

**CULTURAL DIFFERENCES IN AGE OF ONSET AND
PREVALENCE OF DISORDERED EATING ATTITUDES
AND BEHAVIOURS**

by

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Introduction

In a review of the most recent international research findings pertaining to eating disorders, two important trends emerge: firstly, that eating disorders and disordered eating attitudes and behaviours are becoming increasingly prevalent, not only among women in western societies, but amongst diverse adolescent and young adult populations across cultural and racial boundaries (Crago & Shisslak, 2003; Fairburn, Cooper, Doll, Norman & O' Connor, 2000; Fear, Bulik, & Sullivan, 1996; Grigg, Bowman, & Redman, 1996; Jones, Lawson, Daneman, Olmstead, & Rodin, 2000; Lewinsohn, Striegel-Moore & Seeley, 2000; Roberts, McGuiness, Bilton & Maxwell, 1999; Sherwood & Neumark-Sztainer, 2001; Sheward, 1994); and secondly, that the age of onset of these disorders may be decreasing and thus contributing significantly to the increased prevalence (Colborn, 1994; Fear et al., 1996; Jones, Bennet, Olmstead, Lawson, & Rodin, 2001; Roberts et al., 1999; Sherwood, & Neumark-Sztainer, 2001; Story, French, Resnick, & Blum, 1995).

Historically, eating disorders were found to occur predominantly among white adolescent and young adult females, within the upper socio-economic classes, who lived in socially competitive environments. For these young females, experiencing feelings of self-worth, happiness, and success were strengthened to a large extent by thinness (body measurements and percentage of body fat) - factors that have little or no correlation with personal happiness and success in the long run (Garner & Kearney-Cooke, 1996). Until recently, eating disorders were not reported in developing countries, where access to sufficient food was a daily struggle (Barlow & Durand, 2001).

Although it is generally accepted that the etiology of eating-related disorders is multifactorial, there has been increasing interest in the role that social and cultural norms and consequent pressures play either in protecting against or precipitating these problems. It is clear from the existing evidence that for many young western women, looking good is more important than being healthy. Thus, cultural imperatives for thinness may directly result in disordered attitudes towards eating and dieting, which are the first dangerous steps down the slope to eating disorders such as anorexia nervosa and bulimia nervosa (Gluck & Geliebter, 2002).

Women representing cultural minorities in the United States of America and the United Kingdom were believed to be less susceptible to developing eating disorders than white women (Caucasian) in western industrialized societies, and the prevalence of anorexia- and bulimia nervosa was reportedly rare among young black females (non-Caucasian) as well as younger female adolescents (Abrams, Alle & Gray, 1993).

Several North American clinicians only briefly noted the occurrence of anorexia nervosa in black women within clinical case series. According to Dolan (1991), the first two reported black female sufferers of anorexia mentioned in literature appeared in a study conducted with 42 patients who were treated between 1960 and 1971 in New York. In the United Kingdom, there were almost no reports of black female sufferers of anorexia in clinical populations prior to the early 1980s.

It has been argued that black women living in the United Kingdom and the United States were largely protected from the illness (anorexia nervosa) by their cultural ideologies, which link fatness with affluence, beauty, prosperity and fertility (Gray, Ford & Kelly, 1987). This stereotyping of the typical eating disordered female led to the assumption that eating disorders were “culture-bound” syndromes. Recent findings however, suggest that disordered eating attitudes occur beyond the previously culture-bound contexts (Caradas, Lambert & Charlton, 2001).

According to Gluck and Geliebter (2002), culture has a major influence on the ideal appearance for women, which in westernized countries has become increasingly thin. The cultural pressure for women to be thin has been related to a greater incidence of eating disorders and attempts at weight control. Considering this observation within the context of cultural issues, it appears that the culture of milieu is of more relevance than that of race. O’Dea and Abraham (1999) attempt an explanation by suggesting that this may be attributed to the fact that when persons of different cultural backgrounds acculturate, the notion of thinness as the ideal triumphs and a greater degree of disordered eating patterns emerge. Abrams et al. (1993) claim that their study was the first to provide evidence that restrictive eating disorders among black women are related to the degree to which they assimilate to mainstream culture, while Szabo (1999) suggested that within the urban setting, there is homogenization of eating-related psychopathology across racial groups. Thus, it is possible that

traditional definitions of culture do not apply as they used to. Because we are experiencing more global and westernized cohort culture, the prevalence of eating disorders may be increasing in developing countries.

South African-based research findings seem to support the idea that eating disorders are not only becoming more prevalent within lower socio-economic classes, but also amongst black communities (Le Grange, Telch & Tibbs, 1998; Szabo & Hollands, 1997; Senekal, Steyn, Mashego & Nel, 2001; Van der Walt, 1995). Van der Walt (1995) predicted that the prevalence of eating disorders in the black communities in South Africa would gradually increase, as westernization and the homogenization of values take place. According to Szabo (1999), the first published cases of eating disorders in black female South Africans appeared in 1995, and the number of cases in which he had been involved with up to that date, had increased to nine. In a study by Senekal et al. (2001), a higher prevalence of disordered eating attitudes and behaviours (predisposing factors of eating disorders) was found among young black females than among similar white groups from the University of the North in South Africa. Szabo (1999) states that there seems to be a tendency among black South African sufferers to present with bulimic symptoms as part of their illnesses, and results from a preliminary analysis of abnormal eating attitudes in government schools indicated that 18,6% of black and white adolescents scored above the cutoff score of the Eating Attitudes Test, indicating disordered eating attitudes. In the studies of high-school girls and college students, both Szabo and Hollands (1997) and Le Grange et al. (1998) found that black pupils and students had a higher prevalence of abnormal eating attitudes than the other ethnic groups participating in the study. However, findings by Edwards and Moldan (2004) indicated that although some black females are affected by disordered eating behaviour, the involvement is less marked than in their white counterparts. These findings are in contrast with the work of Le Grange et al. (1998) and Senekal et al. (2001). These findings provide insight into the extent of eating-related problems in developing societies, such as South Africa. Therefore, the notion that eating disorders are primarily a Western, Caucasian phenomenon is challenged and the possibility is raised that the risks of eating disorders are increasing in these developing societies.

Although most of these disordered eating attitudes and behaviours are often benign, their presence is associated with an increased subsequent risk of clinical eating disorders (Jones et al., 2001), and thus needs to be explored and examined extensively in order to predict the development of eating disorders more accurately.

A central type of disordered eating behaviour and an associated feature of eating disorders is dieting (Kaplan & Sadock, 1998). Due to the fact that weight concerns and dieting were previously thought to be largely confined to white, middle-to-upper socio-economic status females, less is known about the prevalence of weight concerns, unhealthy weight control behaviours, and especially dieting, among individuals of different cultural groups or of various socio-economic status groups (O'Dea & Abraham, 2000). Studies previously conducted in the United Kingdom reported incidences of dieting between 26% and 46%, among white women from higher socio-economic classes (Dolan, 1991; Roberts et al., 1999). Grigg et al. (1996) postulated that over one third of their total sample of 869 Australian girls, aged 14-16, had used at least one "extreme" dieting method in the past month, for example, "crash dieting", fasting, slimming tablets, diuretics, laxatives, and/or cigarettes to lose weight. Of the total sample, 77% wanted to lose weight and 51% had tried to lose weight in the past month. According to Gibbons and Wertheim (1995), as many as 63% of high school girls in Melbourne (Victoria), aged 12-17 years, had dieted at least once and many had used extreme methods such as fasting or vomiting to lose weight. It is clear that disordered eating behaviours are present in more adolescent girls than previously believed and as such contribute to the current prevalence rates of eating disorders, but still no clear references were made to differences in diverse cultural groups. Recently, Crago and Shisslak (2003), found in a study among young American females, aged 18-23, found that although dieting behaviours were more prevalent among white females, most studies of binge eating and purging behaviours indicated that these behaviours were as common among black females as among white females.

Future research regarding cultural differences in weight-related concerns and behaviours is extremely important, but is complex in terms of study design and interpretation of findings. Some findings regarding the examining of cultural differences in weight-related concerns, attitudes and behaviours have been fairly

consistent, while others have not (Neumark-Sztainer et al., 2002). Large, culturally diverse samples are needed to allow for adequate representation of different ethnicities (Miller, & Pumariega, 1999; Neumark-Sztainer et al., 2002; Senekal et al., 2001). Cross-cultural studies can provide important data on the influence of cultural factors in the growth and control of eating disorders and their symptoms. If those studies deal with the same language but different contexts, the comparison may be richer and the knowledge derived more significant (Raich et al., 2001). According to Toomela (2003) there have been literally hundreds of different definitions of culture in psychology and related fields. He proposes that an attempt to obtain the most appropriate definition would be facilitated by the identification of the purpose for which the definition is intended. He further proposes that several authors are of the opinion that the choice of a definition best suited to the purpose of the study may be regarded as reasonable practice. Matsumoto (2003) suggests that the study of the discrepancy between consensual- and individual-level cultures is valuable in all cultures, but especially in those cultures undergoing massive cultural and social changes. This would be of particular interest in the South African context.

In the current study, *culture* will be utilized as an umbrella term to refer to the distinctive westernized, middle to upper socio-economic classes of the previously advantaged, individual-level cultures (white) and the Afro-centric, previously disadvantaged, consensual-level cultures (black).

The second important contributing factor to this increased prevalence may be found in the growing perception that concerns about weight and body size also appear to be emerging at increasingly younger ages. Initial studies suggest that dieting (disordered eating behaviour) is reported even among a significant number of prepubertal girls (Fear et al., 1996; Sherwood & Neumark-Sztainer, 2001; Striegel-Moore, Schreiber, Pike, Wilfley & Rodin, 1995). Roberts et al. (1999) cite the earliest reported age of girls starting to diet as eight years of age. This study reported that many young girls were engaging in potentially harmful dieting practices from a very early age and that they were of the opinion that dieting was a healthy activity. They found that these young girls were aware of the stigma associated with the overweight body shape and that they judged physical attractiveness using the same criteria as adults. Weight preoccupation and disordered attitudes towards food in prepubertal girls are a

concern, as dieting at this age can impact on growth and may increase risk of fatigue, irritability, low self-esteem, depression, and eating disorders (Sherwood & Neumark-Sztainer, 2001). Fisman (2003) states that these disorders with such early onset, have a major negative impact on physical, psychological, and social development. Garner and Kearney-Cooke (1996) state that the risk of developing an eating disorder is eight times higher among dieting adolescent girls than among non-dieting peers. They found that dieting to lose weight and fear of fatness were common in girls as young as nine years old and that these attitudes and behaviours escalated significantly during adolescence. Wardle and Watters (2004) maintain that exposure to teenage culture is widely believed to contribute to concerns about weight in children and adolescents. In their most recent study, in respect of 200 nine to eleven-year-old middle school adolescent girls in London, Wardle and Watters (2004) found that test scores from the Eating Attitudes Test (measuring disordered eating attitudes), were higher among nine-year-olds than among the eleven-year-olds taking part in the study. In studies done by Halvarsson, Lunner and Sjöden (2000), and Kohn and Henderson (2004), results have shown that children who showed elevated scores on the Children's Eating Attitudes Test, were more likely to be engaged in dieting and other extreme weight control methods than those with lower scores. They also found that these children with already existing disordered eating attitudes were more likely to present with eating disorders in future, than those in the lower range. Evidence that dieting predisposes people to binge eating, suggests that restraint eaters may very well vacillate between episodes of under-eating and normal or binge eating, rather than maintaining a healthy diet for prolonged periods. These adolescents then start following and practicing unhealthy patterns of eating behaviours and increase their risk of developing an eating disorder (Polivy, 1985). Existing literature is largely directed at treatment outcomes in adults (18 years and above), thus calling for extrapolation to a younger population.

Due to limited surveys regarding dieting and eating attitudes in young children, the age of onset of eating disorders still remains unclear (Maloney, McGuire, Daniels & Specker, 1989). From current international research results it is clear that a change in focus of research is occurring, which includes a focus on cultural diversification, younger populations and different socio-economic groups. In South Africa research is relatively limited in these areas.

According to Johnson, Rohan, and Kirk (2002), the findings relative to eating-related psychopathology underscore the need for population-based surveys that sample these attitudes and behaviours across age, gender and ethnicity. These findings have definite implications for intervention. On the one hand, there is a suggestion that existing intervention strategies are proving to be unsuccessful in curbing the problem (prevalence increasing), and on the other hand that they are both age (onset earlier) and culture inappropriate (Freeman & Stoll, 1999; Jones et al., 2001; Neumark-Sztainer et al., 2002; Senekal et al., 2001; Sherwood & Neumark-Sztainer, 2001). Consequently, despite the numerous calls for the development of appropriate and relevant intervention strategies and preventative programmes (Grigg et al., 1996; Jones et al., 2001; Senekal et al., 2001; Sherwood & Neumark-Sztainer, 2001), the problem of high prevalence still remains. It is therefore important that the age of onset should be accurately determined for diverse cultural groups, especially where these groups are as integrally integrated as in South Africa.

An attempt will be made to contribute to the identified developing focus in the existing literature with respect to the age of onset and prevalence of disordered eating attitudes and behaviours across cultural boundaries and could therefore serve as a foundation for the development of appropriate strategies and programmes especially in the multicultural South African context.

Method

This study had a dual purpose: firstly, to investigate changes in prevailing eating attitudes and behaviours of both black and white learners' between educational phases and secondly, to compare black and white learner's eating attitudes and behaviours within three different educational phases. For this purpose the learners were divided into three groups, which were representative of three different educational phases, namely, grades 4 – 6; grades 7 – 9; and grades 10 – 12.

It is clear that this study utilized different criterion groups, which consisted of different grade groups (cohorts). However, they were compared in the same time frame with respect to their eating attitudes and behaviours and thus non-experimental

research was conducted while a *cross sectional design* was implemented (Huysamen, 1994).

Measuring instruments

Because disordered eating attitudes and behaviours are two of the precipitating factors for developing eating disorders (Jones et al., 2001), appropriate measures of these two factors needed to be employed, to be able to predict the development of eating disorders more accurately. The EAT-26 and the EDI are widely used and accepted standardized self-report measures of symptoms and concerns characteristic of eating disorders and have been shown to be reliable and valid screening measures for eating disorders (Garner & Olmstead, 1984). The EDI is the most widely used standardized self-report instrument for the assessment of specific eating attitudes and behaviours. Reliability as well as construct, convergent and discriminant validity have been demonstrated for the EDI in its use on repeated occasions, which have included use with adolescent populations (Garner, Olmstead, Bohr, & Garfinkel, 1982). The three core subscales of the EDI (*drive for thinness*, *body dissatisfaction* and *bulimia*) were used for this study. The EAT-26 assesses a broad range of symptoms and provides a total score for disturbed eating attitudes and behaviours. The EAT-26 has acceptable criterion related validity by significantly predicting group membership. The reliability (internal consistency) of the EAT-26 shows a high score of $\alpha = 0.90$ for an anorexia nervosa group. Total scores on the EAT-26 are derived as a sum of the composite items, ranging from 0 to 78. Scores that are greater than or equal to 20 on the EAT-26 are frequently associated with abnormal eating attitudes and behaviour and may identify respondents with an eating disorder (Garner et al., 1982), although it is important to note that raw scores were used in this study as opposed to norms, due to the fact that the tests have not been standardized for the South-African context.

- ***Eating Disorder Inventory (EDI)***

The EDI provides measurements regarding the three core subscales, namely: *drive for thinness*, *bulimia* and *body dissatisfaction*. The three core subscales were specifically chosen, due to the fact that these three subscales accurately measure specific attitudes related to eating and weight pathology. The EDI test format and scoring are similar to those of the EAT-26. The most extreme “anorectic or bulimic” response (always or

never, depending on the keyed direction) earns a score of 3, the immediately adjacent response 2, the next response 1, and the three choices opposite to the most “anorectic or bulimic” responses receive no score (0). Scaled scores are the summation of all item scores for that particular scale. Scores range from 0 to 21 on the *drive for thinness* scale, which indicates excessive concern with dieting, preoccupation with weight, and involvement in an extreme pursuit of thinness. Items reflect both an ardent wish to lose weight as well as a fear of weight gain. Scores on the *bulimia subscale* also range from 0 to 21, and indicate the tendency toward episodes of uncontrollable overeating (bingeing) and may be followed by the impulse to engage in self-induced vomiting. The presence or absence of bulimia differentiates subtypes of anorexia nervosa (Garner & Olmstead, 1984). The *bulimia subscale* is considered to be an index for disordered eating behaviour. The scores on the *body dissatisfaction scale* range from 0 to 27 and reflect the belief that specific parts of the body associated with shape change or increased “fatness” at puberty are too large (for example: hips, thighs, buttocks). Body dissatisfaction has been found to be related to other body image disturbances in anorexia nervosa. When learners’ present with a high sum total score on each subscale of the EDI, a need for concern is caused and the possibility arises of either a greater drive to be thin, bulimic behaviour and body dissatisfaction, or the presence of anorexia nervosa.

Additionally, the internal consistency for items in each of the three subscales was investigated. For this purpose, Cronbach’s α -coefficients were calculated by means of the SPSS computer programme (SPSS Incorporated, 1983).

The calculated α -coefficients suggest that reasonably high internal consistency measures were found for the *bulimia-subscale* (0,692), while the two remaining subscales, *drive for thinness* (0,823) and *body dissatisfaction* (0,879), showed even higher internal consistency measures. The information obtained by means of these subscales can thus be used with confidence in further analyses.

- ***Eating Attitudes Test (EAT – 26)***

The EAT-26 assesses a broad range of symptoms and provides a single total score for disturbed eating attitudes and behaviours. The internal consistency with which the 26

items of this instrument were measured, was also investigated by means of Cronbach's α -coefficient. In this case, a coefficient of 0,833 was found, which also indicates a high internal consistency of measures. Thus, the information obtained by means of this instrument can be used with confidence in further analyses.

Data collection

Because disorders tend to be more prevalent amongst high academic performers (Barlow & Durand, 2001), this nuisance variable (academic performance) was controlled for by selecting the academically best class of each grade. It was also decided to select single sex (female) schools to ensure homogeneity with respect to gender. A total of 418 learners were selected from two girls' schools in Bloemfontein, Free State Province. These two schools were purposely selected to ensure homogeneity with respect to school environment as both schools resort under the same name and are administered by the same governing body. These learners were selected from grades 4 to 12 – representative of three educational phases (grades 4 –6; grades 7 – 9; and grades 10 – 12). They were tested in group-format. Each learner was given a test booklet consisting of a biographical questionnaire, the EAT-26 and the three subscales of the EDI. Clear instructions were given as to how the booklet should be completed. Anonymity was ensured at all times.

Participants

The pertinent biographical variables applicable to this study were the learner's cultural group membership and her grade (to be used to place her in the appropriate educational phase). Information regarding the distribution of the 418 participants with respect to these two biographical variables was obtained by means of the SAS-computer programme (SAS Institute, 1995) and is presented in Table 1.

Table 1: Frequency distribution of participants according to culture and educational phase

Educational phase	Black		White		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Grades 4 – 6	33	23,9	105	76,1	138	33,0
Grades 7 – 9	42	29,4	101	60,6	143	34,2
Grades 10 – 12	33	24,1	104	75,9	137	32,8
Total	108	25,8	310	74,2	418	100,0

It is clear from Table 1, that the majority of participants were white learners. This was indicative of the cultural distribution of the school as a whole.

Information concerning the learners' ages in months (for both culture groups) was obtained and mean age scores were investigated by means of the *t*-test for independent groups. The SAS-computer programme (SAS Institute, 1995) was utilized and the results were as follows: Mean age for learners in grades 4 - 6: black - 10 years, 8 months and white - 10 years, 7 months; grades 7 - 9: black - 13 years, 7 months and white - 13 years, 7 months; grades 10 - 12: black - 16 years, 4 months and white - 16 years, 7 months. It is clear that the two groups' mean ages compare well with each other. Thus, no significant differences are present in the mean age scores for each educational phase. The black learners constantly showed a greater standard deviation concerning their ages (greater distribution of ages than the white group). The deviations were: grades 4 - 6: black (10,44) and white (9,94); grades 7 - 9: black (11,64) and white (10,97); grades 10 - 12: black (13,07) and white (11,28).

Research questions

Two research questions were investigated in this study. The first research question pertained to the possible changes in learners' eating attitudes and behaviours between educational phases. This was investigated separately for each of the two culture groups. The second question related to possible differences in eating attitudes and behaviours of black and white learners in the different educational phases.

Statistical procedures

Regarding both research questions, investigations were done with respect to the significance of differences in mean scores on the three subscales of the EDI, as well as on the total score of the EAT-26. All analyses were conducted by means of the SAS-computer programme (SAS Institute, 1995). Because one independent variable and four dependent variables (attitudes and behaviours) consistently occurred, a one-way multivariate analysis of variance (MANOVA) was performed (Tabachnick & Fidell, 1989). A significant result (F-value) found with the MANOVA analysis, was followed by a single variable analysis of variance for each of the dependent variables. If more than two categories (as in the case of the educational phases) regarding an independent variable occurred, the Scheffè-procedure was utilized to determine which of the subgroups' mean scores on the dependent variables differed significantly.

To be able to comment on the practical importance/value of statistically significant results found during the analyses, the practical significance of the results was investigated. As criterion of practical significance, effect size was determined. To compare more than two population means, a one-way analysis of variance was performed and, in this case, the effect sizes were determined in the following manner:

$$f = \sqrt{\frac{k-1}{N-k}} \cdot \sqrt{F}$$

According to Steyn (1999) the following guideline values apply for the interpretation of effect sizes:

$f = 0,1$: small effect

$f = 0,25$: moderate effect

$f = 0,4$: large effect

The above-mentioned guidelines were used throughout the study to evaluate the practical significance of the results obtained. Only when statistically significant results (on the 1% or 5% levels) were found, were the corresponding effect sizes determined.

Results

Prior to the exploration of the two relevant research questions, the descriptive statistics (means and standard deviations) applicable to the sample with respect to the four dependent variables, namely *drive for thinness*, *bulimia*, *body dissatisfaction* and *eating attitudes*, are presented in Table 2.

Table 2: Sample means and standard deviations for the four dependent variables

Variable	N	\bar{X}	s
Drive for thinness	410	6,11	5,64
Bulimia	413	1,61	2,75
Body dissatisfaction	412	9,80	7,59
Eating attitudes	417	12,21	9,80

The descriptive statistics obtained in this study with respect to this sample, may be compared to those obtained in a similar study conducted in Canada (Jones et al., 2001) in which 1 739 adolescent females (aged 12 to 18 years) were tested with the same instruments. The latter study reflected the following mean scores and associated standard deviations: *drive for thinness*: $\bar{X} = 4,8$ (s=5,8); *bulimia*: $\bar{X} = 1,3$ (s=2,4); *body dissatisfaction*: $\bar{X} = 10,1$ (s=8,5) and *eating attitudes*: $\bar{X} = 9,7$ (s=10,2). Upon closer investigation, it would appear that the mean scores for both the *drive for thinness* and the *eating attitudes scales* for the current study differ significantly (at the 1% level) from those in the Canadian study. The South African learners therefore have a greater drive for thinness and poorer eating attitudes than their Canadian counterparts do.

The research question pertaining to the age of onset of disordered eating attitudes and behaviours was explored for the two culture groups separately. The results for the black learners will be discussed before presenting those for the white learners.

To be able to determine whether the eating attitudes and behaviours of black learners change between educational phases, the MANOVA procedure was performed. The results of this procedure are presented in Table 3.

Table 3: Manova F-values according to educational phases for black learners

Source	F-value+	ν	p
Educational phase	2,47	8, 139	0,0154*

* $p \leq 0,05$

+ Hotelling-Lawley-Trace

These results suggest that differences exist with respect to the mean eating attitudes- and behaviours scores for the different educational phases for the black learners, which are significant at the 5% -level. To be able to determine on which of the four variables (three subscales from the EDI and one total score from the EAT-26) significant differences occur, in the means for the three educational phases of black learners, a one-way analysis of variance was performed. The latter procedure provides, firstly, an indication of which subscales show significant differences, and secondly, shows for which groups the differences exist. The result with respect to the four subscales (comparable to Table 5), together with the calculated effect sizes (f) indicated clear differences in group mean scores regarding the *bulimia scale* ($p = 0,0306$) for the black learners from different educational phases, which are significant at the 5% -level. The corresponding f -value shows that the result is indicative of a medium effect size. Due to the fact that three educational phases are involved, *post hoc t*-tests were followed by the Sheffè-procedure.

According to the Sheffè-results, the mean bulimia scores of group 1 (grades 4 – 6) differ from those of group 2 (grades 7 – 9) for the black learners. On closer inspection it appears that the black learners from group 2 have a significantly higher mean score (2,46) on the *bulimia scale*. The mean score of group 3 (1,70) is somewhat lower than that of group 2 (2,46), but not significantly so. This suggests that there is a significant increase in dysfunctional eating behaviours (bulimia) from grades 4 – 6 (0,63) to grades 7 – 9 (2,46) among black learners. It is noteworthy that the mean bulimia score for group 3 does not differ significantly from that of either group 1 or group 2. This is suggestive of a peak in disordered eating behaviour (bulimia) in grades 7 - 9.

To be able to determine whether the eating attitudes and behaviours of white learners change between educational phases, the MANOVA-procedure was once again carried out. The results of this procedure are presented in Table 4.

Table 4: Manova F-values according to the educational phases for the white learners

Source	<i>F</i> -value+	<i>V</i>	<i>p</i>
Educational phases	6,95	8, 422	0,0001**

** $p \leq 0,01$

+ Hotelling-Lawley-Trace

From Table 4 it would appear that there are differences in the mean eating attitudes and behaviours scores for the different educational phases, for white learners too, which are significant at the 1% -level. To be able to determine on which of the four subscales (three for the EDI and one total score for the EAT-26) significant differences in means exist for the three educational phases for white learners, a one-way analysis of variance was performed. The latter procedure provides, firstly, an indication with respect to which subscales show significant differences, and secondly, shows for which groups the differences exist. The results with respect to the four variables, together with the calculated effect sizes (*f*), are presented in Table 5.

Table 5: F-values of the one-way analysis of variance to determine differences in mean scores on the four subscales for the white learners

Eating attitudes and behaviours	<i>F</i> -value	<i>p</i>	<i>f</i>
Drive for thinness	7,11	0,0010**	0,27
Bulimia	21,45	0,0001**	0,46
Body dissatisfaction	11,64	0,0001**	0,34
Eating attitude	6,50	0,0017**	0,25

** $p \leq 0, 01$

From Table 5 it is clear that differences in group means for the different educational phases exist for white learners with respect to all four the measures, which are significant at the 1%-level. The corresponding *f*-values show that the result is indicative of a medium to large effect size. Seeing that three educational phases were

utilized, *post hoc t*-tests were done by means of the Sheffè-procedure. The means and standard deviations of the three educational phases for the white learners regarding the drive for thinness-, bulimia-, body dissatisfaction and eating attitudes scales, are presented in Table 6.

Table 6: Sheffè-results concerning the four disordered eating attitudes and behaviour scales for the three educational phases

Groups that differ	N	\bar{X}	s	Groups
<i>Drive for Thinness scale</i>				
Group 3 from 1	102	5,35	4,67	Grades 4 – 6 (group 1)
Group 3 from 2	99	5,94	5,28	Grades 7 – 9 (group 2)
	103	8,11	6,64	Grades 10 - 12 (group 3)
<i>Bulimia scale</i>				
Group 3 from 1	103	0,59	1,27	Grades 4 – 6 (group 1)
Group 3 from 2	101	1,37	2,13	Grades 7 – 9 (group 2)
	103	2,80	3,59	Grades 10 – 12 (group 3)
<i>Body Dissatisfaction scale</i>				
Group 3 from 1	103	7,55	6,83	Grades 4 – 6 (group 1)
Group 3 from 2	100	10,03	7,72	Grades 7 – 9 (group 2)
	103	12,65	7,98	Grades 10 – 12 (group 3)
<i>Eating Attitudes scale</i>				
Group 3 from 1	105	10,96	8,17	Grades 4 – 6 (group 1)
Group 3 from 2	101	11,58	9,79	Grades 7 – 9 (group 2)
	104	15,35	11,74	Grades 10 – 12 (group 3)

According to the Sheffè-results in Table 6, the same tendencies seem to occur over the four subscale measures. There was a significant difference in the mean scores between group 3 (grades 10 – 12) and group 1 (grades 4 – 6), as well as between group 3 and group 2 (grades 7 – 9) on all four of the measured subscales, for the white learners. Mean scores do not differ significantly for groups 1 and 2. Upon closer examination, it would appear that the white learners from group 3 have a significantly higher mean score on the *drive for thinness scale* (8,11), the *bulimia scale* (2,80), the

body dissatisfaction scale (12,65), and the *eating attitudes scale* (15,35), as opposed to those from group 1 and group 2. Learners from group 3 (grades 10 – 12) seem to show a significant increase in all four disordered eating attitudes and behaviours (*drive for thinness, bulimia, body dissatisfaction and eating attitudes*).

The results from Table 6 correlate with previous research findings, which suggests that eating disorders are more prevalent among older adolescent females, suggesting a progressive increase through the grades – especially in the white learner population (Barlow & Durand, 2001; Senekal et al., 2001; Szabo & Hollands, 1997).

The research question pertaining to possible cultural differences in disordered eating attitudes and behaviours were investigated separately for the three educational phases (groups 1 – 3) and results are presented for each consecutive group. The results with respect to **grades 4 – 6** (group 1) are reflected in Table 7.

Table 7: Manova F values according to culture group for learners in grades 4 - 6

Source	F-value+	v	p
Cultural group	0,93	4,129	0,4482

+ Hotelling-Lawley-Trace

According to these results, it appears that there are no significant differences in the mean eating attitudes and behaviours scores for the two culture groups for learners in grades 4 – 6 that may be considered significant, at least at the 5% level of significance. No further exploration of the results was therefore required.

The same procedure was followed for learners in **grades 7 – 9** (group 2) and the results are reflected in Table 8.

Table 8: Manova F values according to culture group for learners in grades 7 - 9

Source	F-value+	v	p
Cultural group	3,00	4,134	0,0208*

* $p \leq 0,05$

+ Hotelling-Lawley-Trace.

The results in Table 8 clearly indicate significant differences in mean eating attitudes and behaviours scores for the two culture groups, which are significant at the 5% level of significance. In an attempt to determine which of the four variables reflect significant differences in means for the two culture groups in this educational phase, a one-way analysis of variance was performed. The results with respect to the dependent variables and the associated effect sizes (*f*) are reflected in Table 9.

Table 9: F values of the one-way analysis of variance to determine differences in mean scores on the four dependent variables for the two culture groups

Eating attitudes and behaviours	F-value	p	f
Drive for thinness	0,01	0,9068	
Bulimia	7,28	0,0079**	0,23
Body dissatisfaction	0,20	0,6560	
Eating attitude	0,01	0,9072	

** $p \leq 0,01$

These results clearly indicate significant differences (at the 1% level) in mean scores for the subscale *bulimia* for the two culture groups in grades 7 – 9. The corresponding *f* value indicates a moderate effect size. As there were only two culture groups involved in this study, no *post hoc t test* was required. The means and standard deviations for the two culture groups with respect to the relevant variable (*bulimia*) are reflected in Table 10.

Table 10: Means and standard deviations for the two culture groups with respect to the Bulimia subscale

Variable	Black		White	
	\bar{X}	s	\bar{X}	s
Bulimia	2,46	3,06	1,37	2,13

These results suggest that the black learners in grades 7 – 9 obtained a higher mean bulimia score than did their white counterparts. This would imply that the black

learners in this developmental phase have a greater tendency to bulimia than the white learners have.

In an attempt to determine whether the eating attitudes and behaviours differ for the two culture groups in **grades 10 – 12**, a one-way Manova procedure was once again employed. The results for the third educational phase (grades 10 – 12) appear in Table 11.

Table 11: Manova F values according to culture group for learners in grades 10 – 12

Source	F-value+	<i>v</i>	<i>p</i>
Cultural group	3,08	4,130	0,0185*

* $p \leq 0,05$

+ Hotelling-Lawley-Trace.

These results clearly indicate significant differences (at the 5% level) in the mean eating attitudes and behaviours scores for the two culture groups in this educational phase. In an attempt to determine on which of the four subscales significant differences in means were reported for the two culture groups, in this educational phase, a one-way analysis of variance was performed. The relevant results and calculated effect sizes (*f*) appear in Table 12.

Table 12: F values of the one-way analysis of variance to determine differences in mean scores on the four dependent variables for the two culture groups

Eating attitudes and behaviours	F-value	<i>p</i>	<i>f</i>
Drive for thinness	12,22	0,0006**	0,31
Bulimia	2,53	0,1143	
Body dissatisfaction	4,00	0,0476*	0,17
Eating attitude	8,41	0,0044**	0,25

** $p \leq 0,01$

* $p \leq 0,05$

The results suggest that the two culture groups' mean scores on the *drive for thinness*, *body dissatisfaction*, and *eating attitudes* scales differ significantly for learners in

grades 10 – 12. These differences are significant at the 1% level for the *drive for thinness* and *eating attitudes* scales, while the difference on the *body dissatisfaction* scale is significant at the 5% level. The associated *f* value is indicative of a moderate effect size. Because only two cultural groups were involved in this study, no *post hoc t test* was required. The relevant means and standard deviations for the two culture groups are reflected in Table 13.

Table 13: Means and standard deviations for the two culture groups on the drive for thinness, body dissatisfaction and eating attitudes subscales

Eating attitudes and behaviours	<i>F</i>-value	<i>p</i>	<i>f</i>
Drive for thinness	12,22	0,0006**	0,31
Bulimia	2,53	0,1143	
Body dissatisfaction	4,00	0,0476*	0,17
Eating attitude	8,41	0,0044**	0,25

** $p \leq 0,01$

* $p \leq 0,05$

The results reflected in Table 13 suggest that the white learners in grades 10 – 12 obtained higher mean scores than their black counterparts did on all three subscales. This suggests that white learners in this educational phase have a greater drive for thinness, are more dissatisfied with their body shapes and have poorer eating attitudes.

Discussion of results

This study aimed at contributing to the identified hiatus in the existing South African literature with respect to the age of onset and prevalence of disordered eating attitudes and behaviours across cultural boundaries. Furthermore, it aimed at creating a foundation for the development of appropriate strategies and programmes to address eating disorders in the multicultural South African context.

The results pertaining to the first research question, namely the age of onset of disordered eating attitudes and behaviours, clearly indicated a significant increase in disordered eating behaviours specifically associated with bulimia for black learners

from grades 4 - 6 to grades 7 – 9. It would appear that the latter educational phase marks the age of onset of significant increases in, for example, uncontrollable eating episodes, attempts at vomiting in order to lose weight and eating or drinking in secrecy for black learners. This phenomenon would appear to support earlier findings (Szabo, 1999) that identified a tendency among black South African sufferers of eating disorders to present with bulimic symptoms as part of their illnesses. These results would suggest that this tendency may be traced back to a mean age of 13,7 years and would have definite implications for intervention and treatment programmes. It is also noteworthy that cultural differences occur with respect to this phenomenon at this educational level. Black females are significantly more likely to report problems related to bulimic behaviour in this phase than their white counterparts. These findings seem to support those reported by Senekal et al. (2001), who indicated a higher prevalence of disordered eating behaviours (bulimia) among black student participants than among similar white student groups.

Apart from the reported bulimic symptoms, the black learners did not report any significant increases in drive for thinness, body dissatisfaction or eating attitudes between the different educational phases.

In sharp contrast to this, the white learners reported significant increases in all measured disordered eating attitudes and behaviours in grades 10 – 12. This educational phase (mean age = 16,67 years) reflected marked increases in all measures included in this study and this mean age may therefore be considered to be the age of onset of significant increases in drive for thinness, bulimia, body dissatisfaction, and poor eating attitudes for white learners. These findings correlate well with those reported by Jones et. al. (2001) in which disordered eating attitudes were seen to be more prevalent among their second age group of participants aged 15 – 16 years. Barlow and Durand (2001) indicated similar findings, which suggest that disordered eating attitudes and behaviours are more prevalent among older adolescent females – especially in the white learner population.

Investigations pertaining to the second research question, namely cultural differences with respect to eating attitudes and behaviours, produced valuable insights. It is clear that black and white learners do not differ with respect to their eating attitudes and

behaviours during the first educational phase (grades 4 – 6) as described in this study. No significant differences were identified with respect to their reported experiences of disordered eating behaviours or attitudes. The results obtained with respect to the second educational phase (Grades 7 – 9) only reflected the cultural differences with respect of bulimia mentioned above. All other measures of eating behaviours and attitudes utilized in this study reflected no significant mean differences for the two cultural groups at this educational level.

The most apparent differences emerged during the third educational phase (grades 10 – 12). It would appear that the white learners in this stage of development reported significantly higher drive for thinness, greater body dissatisfaction and poorer eating attitudes than did their black counterparts. Furthermore, the cultural differences that had emerged during the second educational phase with respect to bulimia, had disappeared in the third phase. This was the only scale (bulimia) that did not reflect a significant mean difference for the two cultural groups at this level. These results would only partially support those reported by Le Grange et. al. (1998) who maintained that black female students scored significantly higher than the other participating ethnic groups on the Bulimic Investigatory Test and the Eating Attitudes Test. In the current study, support may be found for the findings relating to the bulimic activities (but only for grades 7 – 9), whereas no evidence could be found to support the findings on the latter test. The current results would be more supportive of those reported by Edwards and Moldan (2004), who maintain that the mean scores of the white female university students participating in their study were higher than those of the black university students concerning disordered eating attitudes.

A further observation was made with respect to the comparison of mean scores on the subscales *drive for thinness* and *eating attitudes* for the total South African (N = 418) and Canadian (N=1739) samples. It is apparent that the current sample reflected a significantly higher mean score for drive for thinness and eating attitudes.

Limitations of this study and recommendations for the future would include the following:

- (i) The utilization of larger sample sizes to ensure greater representation of black learners.
- (ii) Finer cultural divisions for both black and white cultures, e.g. different language speakers.
- (iii) A possible comparison of these findings with other studies conducted in other school settings (e.g. co-ed; less racially integrated; rural areas) and across wider academic performance levels.
- (iv) Further exploration of the identified early onset of bulimic symptoms among black learners. (With specific reference to the identified peak in bulimia scores for black females in the second educational phase.)
- (v) The development of appropriate intervention strategies and programmes to prevent and remediate identified disordered eating attitudes and behaviours.
- (vi) Differences in language competence and cultural values could have accounted for the differences obtained between the groups.
- (vii) The levels of exposure to the culture as represented by the school context, prior to attending this specific school could have influenced the results. Despite the fact that the differing sample sizes could have impacted negatively on the results, it is imperative that this possible trend be investigated more thoroughly in future studies. It is possible that the groups may begin to share cultural values (due to acculturation) and may begin to approximate each other as well, despite their ethnic, language or racial differences. Thus, the cultural models with which the individual learner identifies may be strong factors in determining the concerns about eating related attitudes and behaviour.
- (viii) The questionnaires utilised may not have been appropriate for the South African setting, or the age groups being studied.

Despite some limitations, the results of the study contribute significantly to the growing focus on ethnic/cultural differences in disordered eating attitudes and

behaviours in a diverse South African population, and may be utilized in the development and implementation of appropriate intervention strategies.

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