Correlations for the absolute discrepancy scores for the total sample were shown to be small, with moderate sized correlations between discrepancies and physical appearance self-concept ($r = -.38$, $p < .05$), emotional stability self-concept ($r = -.24$, $p < .05$) and self-esteem ($r = -.34$, $p < .05$). Although the correlations between the discrepancy scores and self-concept were not as strong as the associations between actual ratings and self-concept, the pattern of relations suggests that body dissatisfaction; regardless of direction has a negative effect on various domains of self-concept.

BMI was shown to have few significant associations with the multiple dimensions of the self-concept. BMI was however, shown to have moderate sized associations with actual and ideal ratings of body image. This result indicates that the higher the BMI, the larger/heavier the actual and ideal ratings of body image reflecting realistic perceptions of what the body looks like, hence demonstrating the construct validity of the silhouette matching task. Correlations between group and self-concept were similarly small. The relations between group and silhouette matching task variables varied however, showing that group was negatively related to actual and absolute discrepancies (suggesting that clinical girls had higher discrepancies) but positively associated with ideal ratings (suggesting that clinical girls had smaller ideals). The association between group and the absolute discrepancy was the strongest, with results suggesting that the clinical group tended to have larger discrepancies between their actual and ideal ratings of body image. As expected, relations between BMI and Group were shown to be positive.

Discussion and Future Research Directions

First and foremost, the current results indicate that the structure of the SDQII-S is sound for the combined sample of adolescent girls used in this study, and therefore implies that the multidimensional model of the self-concept can be applied to this sample of adolescent girls. Furthermore, the range of factor correlations highlights the distinctiveness of the factors measured by the SDQII-S. Furthermore, the results indicated that the highest correlation was between self-esteem and other self-concept domains, hence supporting research within the field that highlights the global nature of the self-esteem factor (Marsh, Parker, & Barnes, 1985). Furthermore, the factor correlations also provided support for the hierarchical structure of the self-concept as proposed by the Marsh/Shavelson self-concept model (see Marsh & Shavelson, 1985) which hypothesizes that the non-academic scales of the self-concept should generally be more related to each other, but not highly correlated with the academic scales of the self-concept. Importantly and interestingly the pattern of factor correlations also revealed that physical appearance and school self-concepts are the most important dimensions in determining global self-esteem.

Furthermore, the results of the current study clearly indicated that actual body image has a strong association with various aspects of the self-concept, particularly physical appearance self-concept and self-esteem, indicating that the larger

that an individual thinks that they are the lower their self-esteem and their evaluation of their physical appearance. These findings are not surprising given that perceptions of body shape have been explicitly linked to self-esteem (see Lowes & Tiggemann, 2003). Furthermore, physical appearance self-concept and actual ratings of body image should logically be related given that they are very similar constructs. One of the differences between actual body image as measured by the silhouette matching task and physical appearance self-concept, is that the items within the physical appearance self-concept focuses on more than just body shape, whereas the body image variables within this study are primarily about body shape rather than any other aspect of physical appearance. Moreover, the results of the study indicated that actual perceptions of body image were the most highly correlated to self-concept domains of the various body image variables. Furthermore, in support of much of the literature (see (Ghaderi, 2001; Sheffield, Tse, & Sofronoff, 2005; Ricciardelli & McCabe, 2001; Smolak & Levine, 2001), body image dissatisfaction (ie the discrepancy between actual and ideal ratings) was shown to be related to self-esteem and physical appearance, indicating that the larger the discrepancy between what girls thought that they were and what they wanted to be, the lower the self-concept. The interesting finding is that it seems that regardless of whether it is a positive or negative discrepancy between actual and ideal, dissatisfaction in general has a negative association with self-concept.

In addition, ideal body image was shown to have very few significant associations with self-concept, but was shown to be significantly related to actual body image and body image dissatisfaction. Given the small associations with self-concept, it seems unlikely that ideal ratings of body image would be able to significantly predict self-concept. However, this was not examined in the current research, and needs to be investigated further. Gaining knowledge on the effect that ideal body image may direct future development of both aetiology and treatment models for body image related disorders in which low self-esteem and self-concept are associated.

Although this research is one of the first studies to investigate the multidimensional self-concept and body image in mental health and in the general population, further research needs to be conducted to determine whether the same relations exist for both clinical and non-clinical populations, and further what the independent effects of each of these variables are on each of the self-concept domains.

Further, although researchers have investigated the direct relationship between self-esteem and body image, other researchers have shown that body dissatisfaction mediates the relation between self-esteem and eating disorder symptomatology (see Ross & Wade, 2004; Wade & Lowes, 2002), and the internalisation of the thin ideal and eating disorder symptomatology. For example, Ross and Wade (2004) examined self-esteem and weight and shape concerns. Based on previous findings, Ross and Wade proposed that weight and shape concerns would mediate the relation between self-esteem and dietary restraint and uncontrolled eating. The findings indicated that weight and shape concerns, as predicted, mediated the relation between self-esteem and dietary restraint and uncontrolled eating behaviours.

In an examination of the cross cultural relevance of the mediational and causal relation between self-esteem, body dissatisfaction, and eating disorder symptomatology, Sheffield, Tse, and Sofronoff (2005) found that although body dissatisfaction mediated the relation between self-esteem (as measured by the Rosenberg self-esteem scale) and eating disturbance in late adolescent and adult Caucasians, the same mediating relation did not apply to women from Hong Kong. In the Hong Kong sample of women, there was a direct relation between self-esteem and eating disturbance and body dissatisfaction was shown to have an insignificant direct effect and an insignificant effect on the relation between self-esteem and eating disturbance.

Although more sophisticated models have been developed and tested to examine the relation between self-esteem, body image and eating disorders, very few authors have examined whether the association can be better explained by direct paths from self-esteem to eating disorders, or whether body image mediates the relation between the two variables. This however is not uncommon within the mental health sector, as traditionally, research within the mental health sector has focused on direct relations. Recent advances in statistical methods however should see an increase in the complexity of analyses and diagnostic and treatment models for mental illnesses. These studies have provided a solid foundation on which to develop more complex models in eating disorders. However, despite the fact that researchers have examined eating disorder symptomatology, they have focused on samples of non-eating disordered university students and adult samples. Hence, it remains unclear as to whether the same models apply to adolescent eating disordered populations. If they do not, then this would have important implications for clinical practice and research. Therefore future research needs to examine these relations, and further determine whether the associations between self-concept and eating disorder symptomatology can be mediated by body image variables.

Body image dissatisfaction and eating disorders have been identified as major health concerns, particularly within the adolescent population, and has been the centre of many educational and public health campaigns. Given the significance of both body image disturbance and eating disorders, this research has capitalised on robust and valid instruments to examine body image and self-concept and has thus provided significant information regarding actual, ideal and dissatisfaction with regard to self-concept in both girls with anorexia nervosa and non-clinical adolescent girls.

About the Authors

My Trinh Ha completed a Bachelor of Science Degree with Honours in Psychology at the University of Adelaide. She is a PhD candidate from the SELF Research Centre, University of Western Sydney, and is the recipient of an Industry based Australian Postgraduate Award. My Trinh is attached to the ARC funded project: Multiple Perspectives of Eating Disorders in Girls.

Herbert W. Marsh is the Professor of Educational Psychology, Oxford University, UK, and founding Director of the Self-concept Enhancement and Learning Facilitation (SELF) Research Centre. He is the author of internationally recognised psychological tests and has published more than 230 articles, 22 chapters, 8 monographs, and 225 conference papers.

Andrew J. Martin is an Associate Professor and International Senior Research fellow at the Faculty of Education and Social Work, University of Sydney, Australia. His areas on interest are motivation, academic achievement, pedagogy, and research methods.

Christine Halse is an Associate Professor at the University of Western Sydney. She has published extensively on the social, cultural and psychological construction of identity and its implications for educational policy and practice in local, national and international contexts, and is internationally regarded as an evaluator of tertiary institutions, teacher professional development programs and curricula. She is the Chief Investigator of the ARC funded research project, *Multiple Perspectives of Eating Disorders in Girls*.

Contact Details

My Trinh Ha
SELF Research Centre
University of Western Sydney
Bankstown Campus
Locked Bag 1797
Penrith South DC NSW 1797
Australia
Email: m.ha@uws.edu.au
Ph: +61 2 9772 6428
Fax: +61 2 9772 6432

References

- Arnett, J. J. (2004). *Adolescence and emerging adulthood: A cultural approach* (2nd ed.). New Jersey: Pearson Education.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (IV-TR ed.). Washington, DC: American Psychiatric Association.
- Ben-Tovim, D. I. & Crisp, A. H. (1984). The reliability of estimates of body width and their relationship to current measured body size among anorexic and normal subjects. *Psychological Medicine*, 14, 843-6
- Cash, T. F., & Deagle III, E. A. (1997). The Nature and Extent if Body-Image Disturbances in Anorexia Nervosa: A Meta-Analysis. *International Journal of Eating Disorders*, 22, 107-125.
- de Zwann, M. (2001). Basic Neuroscience and Scanning. In J. Treasure & M.-H. Schmidt & E. Van Furth (Eds.), *Handbook of Eating Disorders* (pp. 89-102). England: John Wiley and Sons.
- Geller, J., Johnston, K., & Madsen, K. (1997). The role of shape and weight in self-concept: the shape and weight based self-esteem inventory. *Cognitive Therapy and Research*, 21(1), 5-24.
- Ghaderi, A. (2001). Review of Risk Factors for Eating Disorders: Implications for Primary prevention and Cognitive Behavioural Therapy. *Scandinavian Journal of Behaviour Therapy*, 30(2), 57-74.

- Ha, M. T. (2006). *Beyond Their Reflection: An examination of Self-concept, Body image and Experiences of Adolescent Girls with Anorexia Nervosa*. Unpublished PhD Dissertation: University of Western Sydney.
- Hennighausen, K., Enkelmann, D., Wewetzer, C., & Remschmidt, H. (1999). Body image distortion in Anorexia Nervosa - is there really a perceptual deficit? *European Child & Adolescent Psychiatry, 8*, 200 - 206
- Jacobi, C., Hayward, C., Kraemer, H. C., Agras, S., & de Zwann, M. (2004). Coming to Terms With Risk Factors for Eating Disorders: Application of Risk Terminology and Suggestions for a General Taxonomy. *Psychological Bulletin, 130*(1), 19-65.
- Lowes, J., & Tiggemann, M. (2003). Body dissatisfaction, dieting awareness and the impact of parental influence in young children. *British Journal of Health Psychology, 8*, 135-147.
- Marsh, H.-W. (1992). *Self-Description Questionnaire-2 (Short)*. Australia: University of Western Sydney.
- Marsh, H. W. (1999). Cognitive Discrepancy Models: Actual, Ideal, Potential and Future self-perspectives of body image. *Social Cognition, 17*(1), 46-75.
- Marsh, H. W., Ellis, L., Parada, R. H., Richards, G., & Heubeck, B. G. (2004). A short version of the Self-Description Questionnaire II: Operationalizing criteria for short form evaluation with new applications of confirmatory factor analysis. *Psychological Assessment*.
- Marsh, H. W., Parada, R. H., & Ayotte, V. (2004). A multidimensional perspective of relations between self-concept (Self-Description Questionnaire II) and adolescent mental health (Youth Self-Report). *Psychological Assessment, 16*(1), 27-41.
- Marsh, H. W., Parker, J., & Barnes, J. (1985). Multidimensional Adolescent Self-concepts: Their relationship to age, sex and academic measures. *American Educational Research Journal, 22*(3), 422-444.
- Marsh, H. W., & Roche, L. A. (1996). Predicting Self-Esteem From Perceptions of Actual and Ideal Ratings of Body Fatness: Is There Only One Ideal "Supermodel"? *Research Quarterly for Exercise and Sport, 67*(1), 13-23.
- Marsh, H.-W., & Shavelson, R. J. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107-125.
- Marsh, H. W., Trautwein, U., Lüdtke, O., Köller, O., & Baumert, J. (2005). Academic Self-Concept, Interest, Grades, and Standardized Test Scores: Reciprocal Effects Models of Causal Ordering. *Child Development, 76*, 397
- Polivy, J., & Herman, C. P. (2002). Causes of eating disorders. *Annual Review of Psychology, 53*, 187-213.
- Ricciardelli, L. A., & McCabe, M. P. (2001). Children's body image concerns and eating disorders: A review of the literature. *Clinical Psychology Review, 21*(3), 325-344.
- Rodin, J., Silberstein, L., & Striegel-Moore, R. H. (1985). Women and weight: A normative discontent. In T. B. Sondereregger (Ed.), *Psychology and Gender*. Lincoln NB: University of Nebraska Press.
- Ross, M., & Wade, T. (2004). Shape and Weight Concern and Self-esteem as Mediators of Externalised Self-perception, Dietary Restraint and Uncontrolled Eating. *European Eating Disorders Review, 12*, 129-136.
- Sheffield, J. K., Tse, K. H., & Sofronoff, K. (2005). A comparison of Body image dissatisfaction and Eating Disturbance among Australian and Hong Kong Women. *European Eating Disorders Review, 13*, 112-124.
- Slade, P., & Russell, G.-F. (1973). Awareness of body dimensions in anorexia nervosa: cross-sectional and longitudinal studies. *Psychological Medicine, 3*, 188-199.

- Smeets, M., Smit, F., Panhuysen, G., & Ingleby, D. (1998). Body Perception Index: Benefits, Pitfalls, ideas. *Journal of Psychosomatic Research*, 4, 457-464.
- Smolak, L., & Levine, M. P. (2001). Body image in children. In J. K. Thompson & L. Smolak (Eds.), *Body image, eating disorders, and obesity in youth: Assessment, Prevention and Treatment*. Washington, DC: American Psychological Association.
- Stice, E. (2002). Risk and maintenance factors of eating pathology: A meta-analytic review. *Psychological Bulletin*, 128(5), 825-848.
- Tiggemann, M. (2001). The impact of Adolescent girls' life concerns and leisure activities on body dissatisfaction, disordered eating and self-esteem. *Journal of Genetic Psychology*, 162, 133-142.
- Tiggemann, M. (2004). Body Image across the adult life span: stability and change. *Body Image*, 1, 29-41.
- Wade, T. & Lowes, J. (2002). Variables associated with disturbed eating habits and overvalued ideas about the personal implications of body shape and weight in a female adolescent population. *International Journal of Eating Disorders*, 32, 39-45.
- Tiggemann, M., & Stevens, C. (1999). Weight Concern Across the Life-Span: Relationship to Self-esteem and Feminist Identity. *International Journal of Eating Disorders*, 26, 103-106.
- Tiggemann, M., & Wilson-Barrett. (1998). Children's Figure Ratings: Relationship to Self-esteem and Negative Stereotyping. *International Journal of Eating Disorders*, 23, 83-88.
- Webster, J., and Tiggemann, M. (2003). The relationship between women's body satisfaction and self-image across the life span: The role of cognitive control. *Journal of Genetic Psychology*, 164, 241-252.
- White, J. (2000). The prevention of eating disorders: a review of the research on risk factors with implications for practice. *Journal of Child and Adolescent Psychiatric Nursing*, 13(2), 76-88.
- Winchester, E. & Collier, D. (2003). Genetic Aetiology of Eating Disorders and Obesity. In J. Treasure, U. Schmidt, & E. V. Furth (Eds.). *Handbook of Eating Disorders Theory, Treatment and Research* (2nd Ed.). New York: Wiley & Sons.
- Wren, B., & Lask, B. (1993). Aetiology. In B. Lask & R. Bryant-Waugh (Eds.), *Childhood Onset Anorexia Nervosa and Related Eating Disorders* (pp. 69-89). Sussex: Psychology Press.

Table 1: Factor Loadings and Correlations for SDQII-S (Total Sample)

Item Number	Phys	Appr	OSex	SSex	Prnt	Hons	Emot	Math	Verb	Schl	SE
1	.80										
2	.95										
3	.71										
4	.69										
5		.86									
6		.94									
7		.71									
8		.72									
9			.88								
10			.50								
11			.74								
12			.82								
13				.67							
14				.79							

SSex	.33	.33	.37	1.00							
Prnt	.24	.38	.08	.29	1.00						
Hons	.14	.18	.09	.24	.49	1.00					
Emot	.27	.43	.32	.44	.33	.25	1.00				
Math	.14	.29	.03	.20	.25	.21	.16	1.00			
Verb	.11	.22	.09	.26	.24	.24	.16	.21	1.00		
Schl	.28	.42	.15	.35	.48	.39	.26	.65	.63	1.00	
SE	.40	.70	.25	.48	.62	.39	.49	.44	.44	.77	1.00

Note. Phys=Physical Ability, Appr = Physical Appearance, Osex=Opposite sex relations, Ssex= same sex relations, Prnt= Parent relations, Hons= honesty and trustworthiness, Emot= emotional stability, Math=Math self-concept, Verb= verbal self-concept, Schl= general school self-concept, SE= self-esteem, Avg Factor Loadings= Average Factor Loadings. $r < 0.03$, $p > .05$.

Table 2: Factor Correlations for the Various Self-Concept Factors and the Observed Latent Variables

	Actual	Ideal	[A-I]	BMI	Grp
Phys	-0.27*	-0.16*	-0.08*	-0.15*	-0.01
Appr	-0.45*	-0.11*	-0.38*	-0.09*	0.17*
Osex	-0.13*	-0.07*	-0.05	-0.08*	0.05
Ssex	-0.20*	-0.06	-0.16*	-0.08*	0.09*
Prnt	-0.28*	-0.04	-0.22*	-0.08*	0.07*
Hons	-0.14*	-0.06	-0.06	-0.07	-0.05
Emot	-0.24*	-0.01	-0.24*	-0.07*	0.19*

Math	-0.16*	-0.04	-0.13*	-0.12*	-0.06
Verb	-0.17*	-0.06	-0.13*	-0.04	-0.04
Schl	-0.27*	-0.10*	-0.19*	-0.14*	-0.09*
SE	-0.41*	-0.05	-0.34*	-0.10*	0.15*
Actual	1.00	0.25*	0.56*	0.37*	-0.13*
Ideal		1.00	-0.08*	0.29*	0.13*
[A-I]			1.00	0.09*	-0.31*
BMI				1.00	0.23*
Grp					1.00

Note. Phys=Physical Ability, Appr = Physical Appearance, Osex=Opposite sex relations, Ssex= same sex relations, Prnt= Parent relations, Hons= honesty and trustworthiness, Emot= emotional stability, Math=Math self-concept, Verb= verbal self-concept, Schl= general school self-concept, SE= self-esteem, Actual= actual ratings of body image, ideal=ideal ratings of body image, [A-I]= absolute discrepancy between actual and ideal ratings, BMI= body mass index, Grp = group, where the clinical sample=0, and the non-clinical sample= 1, SDQII-S is positively scored. Therefore, the higher the score the more positive the self-concept. *= statistical significance at $p < .05$.