Appearance Schemas Inventory - Revised: Psychometric Properties of the Greek Version in a Female Sample

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The current study examined the psychometric properties of a Greek version of the *Appearance Schemas Inventory – Revised* (ASI-R). A total of 269 university female students (mean age = 25.1 years, *SD* = 3.81; mean height = 163cm, SD = 6.1cm; mean weight = 57.9Kg, *SD* = 10.78) were administered the Greek *Multidimensional Body-Self Relations Questionnaire-Appearance Scales* (MBSRQ-AS) and the Greek *Appearance Schemas Inventory-Revised* (ASI-R). A Principal Components Analysis revealed that the Greek ASI-R items significantly loaded with the original scale's two main factors. Internal consistencies of the subscales ranged from .87 to .93. One-month test-retest reliability coefficients ranged from .90 to. 95. Convergent validity was also confirmed as the Greek ASI-R subscales correlated significantly with the MBSRQ-AS. Group comparisons were also conducted comparing normal weight to overweight and obese individuals with significant differences indicating support for the sensitivity of the scale.

The concept of body image refers to one's perceptions, feelings and thoughts towards one's body and particularly its appearance (Cash & Labarge, 1996; Cash, Melnyk & Hrabosky, 2004; Cash, Morrow, Hrabosky & Perry, 2004). The development of appearance-related self-schemas appears to be a critical issue in the manifestation of body-image dissatisfaction and potentially disordered eating. According to Markus (1977), self-schemas are defined as the 'cognitive structures used to process self-related information' (Cash, Melnyk & Hrabosky, 2004; p. 306), and are derived from one's personal and social experiences (Cash & Labarge, 1996; Labarge, Cash & Brown, 1998). Particularly, appearance-related schemas reflect the importance of appearance to an individual's sense of self (Cash, 2011). Appearance-schematic persons place a great importance on their physical appearance and they evaluate themselves based on how they look (Labarge, Cash & Brown, 1998; Young, 2007).

The *Appearance Schemas Inventory* (ASI) measures 'dysfunctional schematic investment in appearance' (Rusticus & Hubley, 2005; p. 2)

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and particularly assesses certain beliefs about the importance, impact and meaning of appearance in one's life (Cash, 2003). The original version was a 14-item tool developed by Cash and Labarge (1996), but following some amendments, the end result was a longer, 20-item version of the *Appearance Schemas Inventory-Revised* (ASI-R). The 20-item measure is composed of two subscales: Self-Evaluative Salience and Motivational Salience. Self-Evaluative salience reflects how people believe that their physical appearance determines their own self-worth. Representative items are the following: "My appearance is responsible for much of what's happened to me in my life" and "If I dislike how I look on a given day, it's hard to feel happy about other things." Motivational salience reflects an individual's engagement with their appearance (grooming behaviours). Exemplary items include: "I try to be as physically attractive as I can be" and "What I look like is an important part of who I am." Respondents rate items on a 5-point Likert-type scale ranging from Strongly Disagree (1) to Strongly Agree (5). According to Cash (2003), a total composite score is also calculated.

The ASI-R has been found to have good psychometric properties. According to Cash, Melnyk and Hrabosky (2004), the internal consistencies of the ASI-R were satisfactory. For the composite measure, the alpha value was .88 for women and .90 for men. The Self-Evaluative Salience was .82 for women and .84 for men and the Motivational Salience was .90 for women and .91 for men (Cash, 2003). Furthermore, the ASI-R composite score correlated with other similar measures assessing body image dimensions. Cash, Melnyk and Hrabosky (2004) found a positive association (r = .47 for men and .64 for women) between ASI-R scores and the *Sociocultural Attitudes Towards Appearance Questionnaire* – Internalization subscale (SATAQ-3 Internalization), with the *Situational Inventory of Body-Image Dysphoria* (SIBID) (r = .56 for men and .67 for women) and the Body-Image Ideals Questionnaire (r = .38 for men and .53 for women). Rusticus and Hubley (2005) also found a positive correlation between ASI-R scores and the *Multidimensional Body Self Relations Questionnaire* - Appearance Orientation subscale (r = .79). The ASI-R also correlates with perfectionism (r = .63; Cash, Melnyk and Hrabosky (2004), self-esteem (r = -.20; Cash, Melnyk & Hrabosky, 2004), and eating disturbances (r = .31; Cash, Melnyk & Hrabosky, 2004). The reliability and validity of the ASI-R not only extends to college samples but also to the wider community (Cash & Hrabosky, 2003; Rusticus & Hubley, 2005), both genders (Cash, Melnyk & Hrabosky, 2004), race (Cash, Melnyk & Hrabosky, 2004) and ethnicity (Ambo, Suga & Nedate, 2012). Finally, the ASI-R has also been correlated to Body Mass Index in women where heavier women were more likely to perceive their appearance more self-

evaluatively but not as motivationally salient (Cash, Melnyk & Hrabosky, 2004).

The current study aimed to establish the utility of the ASI-R in the Greek-Cypriot population. Since the ASI-R tends to predict appearance and body-image dissatisfaction and potentially disordered eating, it was important to determine how well the instrument of interest measures psychological investment in appearance. The study of this measure's psychometric properties enables us to conclude whether the use of the ASI-R on a Greek- Cypriot sample is effective. This research can be used as a reference point for examining appearance and body image issues in Greek-Cypriot women by researchers, clinicians, nutritionists and health educators.

A review of the literature identifies a gap concerning available tools in the Greek language assessing several body image dimensions. Specifically, a thorough review of the publication by Stalikas, Triliva, & Roussi (2012) which includes the psychological tools in the Greek language did not identify any tools related to body image from a social schema perspective. In addition, Hadjigeorgiou, Tornaritis, Savva and Kafatos (2005) revealed that 42% of Greek-Cypriot females and 18% of Greek-Cypriot males aged 10-18 were dissatisfied with their weight and shape, indicating significant body-image disturbances. Therefore, questionnaires measuring body image and appearance dissatisfaction are needed and can be useful to researchers, clinicians, dieticians and health educators for needs assessments, prevention, monitoring and therapy outcome purposes. The ASI-R appears to be an appropriate instrument to examine such issues. In the current study, the psychometric properties of the Greek adaptation of the ASI-R were examined and particularly the factor structure of the scale, as well as internal consistency, test-retest reliability, and convergent validity.

We expected that the Greek version of the ASI-R will show adequate psychometric properties. The following specific hypotheses were tested:

H1: The items in the Greek ASI-R will have significant loadings ($\geq$ .40) on the scale's two main factors.

H2: The internal consistency of the composite score of the Greek ASI-R and its subscales will be $\geq$ .75.

H3: The test-retest reliability of the Greek ASI-R composite score and its subscales will be $\geq$ .75.

H4: The Greek ASI-R will correlate positively with the *Multidimensional Body-Self Relations Questionnaire*, thereby confirming its convergent validity.

METHOD

Participants

A total of 269 female participants were recruited from a private university in Cyprus and were administered the questionnaires of interest. Participants varied in age from 18-34 with an average age of 25.1 (*SD* = 3.81). The average height of participants was 163cm (*SD* = 6.1; Range: 148-189cm) and the average weight was 57.9Kg (*SD* = 10.78; Range: 39-101). Based on participants' height and weight, Body Mass Index (BMI) was calculated using the ratio of weight and height squared (Kg/cm^2). The mean BMI score was 21.7 (*SD* = 3.44, Range 16.7 – 36.4). In addition, their BMI Weight Category was calculated using the scale '0 – 18.49 = Underweight', '18.5 – 24.99 = Normal Weight', '25 – 29.99 = Overweight' and 'Higher than 30' were considered 'Obese.' This frequency distribution revealed that 35 participants (13.1%) fell in the 'Underweight' category, 177 (65.7%) in the 'Normal Weight' category, 40 (14.9%) in the 'Overweight' category and 17 (6.3%) in the 'Obese' category.

Measures

Beaton, Bombardier, Guillemin and Ferraz's (2000) and Stalikas, Triliva and Roussi's (2012) recommendations were followed in translating the ASI-R into Greek using a forward and backward translation method after all the necessary permissions were granted. Specifically, the English version of the ASI-R was translated to Greek by a professional translator and then a different professional translator back-translated the Greek version to English. A bilingual speaker and a licensed professional psychologist who specializes in body image issues then evaluated both translations. The two professionals discussed, evaluated and corrected any possible discrepancies. Then, a pilot version of the final draft of the scale was administered to a convenience sample of 33 undergraduate students asking them for feedback on the clarity of the questionnaire. No major changes were necessary upon completion of the pilot study and the final version of the scale was administered to the 269 female participants. All participants were invited again to complete the questionnaire after one month in order to assess test-retest reliability and eighty six of them responded to the questionnaire again.

For the purposes of convergent validity assessment, participants were also administered the Greek version of the 34-item, Likert-type scale called the *Multidimensional Body-Self Relations Questionnaire - Appearance Scales* (MBSRQ-AS; Cash, 2000; Argyrides, 2013 for the Greek version). The MBSRQ-AS consists of five subscales. The 5-item Appearance Evaluation subscale measures feelings of physical attractiveness or unattractiveness and satisfaction or dissatisfaction with

one's looks, where high scorers feel mostly positive and satisfied with their appearance and low scorers have a general unhappiness with their physical appearance. The 12-item Appearance Orientation subscale assesses the extent of investment in one's appearance and the 4-item Overweight Preoccupation subscale assesses fat anxiety, weight vigilance, dieting and eating restraint. The Self-Classified Weight subscale consists of two items and reflects self-perception of weight (how one perceives and labels one's weight from very underweight to very overweight). Finally, the 9-item Body Areas Satisfaction subscale (BASS) assesses satisfaction or dissatisfaction with specific areas of the body on a 5-point dissatisfaction-satisfaction scale. The subscales of the MBSRQ-AS have been found to have acceptable psychometric properties ($\alpha > .70$; George & Mallery, 2003) with the internal consistency coefficients for females ranging from .73 to .88 and 1-month test-retest reliability ranging from .74 to .91 (Cash, 2000). Significant correlations were expected between the ASI-R composite and subscale scores and the subscales of the MBSRQ-AS.

Procedure

A questionnaire packet consisting of an informed-consent form, a demographic data sheet, the *Greek Appearance Schemas Inventory-Revised* and the Greek *MBSRQ-AS* was distributed during a scheduled data collection time at the university. Descriptive statistics were then calculated for participants' age, height, weight, body mass index (BMI) and BMI category. In addition, total scores were calculated for the two measures (and their subscales when appropriate).

In order to assess the measure of interest, the same procedure was followed as by the creators of the original English-version scale (Cash, Melnyk & Hrabosky, 2004). Specifically, a Principal Components Analysis with varimax rotation was used. Items were included on a factor of the Greek ASI-R only if the item's loading was > .40 and unique to that factor (Cash, Melnyk and Hrabosky, 2004; Hair et al., 2009). Furthermore, internal consistencies, one-month test-retest reliability and convergent validity analyses were also performed, as with the original English version. Finally, group comparisons were also performed in an attempt to identify possible differences between the different categories of BMI. However, since the number of female participants in the 'Underweight' category was low ($n = 35$), it was decided to compare the female participants in the 'Normal Weight' category ($n = 177$) to the female participants in the combination of 'Overweight' and 'Obese' categories ($n = 57$). Due to the unequal number of participants in these two categories, a random sample of 57 of the 177 participants within the 'Normal Weight' category was extracted and compared to the 57

participants in the 'Overweight/Obese' category to check for possible significant differences and strengthen the results.

BMI category differences were expected since there is support in the literature for significant associations between being overweight or obese, body dissatisfaction and weight concerns (Schwartz & Brownell, 2004). Moreover, individuals in the Normal Weight category have been reported to be more satisfied with their appearance and less preoccupied with their weight compared to obese individuals (Cash & Pruzinsky, 2002; Schwartz & Brownell, 2004). Thus, if in fact differences are found in the current study between the two categories, this should be an indication of further support for the validity of the Greek adaptation of the ASI-R.

RESULTS

A Principal Components Analysis with a varimax rotation was used on the total sample in order to assess the factor structure of the Greek

TABLE 1 Explained Variance and Loadings of the 20 Items of the Greek ASI-R on the Two Main Factors (Self-Evaluative Salience (F1) & Motivational Salience (F2))

Item	Total Sample (*N*=269)	
	F1	F2
Explained Variance	42.44%	8.12%
1. Spend little time on appearance	.09	**.69**
2. Wonder about own looks	**.77**	-.03
3. Try to be as physically attractive	.11	**.62**
4. Never paid much attention to what I look like	.05	**.81**
5. Seldom compare my appearance	**.53**	.10
6. Check my appearance in a mirror	.08	**.54**
7. Dwell on my looks	**.65**	.07
8. Easy to feel good when I like how I look	**.56**	.13
9. If negative reaction to looks, wouldn't be bothered	**.54**	.08
10. High standards of physical appearance	.12	**.66**
11. Appearance little influence on life	.13	**.51**
12. Dressing not a priority	.05	**.65**
13. Wonder how I look when meet others	**.75**	.14
14. Think about how I look in everyday life	**.74**	.05
15. If dislike how I look, hard to feel happy	**.56**	.11
16. Fantasize about being good looking	**.80**	.10
17. Before go out, make sure look good	.18	**.56**
18. Looks important part of who I am	.16	**.56**
19. Control social and emotional events in life	**.56**	.08
20. Appearance responsible for what's happened	**.64**	.04

Note. Bold numbers indicate the significant (> .40) unique to one factor loading of the item in the appropriate factor.

version of the ASI-R. This analysis extracted two factors (using Cattell's (1966) Scree Test) which explained 50.6% of the total variance (Table 1). In concordance with the original scale (Cash, 2003), the first factor corresponded to the Self-Evaluative Salience subscale of the ASI-R and explained 42.44% of the variance and the second factor corresponded to the Motivational Salience subscale and explained another 8.12% of the variance, totalling 50.6%. This analysis also indicated that all items had significant loadings (greater than .40; Hair et al., 2009). Therefore, Hypothesis 1 was supported.

The Cronbach's alpha coefficients were satisfactory for the two factor structure subscales of the ASI-R and the total composite score. Specifically, the alpha coefficient for the Self-Evaluative Salience subscale was .89, and for the Motivational Salience subscale, .87. The alpha coefficient for all 20 items of the scale was .93. Therefore, Hypothesis 2 was also supported as the coefficients were all > .75.

Test-retest correlations were very high for the two factor structure and the total composite score of the Greek ASI-R. Specifically, the one-month test-retest correlation coefficient of the ASI Self-Evaluative Salience subscale was .94 ($p < .001$), for the Motivational Salience subscale .90 ($p < .001$) and for the total composite score .95 ($p < .001$). Therefore, Hypothesis 3 was also supported as the coefficients were all > .75.

TABLE 2 Correlations Between the Greek ASI-R Total Composite & Subscale Scores & the Multidimensional Body-Self Relations Questionnaire (MBSRQ) Subscales

	ASI-Total	ASI-SE	ASI-M
MBSRQ-AE	-.41***	-.36***	-.27***
MBSRQ-AO	.53***	.57***	.81***
MBSRQ-OWP	.48***	.48***	.43***
MBSRQ-BASS	-.33***	-.29***	-.25***
MBSRQ-SCW	-.14*	-.15*	-.16*

Note. MBSRQ-AE = Appearance Evaluation; MBSRQ-AO = Appearance Orientation; MBSRQ-OWP = Overweight Preoccupation; MBSRQ-BASS = Body Areas Satisfaction Scale; MBSRQ-SCW = Self-Classified Weight. ASI-Total = Appearance Schemas Inventory Total Score; ASI-SE = Self-Evaluative Salience; ASI-M = Motivational Salience. N = 269. * p < .05, ** p < .01, *** p <.001

Concerning convergent validity, the Pearson correlation coefficients between the two Greek ASI-R factor subscales and the composite score and the five subscales of the Greek MBSRQ-AS showed significant relationships in all the expected directions. Specifically, levels of investment in one's appearance, as assessed by the ASI-R composite score, were positively correlated to Overweight Preoccupation ($r = .48$, p

< .001) and Appearance Orientation (r = .53, p < .001) and negatively correlated to Body-Areas Satisfaction (r = -.33, p < .001), Appearance Evaluation (r = -.41, p < .001) and Self-Classified Weight (r = -.14, p < .05). Therefore, Hypothesis 4 was also supported. The results concerning the convergent validity are presented in Table 2.

Independent sample t-tests comparing the two groups of BMI categories (Normal Weight versus Overweight/Obese) showed significant differences on one of the two factor subscales as well as the total composite score. Specifically, normal weight participants reported significantly higher scores on the Motivational Salience subscale, t (232) = 3.86, p < .001, and significantly higher scores on the Total Composite Score, t (232) = 2.99, p < .01, (See Table 3). However, there were no significant differences between the two groups on the Self Evaluative

TABLE 3 Means, SDs, t and p Values of the Scores on the Greek ASI-R Total Composite Score & Subscales by BMI Category

ASI Subscale	BMI CATEGORY						
	Normal Weight		Overweight/ Obese				
	M	*SD*	*M*	*SD*	*t*	*df*	*p*
Total Composite	66.09	12.97	59.93	15.48	3.00**	232	.003
Self Evaluative	37.57	8.46	34.89	9.64	2.02	232	.06
Motivational	28.52	5.68	25.04	6.86	3.86***	232	<.001

Note 1. N = 234+; 177 Normal Weight and 57 Overweight/Obese. * p < .05, ** p < .01, *** p < .001.
Note 2. + = The 35 participants who fell in the Underweight category were not included in this analysis

Salience subscale, t (232) = 2.02, p > .05. When the same analysis was conducted using a subset of 57 randomly selected participants from the 'Normal Weight' category and comparing them to the 57 participants of the 'Overweight/Obese' category, similar results were found (i.e. Motivational Salience subscale, t (112) = 3.13, p < .001, Total Composite Score, t (112) = 2.77, p < .01, and Self Evaluative Salience, t (112) = 1.62, p > .05. This indicates that these significant differences were not affected by the initial unequal sample sizes. However, it is worth noting that even though the differences are significant, the effect sizes (η^2) of the differences were quite low (< .05 on all three scales).

DISCUSSION

The *Appearance Schemas Inventory-Revised* (ASI-R), which measures the importance, influence and meaning of appearance in one's life was translated and adapted in the Greek language. We attempted to examine the psychometric properties of the Greek ASI-R in a Greek-Cypriot sample. The present findings support the reliability and validity of the Greek version of the ASI-R. In accordance with the original model (Cash, 2003) and the analysis of Cash and his colleagues (2004), the current analysis revealed the original two-factor structure. The first factor corresponded to the Self-Evaluative Salience subscale, which reflects the extent to which people believe that their sense of self is defined by their physical appearance. The Motivational Salience subscale was the second factor extracted and represents the attendance to one's appearance and engagement with grooming behaviours.

Similar to those reported by Cash, Melnyk and Hrabosky (2004) and in support of our hypothesis, the internal consistencies of the scale were very good ($\alpha > .87$; George & Mallery, 2003). Specifically, the Cronbach's alpha coefficients for the Self-Evaluative Salience subscale as well as for the Motivational Salience subscale and the total composite score were almost identical to Cash et al's (2004) findings. Moreover, the one-month test-retest reliability was also very good and the test-retest correlations were found to be high for the two factors as well as the composite score of the scale.

With respect to the convergent validity of the scale, the findings indicate that the Greek ASI-R was significantly correlated with the MBSRQ-AS, which evaluates different attitudinal facets of body image. The results parallel Rusticus and Hubley's (2005) findings as there is a positive correlation between ASI-R scores and the Appearance Orientation subscale of the MBSRQ-AS. Specifically, these two instruments measure a similar construct, the levels/extent of investment in one's appearance. Moreover, as the levels of investment in one's appearance increased, so did the fat anxiety, weight vigilance, dieting and eating restraint as measured by the Overweight Preoccupation subscale of the MBSRQ-AS. Negative relationships were found between the ASI-R composite score and the Body-Areas Satisfaction, Appearance Evaluation and Self-Classified Weight subscales of the MBSRQ-AS. Therefore, as the levels of investment in one's appearance increased, there was a decrease in satisfaction with certain areas of the body (Body-Areas Satisfaction), satisfaction or feelings of attractiveness with one's appearance (Appearance Evaluation) and how one classifies their own weight (Self-Classified Weight).

In the current study, results indicated that normal weight female participants were more motivationally invested in their appearance as

compared to overweight/obese female participants. However, there were no significant differences between normal weight females and overweight/obese females on self-evaluative investment in their appearance, a finding in line with previous literature (Cash & Pruzinsky, 2002; Cash & Roy, 1999; Schwartz & Brownell, 2004). Both of the above results may be explained by the Mediterranean weather of Cyprus. Cyprus has year-round warm weather, which typically results in Cypriots wearing lighter, more body-part exposing clothes. In her research, Sloan (2002) argued that people residing in warm weather climates may invest more time in their appearance, resulting from wearing more revealing clothing. It is therefore possible that Greek-Cypriot females are investing more time in their appearance, regardless of their weight. The results concerning the BMI differences should be interpreted with caution as the effect sizes of these differences were quite low (< .05). This should be assessed further in a research project focusing on BMI differences specifically.

The current study may be limited by the self-reported calculation of the BMI. People may respond to such calculations in terms of how they would like to appear. Therefore, the height and weight of participants might be modified by self-presentation bias. According to several researchers, people tend to overestimate their height and underestimate their weight when they are asked to report these measures (Alvarez-Torices, Franch-Nadal, Alvarez-Guisasola, Hernandez-Mejia & Cueto-Espina, 1993; Nakamura, Hoshino, Kodama & Yamamoto, 1999). The same inaccuracies in estimation of height and weight have been found in a Greek-Cypriot sample as well (Hadjigeorgiou, Tornaritis, Solea, Savva & Kafatos, 2011).

In sum, the present study provides supporting evidence of the psychometric properties of the Greek version of the ASI-R. The two factor subscales, as well as the total composite score appear to be appropriate for use in examining the extent of investment in physical appearance in the Greek-Cypriot population. Future research examining the use of the current measure in Greece which is also Greek-speaking is recommended. We also recommend a validation of the current findings using individuals diagnosed with eating disorders and/or other related disorders as well as measuring the effectiveness of several body image related interventions. It would also be beneficial for future research to assess English-speaking or English literate women of Greek descent using the original English version of the ASI-R and assess possible differences in psychometric properties.

Since Greek-Cypriot women experience significant body image issues as reported previously, it was important to examine the appropriateness of such an instrument in this population. The use of the

ASI-R by clinicians, researchers, dieticians and health educators in the Greek population could be a helpful aid in identifying potential appearance and body image issues and it could also guide specialists to intervene as early as possible.

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