



Adolescent Stress Questionnaire: Reliability and validity of the Greek version and its description in a sample of high school (lyceum) students



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ABSTRACT

Adolescence is a crucial phase of human life characterized by enhanced exposure and vulnerability to various stressful stimuli. The Adolescent Stress Questionnaire (ASQ) is a useful measure to evaluate possible sources of stressors affecting the adolescent equilibrium. The present study examines the scientific properties of the Greek version of ASQ to measure perceived stress among 250 Greek adolescents. The confirmatory factor analysis (CFA) results showed a good fit of the original structure of ASQ to the observed data in the Greek sample. A good internal reliability was also confirmed by high Cronbach's alpha values. In line with previous research, girls reported more stress than boys. Overall, the Greek ASQ is a valid and reliable instrument for evaluating adolescent stress.

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Adolescence has been characterized as a critical and discrete period of the life cycle (Susman & Dorn, 2009; Williams, Holmbeck, & Greenley, 2002). It is well documented that stress plays an important role in shaping adolescent health and well-being (Byrne, Davenport, & Mazanov, 2007; Moksnes, 2011; Romeo, 2010; Thoits, 2010). Levels of stress seem to increase from preadolescence to adolescence (Rudolph, 2002) and combined with inadequate coping, may induce stress's well-known effects (Chrousos, 2009; McLaughlin & Hatzenbuehler, 2009; Seiffge-Krenke, Aunola, & Nurmi, 2009).

Among interviews, checklists and self-report measures (Duggal et al., 2000), the Adolescent Stress Questionnaire (ASQ) has been shown to be valid for measuring adolescent stress in research and clinical contexts (Byrne et al., 2007; De Vriendt et al., 2011; Moksnes, Byrne, Mazanov, & Espnes, 2010; Moreno et al., 2008). The current study aimed to validate the Greek version of the ASQ.

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Table 1

Item content and results of the first and second-order confirmatory analyses of the Adolescent Stress Questionnaire (ASQ): standardized factor loadings of manifest variables and latent factors.

ASQ scales with items	Standardized factor loadings		
	1st-order model	2nd-order model	
	Manifest variables	Manifest variables	Latent factors
Home life			0.87
Disagreements between you and your father	0.50	0.51	
Not being taken seriously by your parents	0.49	0.49	
Little or no control over your life	0.47	0.47	
Abiding by petty rules at home	0.43	0.43	
Disagreements between your parents	0.76	0.76	
Arguments at home	0.73	0.73	
Disagreements between you and your mother	0.52	0.52	
Lack of trust from adults	0.65	0.65	
Parents expecting too much from you	0.74	0.74	
Parents hassling you about the way you look	0.70	0.70	
Living at home	0.77	0.77	
Lack of understanding by your parents	0.60	0.60	
School performance			0.85
Having to study things you do not understand	0.55	0.55	
Teachers expecting too much from you	0.69	0.69	
Keeping up with schoolwork	0.59	0.59	
Difficulty with certain subjects	0.73	0.73	
Having to concentrate too long during school hours	0.64	0.64	
Having to study things you are not interested in	0.52	0.52	
Pressure of study	0.75	0.75	
School attendance			0.62
Getting up early in the morning to go to school	0.58	0.58	
Compulsory school attendance	0.87	0.87	
Going to school	0.87	0.87	
Romantic relationships			0.64
Being ignored or rejected by the person you want to go out with	0.63	0.63	
Making the relationship with your boyfriend/girlfriend work	0.86	0.86	
Not having enough time for your boyfriend/girlfriend	0.89	0.89	
Getting along with your boyfriend/girlfriend	0.84	0.83	
Breaking up with your boyfriend/girlfriend	0.84	0.84	
Peer pressure			0.79
Being hassled for not fitting in	0.65	0.65	
Being judged by your friends	0.72	0.72	
Changes in your physical appearance with growing up	0.68	0.68	
Pressure to fit in with peers	0.65	0.65	
Satisfaction with how you look	0.75	0.75	
Peers hassling you about the way you look	0.71	0.70	
Disagreements between you and your peers	0.79	0.79	
Teacher interaction			0.84
Disagreements between you and your teachers	0.66	0.66	
Not getting enough timely feedback on schoolwork	0.67	0.68	
Teachers hassling you about the way you look	0.69	0.69	
Abiding by petty rules at school	0.59	0.59	
Not being listened to by teachers	0.75	0.75	
Lack of respect from teachers	0.71	0.71	
Getting along with your teachers	0.75	0.75	
Future uncertainty			0.77
Concern about your future	0.70	0.70	
Putting pressure on yourself to meet your future goals	0.78	0.77	
Having to make decisions about future work or education	0.73	0.73	
School/leisure conflict			0.75
Not having enough time for fun	0.63	0.63	
Not getting enough time for leisure	0.82	0.83	
Having too much homework	0.81	0.81	
Not enough time for activities outside of school hours	0.78	0.78	
Lack of freedom	0.67	0.68	

Table 1 (continued)

ASQ scales with items	Standardized factor loadings		
	1st-order model		Latent factors
	Manifest variables	Manifest variables	
Financial pressure			0.76
Pressure to make more money	0.60	0.60	
Not enough money to buy the things you want	0.82	0.82	
Having to take on new responsibilities with growing older	0.89	0.89	
Not enough money to buy the things you need	0.84	0.84	
Emerging adult responsibility			0.84
Employers expecting too much from you	0.64	0.64	
Having to take on new responsibilities with growing older	0.77	0.77	
Work interfering with school and social activities	0.71	0.71	

Method

Linguistic validation

After obtaining permission from the developer to translate and use the ASQ, certain standardized methodological procedures were followed (Bullinger et al., 1998; Cull et al., 2002; van Widenfelt, Treffers, Beurs, Siebelink, & Koudijs, 2005). The original English version was translated independently into Greek by three native bilingual Greek translators. After the forward translation was completed, a back translation by a native English speaker fluent in Greek and a Greek teacher of the English language was also conducted. During all stages, the different versions were compared to maximize semantic and conceptual equivalence to the original version. Following this procedure, a pilot test of the questionnaire was conducted using nine volunteers. In a focus group session, the volunteers had to report any type of difficulties regarding the clarity of the questionnaire and their general view regarding the instrument.

Participants and procedure

The study was performed in a two month-period in the province of Attica, Greece. In total, a sample of 300 adolescents, aged from 15 to 18 years old (mean age = 16.79), at 19 foreign language centers, were asked to participate in the study. 50 questionnaires were excluded because of incomplete or incorrect answers, resulting in a sample of 250 adolescents (response rate of 83.3%).

Measures

The ASQ consists of a 58-item inventory, reflecting 10 stress dimensions within the last 12-month period: a) the stress of home life, b) school performance, c) school attendance, d) romantic relationships, e) peer pressure, f) teacher interaction, g) future uncertainty, h) school/leisure conflict, i) financial pressure and k) emerging adult responsibility. A Likert scale from 1 = not at all stressful (or irrelevant to me) to 5 (=very stressful) was used. Scale scores were calculated by summing the affirmed response to each item across all items defining any particular scale, and the total score was produced by the sum of the score from each dimension.

Table 2

Correlation matrix for ASQ scales.

	SC01	SC02	SC03	SC04	SC05	SC06	SC07	SC08	SC09
SC01									
SC02	0.74								
SC03	0.50	0.58							
SC04	0.56	0.42	0.42						
SC05	0.73	0.61	0.48	0.51					
SC06	0.76	0.72	0.45	0.50	0.81				
SC07	0.65	0.83	0.35	0.41	0.49	0.60			
SC08	0.62	0.72	0.55	0.55	0.50	0.54	0.65		
SC09	0.61	0.60	0.48	0.60	0.55	0.56	0.66	0.62	
SC10	0.71	0.70	0.56	0.56	0.62	0.67	0.62	0.58	0.77

SC01 = Home life, SC02 = School performance, SC03 = School attendance, SC04 = Romantic relationships, SC05 = Peer pressure, SC06 = Teacher interaction, SC07 = Future uncertainty, SC08 = School/leisure conflict, SC09 = Financial pressure, SC10 = Emerging adult responsibility.

Data analysis

The Greek ASQ was validated by confirmatory factor analysis (CFA). Using structure equation modeling (SEM) procedures (Byrne, 2010), factorial invariance was examined. A first-order model, with the individual items as manifest variables and the 10-component scales as first-order factors, showed high mutual correlations between the factors. Therefore, a second-order model was generated, with the ASQ summary score as the second-order factor. Model evaluations were performed using a variety of fit indices, including the comparative fit index (CFI) the Tucker–Lewis Index (TLI) and the root mean square error of approximation (RMSEA) (Bentler, 1990; Bentler & Bonett, 1980; Browne & Cudeck, 1992; Hoyle, 1995; Hu & Bentler, 1999; Steiger, 1990). Model chi-square test statistics and associated degrees of freedom and *p*-values were reported for completeness, although these values were not used in model evaluation (Beckstead, Yang, & Lengacher, 2008). Cronbach's alpha was calculated for each stress component scale and for the full scale to confirm internal consistency (Kline, 2000). All statistical tests were two-tailed, and results were considered significant at $p < 0.05$. Analyses were performed using SPSS 16.0 and AMOS SPSS.

Results

Among the 250 adolescents most were females (60.4%, $N = 151$). Age and residential area did not correlate significantly with any of the ASQ's scales ($p > 0.1$). The stress levels were significantly different between boys and girls for 6 of the 10 components, with the girls exhibiting higher (unfavored) scores in all cases.

Table 1 presents the results of the first- and second-order CFAs. Manifest variables and latent factor loadings onto the 10 factors (component scales) were included in the table. For the first-order model, 46 of 56 items had a correlation of ≥ 0.6 , and for the second-order CFA model, three items had acceptable factor loadings, between 0.40 and 0.50. Moreover, the majority of items demonstrated high correlations with their component scale, with factor loadings > 0.5 . The 10-component scales correlated highly with the summary score, with standardized factor loadings > 0.60 (range: 0.62–0.87). The model's absolute fit index χ^2 was 2513.5 ($p < 0.0005$). The comparative model fit indices, CFI and RMSEA, were 0.90 and 0.05, respectively, both indicating an acceptable fit of the theoretical model of the ASQ to the data.

Regarding the mutual correlations between the ASQ scales, all 10 scale scores showed significant medium-to-strong correlations. Extreme values reached 0.41 and 0.83 (Table 2). The internal consistency of both the total ASQ and its 10 subscales was interpreted by a Cronbach's alpha value, which was > 0.7 in all cases (range: 0.70–0.86) and the overall value was **0.96**.

Discussion

Both confirmatory and reliability analyses were supportive of a valid instrument and our findings were comparable with the results of other similar studies (Byrne et al., 2007; De Vriendt et al., 2011; Moksnes et al., 2010; Moreno et al., 2008).

Adolescent girls seem to suffer more stress in many of the scales, which is consistent with recent research (De Vriendt et al., 2011; Moksnes et al., 2010; Moksnes & Espnes, 2011). There is extensive evidence that girls may experience higher negative emotional reactions to stressors than males do (Hankin, Mermelstein, & Roesch, 2007; Rudolph, 2002), and this reactivity may be domain specific (Charbonneau, Mezulis, & Hyde, 2009; Prinstein & Aikens, 2004) or partially defined by temperament (Mezulis, Hyde, & Abramson, 2006), an emotional and behavioral style with a biological background that is stable over time (Compas, Connor-Smith, & Jaser, 2004).

Age was not a significant predictor of self-reported stress, possibly due to the age distribution of our sample and the different cultural contexts in which relative studies have been conducted.

In conclusion, the Greek version of the ASQ constitutes a valid instrument for assessing adolescent stress, as the questionnaire allows adolescents to report their own exposure to a variety of stressors and the corresponding subjective stressor load, adding to current knowledge and informing future research.

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