

2019

# Prevalence and Characteristics of Disordered Eating Adolescents in Cyprus: The Influence of Body Image, Situational Dysphoria, Self-Esteem, and the Media

Argyrides, Marios

The European Journal of Counselling Psychology

---

<http://hdl.handle.net/11728/11693>

*Downloaded from HEPHAESTUS Repository, Neapolis University institutional repository*

# Prevalence and Characteristics of Disordered Eating Adolescents in Cyprus: The Influence of Body Image, Situational Dysphoria, Self-Esteem, and the Media

Marios Argyrides\*<sup>a</sup>, Evagelia Alexiou<sup>a</sup>

[a] Neapolis University Pafos, Paphos, Cyprus.

## Abstract

The purpose of the current study was threefold: a) to collect a very large representative sample of adolescents and assess for their levels of disordered eating behaviors; b) to describe the characteristics of adolescents with disordered eating behaviors in Cyprus based on the measures that were used in the study and c) to compare the adolescents with significant disordered eating behaviors (EAT-26  $\geq$  20) to the ones without any disordered eating behaviors (EAT < 20) on all the variables of interest. A total of 2664 secondary school students responded to self-report measures assessing disordered eating, negative body image, situational dysphoria, self-esteem and media influences. Results indicated that 16.04% of the overall sample of adolescents scored significantly on the EAT-26 (21.4% of females and 8.4% of males). Results also indicated that the majority of the adolescents with disordered eating behaviors were female, mainly from average socioeconomic status, normal Body Mass Index and grew up and reside in an urban area. Finally, adolescents in the disordered eating behaviors group scored significantly lower on appearance satisfaction and self-esteem and significantly higher on appearance investment, weight-related anxiety, situational dysphoria, internalization of the thin and athletic ideals as well as feeling pressured from the media and considering the media as a good source of information. In conclusion, results indicate a substantial difference in levels of disordered eating in adolescents as compared to previous research in Cyprus. Possible explanations are addressed as well as implications for prevention strategies and future research ideas based on the findings.

*Keywords:* prevalence, disordered eating, Cyprus, body image, media

The European Journal of Counselling Psychology, 2019, Vol. 8(1), 19–31, <https://doi.org/10.5964/ejcop.v8i1.216>

Received: 2019-03-27. Accepted: 2019-03-27. Published (VoR): 2020-01-13.

Handling Editor: Marios Argyrides, Neapolis University Pafos, Paphos, Cyprus

\*Corresponding author at: 2 Danaes Av., 8042, Paphos, Cyprus. E-mail: m.argyrides.1@nup.ac.cy



This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License, CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Eating disorders have a serious impact on the physical/psychosocial health and quality of life, especially for adolescents who are more at risk (Herpertz-Dahlmann, Wille, Holling, Vloet, & Ravens-Sieberer, 2008; Smolak, 2009). The development of eating disorders has been attributed mainly to three clusters: the sociocultural, the familial and the individual (Tylka & Subich, 2004). As compared to what was previously believed (Powell & Kahn, 1995), eating disorders and disordered eating behaviors are prevalent in both Western and Non-Western countries (Herpertz-Dahlmann et al., 2008). Disordered eating has also been found to be more prevalent in females (Baş, Asci, Karabudak, & Kiziltan, 2004; Striegel-Moore et al., 2009), across all socioeconomic statuses (Gibbons, 2001), body mass indexes (Fan, Li, Liu, Hu, Ma, & Xu, 2010) and individuals residing in urban areas (Yu et al., 2015).

Disordered eating behaviors have been assessed worldwide, usually using the Eating Attitudes Test-26 where scores higher than 20 are linked to the diagnosis of eating disorders (Garner, Olmsted, Bohr, & Garfinkel,

Table 1

Percentages of EAT-26 Scores of  $\geq 20$  of Adolescents Across Several Countries

Country/Sample	N	% of Boys	N	% of Girls	Citation
USA	N/A	N/A	2483	13-16	Jones, Bennett, Olmsted, Lawson and Rodin (2001)
Brazil	N/A	N/A	1807	13.3	Vilela et al., 2004
Saudi Arabia	N/A	N/A	129	19.6	Al-Subaie et al., 1996
United Arab Emirates	N/A	N/A	495	23.4	Eapen, Mabrouk, & Bin-Othman, 2006
Iran	N/A	N/A	1887	16.7	Gargari et al., 2011
Israel	120	5.0	125	20.8	Maor, Sayag, Dahan and Hermoni (2006)
South Africa	N/A	N/A	506	18.7	Szabo & Allwood, 2004
China	N/A	N/A	796	10.8	Lee & Lee, 2000
Japan	453	2.4	675	11.2	Nishizawa et al., 2003
Italy	N/A	N/A	626	13.7	Saporetti, Sancini, Bassoli, Castelli, & Pellai, 2004
Spain	N/A	N/A	467	23.5	Toro et al., 2006
Greece	100	12.8	202	24.7	Costarelli, Antonopoulou, & Mavrovounioti, 2011

1982). EAT-26  $\geq 20$  scores have also been found to vary widely in adolescents from country to country (see Table 1) ranging between 2.4% and 12.8% for boys and 11.2% and 24.7% for girls in the samples used.

These percentages, especially for the female samples, are considerably lower than the percentages reported in two studies conducted in Cyprus using adolescent girls and the EAT-26. Specifically, Hadjigeorgiou, Tornaritis, Savva, Solea, & Kafatos (2012) collected data from a representative sample of adolescents in 2003 ( $N = 2033$ ) and 2010 ( $N = 1128$ ). Their results indicated that 18.8% of males and 34.4% females in 2003 and 18.8% of males and 35.9% of females in 2010 had significant disordered eating behaviors (EAT-26  $\geq 20$ ). When using university-age samples in Cyprus and the EAT-26, results indicated more similar trends to the international literature. Specifically, Argyrides and Kkeli (2015a) reported significant scores on the EAT-26 in 21.43% of their 269 female sample. This considerable difference between the percentages of the adolescent and young adult population combined with pilot data of the researchers from a high school sample (which resulted in 18% of female high school students scoring  $\geq 20$  on the EAT-26) (Alexiou & Argyrides, 2015) was puzzling. Therefore, the need to either further support the previous findings in the adolescent population or possibly find contradicting evidence was deemed necessary.

Another significant reason that research on disordered eating in Cyprus was deemed necessary is the claim by Argyrides, Kkeli and Koutsantoni (2015) supporting that Cyprus is of great interest in the body image and disordered eating literature due to four reasons: a) the great boost in economy experienced by the inhabitants a few years after the 1974 Turkish invasion which resulted in a great emphasis placed on social and personal image (i.e. housing, vehicles, appearance); b) the year-round warm weather in Cyprus (320 days of sunshine) inevitably results in inhabitants wearing lighter/more revealing clothing, a claim also supported previously by Sloan (2002) who associated warm weather and disordered eating concerns; c) Argyrides et al. (2015), Katsounari (2009), and Hadjigeorgiou et al. (2012) reported notably high levels of body image concerns, disordered eating and low levels of self-esteem and d) Argyrides et al. (2015) supported that the school curriculum does not substantially address issues of body image and disordered eating. In contrary, the weekly time spent in classes addressing these issues has been reduced.

Based on the above information, the purpose of the current study was threefold: a) to collect a very large representative sample of adolescents and assess for their levels of disordered eating behaviors; b) to describe the characteristics of adolescents with disordered eating behaviors in Cyprus based on the measures used and c) to compare the adolescents with significant disordered eating behaviors ( $EAT-26 \geq 20$ ) to the ones without any disordered eating behaviors ( $EAT < 20$ ) on all the variables of interest. For the current study, the variables of interest were disordered eating behaviors, appearance satisfaction, investment in appearance, weight-related anxiety (overweight preoccupation), self-esteem, body-image-dysphoria, internalization of the thin and athletic ideals, pressures from the media and the perception of media as a good source of information of body image. Based on the above aims of the study as well as findings from previous research as stated earlier, three hypotheses were developed:

H1: The percentage of the sample (males and females) that will score significantly on the EAT-26 ( $\geq 20$ ) will reflect the reported findings of the other European and Middle Eastern countries (ranging between 2.4% and 12.8% in males and 11.2 and 24.7% in females).

H2: As previously supported in the literature, the participants that will be identified as having disordered eating behaviors will be mainly females, across all BMI categories and socioeconomic statuses and from urban areas.

H3: When compared to participants without any disordered eating behaviors ( $EAT-26 < 20$ ), participants identified as having disordered eating behaviors will have significantly lower levels of self-esteem and body image satisfaction and higher levels of body/weight-related dysphoria and anxiety, investment in appearance and influences from the media.

## Method

### Participants

Two thousand six hundred and sixty four secondary school students participated in the current study (1119 boys [42%] and 1545 girls [58%]). Participants had a mean age of 15.24 ( $SD = 1.24$ ) with a range of 14 to 18 years. Concerning height and weight, participants had a mean height of 167 cm ( $SD = 8.5$  cm; Range 110 – 200 cm) and a mean weight of 59 kg ( $SD = 12.05$ ; Range 36-124 kg). Based on participants' self-reported height and weight, their Body Mass Index (BMI) was calculated. The mean BMI was 21.0 ( $SD = 3.54$ ; Range 12.35 – 49.59). Concerning participants' socioeconomic status, the data revealed that they came mostly from middle class families (16.2% low socioeconomic status; 64.3% middle socioeconomic status; 19.5% high socioeconomic status).

### Measures

#### Disordered Eating Attitudes and Behavior

The Eating Attitudes Test-26 (EAT-26) (Garner, Olmsted, Bohr, & Garfinkel, 1982; Varsou & Trikkas, 1991 for the Greek version) is a widely used instrument which identifies the symptoms of disordered eating according to the respondents' feelings, attitudes and behaviors. The EAT-26 consists of three subscales which include Dieting, Bulimia and Food Preoccupation, and Oral Control. The 26 items of the scale are rated on a 6-point Likert-type scale ranging from Always (receiving a score of "1") to Never (receiving a score of "6"). The 26 items also

create a Composite Total Score. When one's Composite Total Score is 20 or higher, he/she appears to have a higher risk of developing eating disorder pathology and is indicative of a high level of engagement with their body shape and dieting behavior. Since the main purpose of the study was to identify individuals in the "at-risk" category of eating disorders, only the Composite Total Score of the measure was used. The EAT-26 has reported reliability coefficients ranging from .86 to .90. For the current study, the internal consistency reliability coefficient of the Total Composite Score was .87.

### **Body-Image Satisfaction, Body-Image Investment and Weight-Related Anxiety**

The Multidimensional Body–Self Relations Questionnaire–Appearance Scales (MBSRQ – AS) (Argyrides & Kkeli, 2013 for the Greek version; Cash, 2000) was used to measure participants' appearance satisfaction, investment in appearance, and weight–related anxiety. Three of the five subscales of the measure were used for the purposes of the current study: the 7–item Appearance Evaluation subscale measuring feelings of physical attractiveness and satisfaction with one's looks, the 12–item Appearance Orientation subscale measuring the extent of investment in one's appearance, and the 4–item Overweight Preoccupation subscale measuring weight–related anxiety. All items were rated on a 5–point Likert–type satisfaction scale ranging from Very Satisfied (receiving a score of 5) to Very Dissatisfied (receiving a score of 1) and Strongly Agree (receiving a score of 5) to Strongly Disagree (receiving a score of 1). The subscales of the current measure have been found to have good psychometric properties among both genders and different cultural groups with alphas above .80. For the current sample, the alpha coefficient for the Appearance Orientation subscale was .81, for the Appearance Evaluation .82 and .86 for the Overweight Preoccupation subscale.

### **Self-Esteem**

Self-Esteem was assessed using the Rosenberg Self-Esteem Scale (Rosenberg, 1965; Spanea et al., 2005 for the Greek version). It consists of 10 items that assess levels of global self–worth based on the positive and negative beliefs and perceptions about one's self. The questionnaire uses a 4–point Likert–type scale ranging from Strongly Agree (receiving a score of 4) to Strongly Disagree (receiving a score of 1). The Rosenberg Self Esteem Scale also has excellent reported reliability coefficients ranging from .87 to .93. For the current sample the alpha coefficient was .87.

### **Situational Body Image Dysphoria**

Body image-related dysphoria in social situations was assessed using the Situational Inventory of Body Image Dysphoria – Short version (SIBID-S) (Argyrides & Kkeli, 2015b for the Greek version; Cash, 2002). Respondents are asked to report how often they experience body-image dysphoria or distress in each of 20 identified situations – including both social and nonsocial contexts and activities related to exercising, grooming, eating, intimacy, physical self-focus, and appearance alterations. The SIBID-S contains 20 items that are answered on a five-point Likert-type rating scale ranging from Never (receiving a score of 0) to Always (receiving a score of 4). The Composite Total Score of the SIBID-S has excellent reported reliability coefficient of .96. For the current sample the alpha coefficient was .94.

### **Media Influences**

Media influences were assessed using the Sociocultural Attitudes Towards Appearance Questionnaire–3rd version (SATAQ–3) (Argyrides et al., 2014 for the Greek version; Thompson, van den Berg, Roehrig, Guarda, & Heiberg, 2004). The 30-item measure consists of four subscales: the internalization of the thin ideal (Internalization of the Thin Ideal), appearance comparison (Appearance Comparison), body surveillance (Body Surveillance), and weight concerns (Weight Concerns).

zation – General), the internalization of the athletic ideal (Internalization – Athlete), the perceived pressures from the media regarding appearance (Pressures), and whether the media are perceived as a good source of information regarding appearance (Information). Items are scored on a 5–point Likert–type scale ranging from Definitely Disagree (receiving a score of 1) to Definitely Agree (receiving a score of 5). The measure has excellent psychometric properties across several populations and ages with internal Cronbach alpha coefficients ranging from .84 to .93. For the current sample, the Cronbach's alphas were .92 for Internalization – General, .82 for Internalization – Athlete, .94 for Pressures and .88 for Information.

## Procedure

Upon all the necessary ethical and organizational approvals, the research team visited the schools and collected data during allocated school hours. Participants responded to the demographic questionnaire which included information on age, gender, height, actual and ideal weight, socioeconomic status, and place of upbringing and residence. Participants' Body Mass Index (BMI) was calculated based on their reported height and weight. Moreover, participants' BMI was categorized as Underweight, Normal Weight, Overweight, and Obese. The total scores of all the variables of interest described above were then calculated and the necessary statistical analyses were conducted (descriptive statistics, non-parametric tests and t-tests).

## Results

In order to address Hypothesis 1, descriptive statistics were conducted and indicated that 427 of the 2664 adolescents (16.03%) had a score of  $\geq 20$  on the EAT-26 which indicates significant disordered eating behaviors. Concerning gender, 332 of the 1545 females (21.4%) and 95 of the 1119 males (8.4%) were identified as having a score  $\geq 20$  on the EAT-26. Therefore, Hypothesis 1 was supported since the percentage of participants with a significant score on the EAT-26 resembled the literature from other countries in the region (ranging between 2.4% and 12.8% in males and 11.2 and 24.7% in females) on adolescent disordered eating behaviors.

In order to address Hypothesis 2, descriptive and non-parametric (chi-square) statistics were conducted on the 427 adolescents who scored  $\geq 20$  on the EAT-26 (Table 2) in order to understand the characteristics of this group. Of these 427 adolescents, 332 (77.75%) were female and 95 (22.25%) were male,  $\chi^2(1) = 131.5$ ,  $p < .001$ . Concerning their BMI category, results indicated that the vast majority of the sample was in the Normal BMI category ( $N = 301$ ; 70.5%), followed by 66 (15.5%) in the Underweight category, 46 (10.7%) in the Overweight category and 14 (3.3%) in the Obese category,  $\chi^2(3) = 484.2$ ,  $p < .001$ . Concerning their socioeconomic status, 197 (46.2%) came from middle socioeconomic status families, 125 (29.2%) from high socioeconomic status families and 105 (24.6%) from low socioeconomic status families,  $\chi^2(2) = 41.0$ ,  $p < .001$ . Furthermore, concerning place of upbringing and residence, the vast majority ( $N = 350$ ; 82%) came from an urban setting and only 77 (18%) came from a rural setting,  $\chi^2(1) = 174.5$ ,  $p < .001$ . The 427 adolescents also had an average grade of 83.5% during the last year (range 40% - 100%) on their overall coursework and an actual-ideal weight discrepancy of 5.1 kg, implying that they wanted to lose on average of 5.1 kg from their current weight.

Based on the above results, Hypothesis 2 is partially supported as the majority of the adolescents with disordered eating behaviors were female, mainly from an average socioeconomic status family, within the Normal range of BMI and grew up and reside in an urban area.

Table 2

*Demographic Characteristics of Adolescents With Significant Disordered Eating Behaviors (EAT-26  $\geq$  20).*

Demographic	<i>n</i>	%
Gender		
Males	95	22.25
Females	332	77.75
BMI category		
Underweight	66	15.5
Normal	301	70.5
Overweight	46	10.7
Obese	14	3.3
Socioeconomic Status		
Low	105	24.6
Medium	197	46.2
High	125	29.2
Upbringing/Residence		
Urban	350	82.0
Rural	77	18.0

Note. *N* = 427.

In order to address Hypothesis 3, several independent sample t-tests were conducted assessing for statistical differences between adolescents with and without disordered eating behaviors (EAT-26  $\geq$  20 vs  $<$  20) on all the variables of interest (appearance satisfaction, investment in appearance, appearance-related anxiety, self-esteem, body image-related situational dysphoria, internalization of the thin and athletic ideals, pressures and information from the media).

As can be seen in Table 3, adolescents in the disordered eating behaviors group scored significantly lower on self-esteem and appearance satisfaction. Specifically, concerning self-esteem, adolescents with significant disordered eating behaviors scored significantly lower on global self-esteem ( $M = 28.28$ ,  $SD = 5.35$ ) than adolescents with no disordered eating ( $M = 30.48$ ,  $SD = 4.78$ ;  $p < .001$ ). Concerning appearance satisfaction, adolescents with significant disordered eating behaviors scored significantly lower on the Appearance Evaluation subscale of the MBSRQ ( $M = 3.09$ ,  $SD = 0.75$ ) than adolescents with no disordered eating ( $M = 3.47$ ,  $SD = 0.67$ ;  $p < .001$ ), indicating less satisfaction with their appearance.

As also seen in Table 3, adolescents in the disordered eating behaviors group scored significantly higher on appearance investment, weight-related anxiety, body image-related situational dysphoria, internalization of the thin and athletic ideals, perceived pressures from the media and consideration of the media as a good source of information.

Specifically, concerning investment in appearance, adolescents with significant disordered eating behaviors scored significantly higher on the Appearance Orientation subscale of the MBSRQ ( $M = 3.83$ ,  $SD = 0.65$ ) than adolescents with no disordered eating ( $M = 3.53$ ,  $SD = 0.59$ ;  $p < .001$ ), indicating more investment towards their appearance.

Table 3

Mean Differences Between Adolescents Who Had Significant Disordered Eating Behaviors ( $EAT-26 \geq 20$ ) to Adolescents Who Do Not ( $EAT - 26 < 20$ )

Variable/Group	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
<b>Rosenberg Self Esteem</b>				
EAT-26 < 20	30.48	4.78	8.56***	< .001
EAT-26 $\geq$ 20	28.28	5.35	7.93***	< .001
<b>MBSRQ Appearance Evaluation</b>				
EAT-26 < 20	3.47	0.67	10.48***	< .001
EAT-26 $\geq$ 20	3.09	0.75	9.66***	< .001
<b>MBSRQ Appearance Orientation</b>				
EAT-26 < 20	3.53	0.59	-9.25***	< .001
EAT-26 $\geq$ 20	3.83	0.65	-8.65***	< .001
<b>MBSRQ Overweight Preoccupation</b>				
EAT-26 < 20	2.44	0.85	-25.55***	< .001
EAT-26 $\geq$ 20	3.58	0.83	-26.06***	< .001
<b>SIBID-S</b>				
EAT-26 < 20	1.23	0.82	-20.77***	< .001
EAT-26 $\geq$ 20	2.15	0.90	-19.54***	< .001
<b>SATAQ-3 Internalization – General</b>				
EAT-26 < 20	22.74	6.90	-20.11***	< .001
EAT-26 $\geq$ 20	30.14	7.29	-19.38***	< .001
<b>SATAQ-3 Internalization – Athlete</b>				
EAT-26 < 20	13.59	4.24	-10.69***	< .001
EAT-26 $\geq$ 20	16.01	4.59	-10.14***	< .001
<b>SATAQ-3 Pressures</b>				
EAT-26 < 20	14.86	5.00	-17.78***	< .001
EAT-26 $\geq$ 20	19.74	6.05	-15.64***	< .001
<b>SATAQ-3 Information</b>				
EAT-26 < 20	26.26	5.83	-8.98***	< .001
EAT-26 $\geq$ 20	29.06	6.25	-8.56***	< .001

Note. Rosenberg Self-Esteem = composite score of the Rosenberg Self-Esteem Scale; MBSRQ Appearance Evaluation = Body Image Satisfaction; MBSRQ Appearance Orientation = Body Image Investment; MBSRQ Overweight Preoccupation = Weight Related Anxiety; SIBID-S = Situational Dysphoria; SATAQ-3 Internalization-General = Thin Ideal Internalization; SATAQ-3 Internalization-Athlete = Athletic Internalization; SATAQ-3 Pressures = Media Pressures; SATAQ-3 Information = Information from Media.  $N = 427$  with  $EAT-26 \geq 20$ ,  $N = 2337$  with  $EAT-26 < 20$ .

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Concerning weight-related anxiety, adolescents with significant disordered eating behaviors scored significantly higher on the Overweight Preoccupation subscale of the MBSRQ ( $M = 3.58$ ,  $SD = 0.83$ ) than adolescents with no disordered eating ( $M = 2.44$ ,  $SD = 0.85$ ;  $p < .001$ ), indicating more weight-related anxiety.

Concerning body image-related situational dysphoria, adolescents with significant disordered eating behaviors scored significantly higher on the SIBID-S ( $M = 2.15$ ,  $SD = 0.90$ ) than adolescents with no disordered eating ( $M = 1.23$ ,  $SD = 0.82$ ;  $p < .001$ ), indicating more dysphoria in social situations.

When using the four subscales of the SATAQ-3, adolescents with significant disordered eating behaviors scored significantly higher on the internalization of the thin ideal ( $M = 30.14$ ,  $SD = 7.29$ ) than adolescents with no

disordered eating ( $M = 22.74$ ,  $SD = 6.90$ ;  $p < .001$ ) and the athletic ideal ( $M = 16.01$ ,  $SD = 4.59$  for  $EAT-26 \geq 20$ ,  $M = 13.59$ ,  $SD = 4.24$  for  $EAT-26 < 20$ ;  $p < .001$ ), indicating more internalization of both ideals by adolescents in the disordered eating behaviors group. Finally, adolescents with significant disordered eating behaviors scored significantly higher on the pressures from the media subscale of the SATAQ-3 ( $M = 19.74$ ,  $SD = 6.05$ ) than adolescents with no disordered eating ( $M = 14.86$ ,  $SD = 5.00$ ;  $p < .001$ ) and the perception of the media as a good source of information ( $M = 29.06$ ,  $SD = 6.25$  for  $EAT-26 \geq 20$ ,  $M = 26.26$ ,  $SD = 5.83$  for  $EAT-26 < 20$ ;  $p < .001$ ), indicating more perceived pressures from the media concerning their looks and consider the media as a good source of information concerning body image.

The above results indicate that Hypothesis 3 was fully supported as adolescents with significant disordered eating behaviors did score lower on self-esteem and body image satisfaction and higher on body/weight-related dysphoria and anxiety, investment in appearance and influences from the media.

## Discussion

The purpose of the current study was threefold: a) to collect a very large representative sample of adolescents in Cyprus and assess for their levels of disordered eating behaviors; b) to describe the characteristics of adolescents with disordered eating behaviors in Cyprus and c) to compare the adolescents with significant disordered eating behaviors ( $EAT-26 \geq 20$ ) to the ones without any disordered eating behaviors ( $EAT < 20$ ) on all the variables of interest.

It was hypothesized that from the whole sample, the adolescents with significant scores on the EAT-26 will resemble the world literature and thus, be lower than that reported by [Hadjigeorgiou et al. \(2012\)](#). For the current sample, 16.03% scored higher than 20 on the EAT-26 (8.4% for boys and 21.4% for girls). These results should be taken into consideration as additional information to the prevalence of disordered eating in Cyprus. It should be noted that more than 34% of the schools in the whole country participated in the study, carefully selected to represent all districts of the country. This number and method of selection of schools is believed to be a very representative sample and thus, more accurately representing the prevalence of disordered eating. The authors are unsure of the reasons why the research by [Hadjigeorgiou et al. \(2012\)](#) had percentages of disordered eating in their sample of females that were much higher than the reported literature.

Results also indicated that the majority of the adolescents with disordered eating behaviors were female, with normal BMI, mainly across the average socioeconomic status and grew up and reside in an urban area. These results provide further support of previous research concerning gender, socioeconomic status and body mass index ([Fan et al., 2010](#); [O'Dea & Abraham, 2000](#); [Striegel-Moore et al., 2009](#)). In the introduction section, it was reported that Cyprus is of interest to the body image and disordered eating literature for several reasons including the lack of prevention programs and curriculum coverage concerning body image and disordered eating. The results of the current research are important since it is evident that adolescents are most "at-risk" and any implementation of preventive efforts should be directed towards them. The results will be shared with all relevant stakeholders in Cyprus (i.e. Ministries of Education and Health).

Results also indicated that adolescents in the disordered eating behaviors group scored significantly lower on self-esteem and appearance satisfaction and significantly higher on appearance investment, weight-related anxiety, situational dysphoria, internalization of the thin and athletic ideals as well as pressures and information

from the media. The group differences between disordered and non-disordered eating individuals provides further support to Argyrides & Kkeli's (2015a) findings in Cyprus who assessed the university-age population, as well as other research in the literature (Levine & Murnen, 2009; Littleton & Ollendick, 2003). This information is important for the literature in that any prevention and/or intervention efforts should be developed/chosen based on the inclusion of these sociocultural variables. The findings concerning the influence of the media on disordered eating also supports previous research findings (Levine & Murnen, 2009; Littleton & Ollendick, 2003).

The results of the study provide important information about the current situation in Cyprus. The large, representative sample size of the study gives information that can be used by professionals who work with adolescents. Specifically, psychologists who work with adolescents who have disordered eating behaviors and/or eating disorders can use the characteristics found in this group and target/modify their therapeutic goals. Empirically validated intervention programs such as the Body Project (Stice, Shaw, & Rohde, 2013) and The Body Image Workbook (Cash, 2008) need to be translated and validated as soon as possible as there are no such programs in place.

Moreover, the findings of this study may also help educators who come into daily contact with adolescents, in order to be able to detect more easily the symptoms of a student that is "at-risk" of developing an eating disorder. Educators can be trained in identifying the risk-factors so that they can better inform school counselors and design and implement intervention programs. As already stated, the results of this study will also be shared with the Ministry of Education and Culture as well as the Ministry of Health in an attempt to encourage a partial reform of the educational system in order to enrich its current curriculum and educational programs and include body image and eating disorders. Prevention efforts with the culturally appropriate adoption of empirically validated programs should also increase considerably targeting the aforementioned population as well as the general public. As of now, prevention efforts in Cyprus are minimal concerning these issues (Argyrides et al., 2015).

The current study is limited to the geographic location of the participants (Cyprus) as well as the specific age group which it assesses. Therefore, any generalizations should be made with caution. Furthermore, the data were collected in the form of self-report questionnaires, which always raises doubts, especially on the reporting of height and weight. Hadjigeorgiou et al. (2011) did find significant inaccuracies in estimation of height and weight in a Greek-Cypriot sample.

The selection, assessment and adoption of Greek-Speaking prevention programs should immediately guide future research efforts. Future studies should also be conducted using a more qualitative approach in order to enrich the findings of the current study. It is important to deepen the understanding of the factors that separate the disordered eating individuals to the non-disordered ones, with a greater emphasis on the protective factors since risk factors have already been previously assessed (Argyrides & Kkeli, 2015a) as well as in a more qualitative manner. Furthermore, and as previous research supported (Sloan, 2002), the importance of warm weather in disordered eating should be evaluated further. Last, additional variables could also be introduced to further aid the development of preventive efforts such as perfectionism, personality traits, and spirituality.

## Funding

The authors have no funding to report.

## Competing Interests

One of the authors, Marios Argyrides, is the guest editor for this special thematic section on "Body Image and Disordered Eating in Cyprus".

## Acknowledgments

The authors have no support to report.

## References

- Al-Subaie, A., Al-Shammari, S., Bamgboye, E., Al-Sabhan, K., Al-Shehri, S., & Bannah, A. R. (1996). Validity of the Arabic version of the Eating Attitudes Test. *International Journal of Eating Disorders*, *20*, 321-324. [https://doi.org/10.1002/\(SICI\)1098-108X\(199611\)20:3<321::AID-EAT12>3.0.CO;2-2](https://doi.org/10.1002/(SICI)1098-108X(199611)20:3<321::AID-EAT12>3.0.CO;2-2)
- Alexiou, E., & Argyrides, M. (2015, May). *Eating habits of adolescents in Cyprus*. Paper presented at the 15th Panhellenic conference of psychological research in Nicosia, Cyprus.
- Argyrides, M., & Kkeli, N. (2013). Multidimensional Body-Self Relations Questionnaire-Appearance Scales: Psychometric properties of the Greek version. *Psychological Reports*, *113*, 885-897. <https://doi.org/10.2466/03.07.PR0.113x29z6>
- Argyrides, M., & Kkeli, N. (2015a). Predictive factors of disordered eating and body image satisfaction in Cyprus. *International Journal of Eating Disorders*, *48*(4), 431-435. <https://doi.org/10.1002/eat.22310>
- Argyrides, M., & Kkeli, N. (2015b). Validation of the factor structure of the Greek adaptation of the Situational Inventory of Body-Image Dysphoria – Short Form (SIBID-S). *Eating and Weight Disorders*, *20*(4), 491-496. <https://doi.org/10.1007/s40519-015-0194-z>
- Argyrides, M., Kkeli, N., & Kendeou, P. (2014). Validation of the factor structure of the Greek adaptation of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3). *Body Image*, *11*, 201-205. <https://doi.org/10.1016/j.bodyim.2014.02.003>
- Argyrides, M., Kkeli, N., & Koutsantoni, M. (2015). Body image, sociocultural influences and self-esteem: The case of Cyprus. In R. Vargas (Ed.), *Body image: Social influences, ethnic differences and impact on self-esteem* (pp. 77-95). New York, NY, USA: Nova Science.
- Baş, M., Asci, F. H., Karabudak, E., & Kiziltan, G. (2004). Eating attitudes and their psychological correlates among Turkish adolescents. *Adolescence*, *39*(155), 593-599.
- Cash, T. F. (2000). *MBSRQ users' manual, 3rd ed.* Norfolk, VA, USA: Old Dominion University Press.
- Cash, T. F. (2002). The situational inventory of body-image dysphoria psychometric evidence and development of a short form. *International Journal of Eating Disorders*, *32*, 362-366. <https://doi.org/10.1002/eat.10100>
- Cash, T. F. (2008). *The body image workbook: An eight-step program for learning to like your looks – 2nd edition.* Oakland, CA, USA: New Harbinger Publications.
- Costarelli, V., Antonopoulou, K., & Mavrovounioti, Ch. (2011). Psychosocial characteristics in relation to disordered eating attitudes in Greek adolescents. *European Eating Disorders Review*, *19*(4), 322-330. <https://doi.org/10.1002/erv.1030>

- Eapen, V., Mabrouk, A. A., & Bin-Othman, S. (2006). Disordered eating attitudes and symptomatology among adolescent girls in the United Arab Emirates. *Eating Behaviors, 7*, 53-60. <https://doi.org/10.1016/j.eatbeh.2005.07.001>
- Fan, Y., Li, Y., Liu, A., Hu, X., Ma, G., & Xu, G. (2010). Associations between body mass index, weight control concerns and behaviors, and eating disorder symptoms among non-clinical Chinese adolescents. *BMC Public Health, 10*, Article 314. <https://doi.org/10.1186/1471-2458-10-314>
- Gargari, B. P., Kooshavar, D., Sajadi, N. S., Karami, S., Behzad, M. H., & Shahrokhi, H. (2011). Disordered eating attitudes and their correlates among Iranian high school girls. *Health Promotion Perspectives, 1*, 41-49. <https://doi.org/10.5681/hpp.2011.003>
- Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitude Test: Psychometric features and clinical correlates. *Psychological Medicine, 12*, 871-878. <https://doi.org/10.1017/S0033291700049163>
- Gibbons, P. (2001). The relationship between eating disorders and socioeconomic status: It's not what you think. *Nutrition Noteworthy, 4*(1). Retrieved from: <https://escholarship.org/uc/item/1k70k3fd>
- Hadjigeorgiou, C., Tornaritis, M., Savva, S., Solea, A., & Kafatos, A. (2012). Secular trends in eating attitudes and behaviours in children and adolescents aged 10–18 years in Cyprus: A 6-year follow-up, school-based study. *Public Health, 126*, 690-694. <https://doi.org/10.1016/j.puhe.2012.04.014>
- Hadjigeorgiou, C., Tornaritis, M., Solea, A., Savva, H., & Kafatos, A. (2011). Validity of self-reported height, weight and body mass index among Cypriot adolescents: Accuracy in assessing overweight status and weight overestimation as predictor of disordered eating behaviour. *Mediterranean Journal of Social Sciences, 3*, 209-217. <https://doi.org/10.5901/mjss.2012.03.01.209>
- Herpertz-Dahlmann, B., Wille, N., Holling, H., Vloet, T. D., & Ravens-Sieberer, U. (2008). Disordered eating behavior and attitudes, associated psychopathology and health – related quality of life: Results of the BELLA study. *European Child & Adolescent Psychiatry, 17*, 82-91. <https://doi.org/10.1007/s00787-008-1009-9>
- Jones, J. M., Bennett, S., Olmsted, M. P., Lawson, M. L., & Rodin, G. (2001). Disordered eating attitudes and behaviours in teenaged girls: A school-based study. *Canadian Medical Association Journal, 165*(5), 547-552.
- Katsounari, I. (2009). Self – Esteem, depression and eating disordered attitudes: A cross – cultural comparison between Cypriot and British young women. *European Eating Disorders Review, 17*(6), 455-461. <https://doi.org/10.1002/erv.946>
- Lee, S., & Lee, A. M. (2000). Disordered eating in three communities of China: A comparative study of female high school students in Hong Kong, Shenzhen, and rural Hunan. *International Journal of Eating Disorders, 27*, 317-327. [https://doi.org/10.1002/\(SICI\)1098-108X\(200004\)27:3<317::AID-EAT9>3.0.CO;2-2](https://doi.org/10.1002/(SICI)1098-108X(200004)27:3<317::AID-EAT9>3.0.CO;2-2)
- Levine, M., & Murnen, S. (2009). “Everybody knows that mass media are/are not [pick one] a cause of eating disorders”: A critical review of evidence for a causal link between media, negative body image, and disordered eating in females. *Journal of Social and Clinical Psychology, 28*, 9-42. <https://doi.org/10.1521/jscp.2009.28.1.9>
- Littleton, H. L., & Ollendick, T. (2003). Negative body image and disordered eating behavior in children and adolescents: What places youth at risk and how can these problems be prevented? *Clinical Child and Family Psychology Review, 6*(1), 51-66. <https://doi.org/10.1023/A:1022266017046>

- Maor, N. R., Sayag, S., Dahan, R., & Hermoni, D. (2006). Eating attitudes among adolescents. *The Israel Medical Association Journal*, *8*, 627-629.
- Nishizawa, Y., Kida, K., Nishizawa, K., Hashiba, S., Saito, K., & Mita, R. (2003). Perception of self-physique and eating behavior of high school students in Japan. *Psychiatry and Clinical Neurosciences*, *57*, 189-196. <https://doi.org/10.1046/j.1440-1819.2003.01100.x>
- O'Dea, J. A., & Abraham, S. (2000). Improving the body image, eating attitudes, and behaviors of young male and female adolescents: A new educational approach that focuses on self-esteem. *International Journal of Eating Disorders*, *28*, 43-57. [https://doi.org/10.1002/\(SICI\)1098-108X\(200007\)28:1<43::AID-EAT6>3.0.CO;2-D](https://doi.org/10.1002/(SICI)1098-108X(200007)28:1<43::AID-EAT6>3.0.CO;2-D)
- Powell, A. D., & Kahn, A. S. (1995). Racial differences in women's desires to be thin. *International Journal of Eating Disorders*, *17*, 191-195. [https://doi.org/10.1002/1098-108X\(199503\)17:2<191::AID-EAT2260170213>3.0.CO;2-Z](https://doi.org/10.1002/1098-108X(199503)17:2<191::AID-EAT2260170213>3.0.CO;2-Z)
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ, USA: Princeton University Press.
- Saporetti, G., Sancini, S., Bassoli, L., Castelli, B., & Pellai, A. (2004). Risk assessment for eating disorders in a high school: A study based on the Eating Attitudes Test-26. *Minerva Pediatrica*, *56*, 83-90.
- Sloan, D. M. (2002). Does warm weather climate affect eating disorder pathology? *International Journal of Eating Disorders*, *32*, 240-244. <https://doi.org/10.1002/eat.10077>
- Smolak, L. (2009). Risk factors in the development of body image, eating problems, and obesity. In L. Smolak & J. K. Thompson (Eds.), *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment* (2nd ed., pp. 135-156). Washington, DC, USA: American Psychological Association.
- Spanea, E., Anagnostopoulos, F., Kalatzi-Azizi, A., & Skarlos, D. (2005). Psychosocial adjustment of patients with breast cancer. *Hellenic Journal of Psychology*, *2*, 159-182.
- Stice, E., Shaw, H., & Rohde, P. (2013). *The Body Project: A dissonance-based eating disorder prevention intervention, updated edition—programs that work*. New York, NY, USA: Oxford University Press.
- Striegel-Moore, R. H., Rosselli, F., Perrin, N., DeBar, L., Wilson, G. T., May, A., & Kraemer, H. C. (2009). Gender difference in the prevalence of eating disorder symptoms. *International Journal of Eating Disorders*, *42*(5), 471-474. <https://doi.org/10.1002/eat.20625>
- Szabo, C. P., & Allwood, C. W. (2004). A cross-cultural study of eating attitudes in adolescent South African females. *World Psychiatry; Official Journal of the World Psychiatric Association (WPA)*, *3*, 41-44.
- Thompson, J. K., van den Berg, P., Roehrig, M., Guarda, A., & Heinberg, L. J. (2004). The Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3): Development and validation. *International Journal of Eating Disorders*, *35*, 293-304. <https://doi.org/10.1002/eat.10257>
- Toro, J., Gomez-Peresmitre, G., Sentis, J., Valles, A., Casulá, V., Castro, J., . . . Rodriguez, R. (2006). Eating disorders and body image in Spanish and Mexican female adolescents. *Social Psychiatry and Psychiatric Epidemiology*, *41*(7), 556-565. <https://doi.org/10.1007/s00127-006-0067-x>

- Tylka, T. L., & Subich, L. M. (2004). Examining a multidimensional model of eating disorder symptomatology among college women. *Journal of Counseling Psychology, 51*(3), 314-328. <http://psycnet.apa.org/doi/10.1037/0022-0167.51.3.314><https://doi.org/10.1037/0022-0167.51.3.314>
- Varsou, E., & Trikkas, G. (1991, April). The EDI, EAT – 26 and BITE in a Greek population: Preliminary findings. Paper presented at the 12th Panhellenic Psychiatric Conference, Volos, Greece.
- Vilela, J. E., Lamounier, J. A., Dellaretti, A., Filho, M. A., Barros Neto, J. R., & Horta, G. M. (2004). Eating disorders in school children. *Jornal de Pediatria, 80*, 49-54. <https://doi.org/10.2223/1133>
- Yu, J., Lu, M., Tian, L., Lu, W., Meng, F., Chen, C., . . . Yao, Y. (2015). Prevalence of disordered eating attitudes among University students in Wuhu, China. *Nutrición Hospitalaria, 32*, 1752-1757. <https://doi.org/10.3305/nh.2015.32.4.9187>