

# Reliability and Construct Validity of the Greek Gratitude Questionnaire (GQ6) in a sample of children aged 11 to 12 years

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## Abstract

The present study examined the reliability and construct validity of the Greek translation of the Gratitude Questionnaire (GQ-6) in a sample of 1931 elementary school pupils, aged 11 to 12 years. A sub-sample of 59 pupils completed the questionnaire twice with a four-week interval. Forward and back translations were used to translate the GQ from English to Greek. Exploratory factor analysis on the GQ indicated the same single factor as that of the original GQ-6. Internal reliability for two administrations was good ( $\alpha=0.74$  &  $\alpha=0.60$ ). Test-retest reliability was found to be high (from  $r=0.62$  to  $r=0.88$ ). The GQ scores were moderately correlated with “satisfaction with life”, revealing that this measure is distinguishable from the measures of “well-being”. Furthermore, an inverse relationship was found between GQ and “anger” as a personality trait in the children sample.

**Keywords:** Gratitude Questionnaire, Greek version, reliability, and construct validity

## Introduction

There has been interest in gratitude in children, adolescents and adults. Some philosophers [1] and psychologists [2] have treated gratitude as a moral virtue, something that is likely to forge or strengthen a connection between people. According to the Oxford Universal Dictionary gratitude reflects the “the quality or condition of being grateful; a warm feeling of goodwill towards a benefactor; grace, favor, a free gift, a gratuity (p. 824)”. The Greek linguist Bambiniotis [3] defines gratitude as “the recognition of benevolence and the expression of thanksgiving”. Piaget [4] highlighted that gratitude is a sense of autonomous obligation, when one freely and happily takes on a debt to a former benefactor, making a distinction from a sense of heteronomous obligation when one provides something of benefit because forced to do so, or because one intends to gain something as a result. It seems to be developed between the ages of 7 and 10 through the child’s interactions with the environment over time [5]. Research in the United States and Brazil with children from 7 to 14 years old indicated that younger children, being more egocentric, express concrete gratitude whereas older children express connective gratitude, which requires a sense of relatedness and some degree of autonomy [6].

However, many psychologists, particularly those working in the field of positive psychology, view gratitude as a moral affect, as an emotion and «affective trait» [7], or as life orientation towards the positive [8]. As an affective trait, gratitude involves qualities such as intensity, frequency, span, and density of grateful experiences in people’s lives [9] [10]. These qualities of gratitude can influence one another. According to moral affect theory, the gratitude is created through the effects of personality and affective traits, through the impact of discrete interpersonal and emotional episodes and the interaction of these factors [11]. Fredrickson [12] considered gratitude as one of the ten most common positive emotions that were experienced frequently in people’s lives. Other researcher view gratitude as an inner resource and strength that can improve people’s physical and mental health [13][14].

Gratitude is an essential part of human well-being across

cultures and times [15]. According to moral affect theory and empirical findings, gratitude and well-being form a virtuous cycle [16][17][18]. The gratitude promotes psychological well-being which in turn increases self-esteem, pro-social behavior [19] and social ties [11]. As a positive emotion, it is related to other positive emotions [20], such as satisfaction with life [21]. According to research, youth who express greater gratitude tend to feel more positive satisfaction with their life and their school experience than those who report less gratitude [9][22][23][24][25]. Furthermore, increased gratitude predicted growth in pro-social behavior of adolescents [26].

A number of studies showed that low level of gratitude or ingratitude often elicits negative emotional responses, such as anger, hostility, even indifference [27]. Ungrateful people are more likely to be critical and more likely to become involved in conflicts and arguments [29]. Furthermore, they tend to have difficult social relationship problems [9].

Although a number of studies have investigated the contribution of gratitude to satisfaction with life among children and adolescents [30], no studies have considered its beneficial influence on Greek children aged 11 to 12 years. A useful Greek version of a well-validated and widely-used measure of gratitude would contribute to the literature. It is upon “*χάρης*» that the Greek terminology of gratitude is founded; the opposite is “*αχάριστος*» [31]. Thus, the purpose of this study was to investigate the validity and cross-validity of the GQ with a sample of Greek children. The exploratory factor analysis was used to investigate the underlying structure of the items. Furthermore, correlation analyses were conducted to examine whether the Greek GQ has positive relationships with satisfaction with life and negative associations with anger as a personality trait. These two constructs were selected because of their relationship with gratitude [9][23][29].

The purpose of the present study was to translate the GQ-6 into Greek and to provide preliminary data to support the utility of the translation (GQ-6-J). The sample for the study is nationwide, and includes children aged 11 to 12 years. Test–retest reliability was examined over a 4-week period in a sample of 59 children.

The objectives of the study were as follows:

- ▶ To observe the same single factor structure in the GQ-6-J. [23]
- ▶ To investigate a temporal stability by retesting four weeks after the initial testing.
- ▶ To examine the positive relationship of the GQ-6-J with satisfaction with life.
- ▶ To investigate the negative association between the GQ-6-J with anger.

## Method

### Participants

In total, 1931 elementary school pupils, aged 11 to 12 years, took part in this study. The sample consisted of 966 boys and 965 girls. 911 pupils were from E' class and 1020 were from D' class. Participants were selected from 16 different schools in Athens, Salonika, Corfu, Crete, Florina, Komotini, Mytilene, Kozani, Messinia, Laconia, Arcadia and Trikala. The majority of pupils (1559=80.7%) come from urban areas and the rest (19.3%) from rural areas,  $\chi^2(1, 1931)=6.11, p<0.01$ . A sub-sample of 59 children completed the GQ6 twice, separated by a 4-week interval (Time 1 and Time 2).

### Research Instrument

*Measure of Gratitude.* Six-Item Form (GQ-6) [11] published in a scientific journal for use in the public domain was the main measure. The Questionnaire is self-report designed to assess individual differences in the proneness to experience gratitude in daily life. Each item is rated on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Four of the items were positively worded (e.g., "I have so much in life to be thankful for"), while two items were negatively worded and were reverse scored (e.g., "When I look at the world, I don't see much to be grateful for"). Scores range from 6 to 42, with higher scores reflecting higher levels of gratitude.

*Measure of Satisfaction with Life.* Satisfaction with Life Scale [32] that estimates cognitive evaluation of individual satis-

faction was used. Two items related to the lives of children in school were added to the scale ("I have a great time at my school"; "I have a great time with my friends"). The questions were measured on a seven-point response format, with one indicating "strongly disagree" and seven "strongly agree". Scores range from 6 to 42, with higher scores reflecting higher levels of life satisfaction. The value of Cronbach's alpha coefficient for life satisfaction was  $\alpha=0.84$ . According to Pavot and Diener [32] the Satisfaction with Life Scale has a potential cross-cultural index of life satisfaction.

*State of anger.* The State-Trait Anger Scale (STAS) was used to assess the intensity of anger as a personality trait [33]. S-Anger for children and adolescents was constructed by [34] and adapted to Greek reality by (να προστεθει και στη βιβλιογραφία). T-Anger Scale consists of ten items rated on 4-point Likert-type scale (score range: 0-40). The higher scores indicate more frequent and intense anger. An example of a trait anger item is, "I control my angry feelings". The value of Cronbach's alpha coefficient for life satisfaction was  $\alpha=0.83$ .

### Procedure

The questionnaires were initially drafted in English and were translated into the Greek language by bilingual translators. The translation process involved three steps: (a) initial translation of questionnaires by the bilingual translators, (b) editing of the translation by the second translators, and (c) review of the quality of consistency in both languages.

Data collection took place in different schools after obtaining consent for pupil cooperation. Pupils participated in the study on a voluntary basis. The questionnaires were administered in class in the presence of the regular teacher. Each pupil was given a randomly ordered questionnaire packet that required them to answer a number of questions. It was emphasized that the data were anonymous, that participation was voluntary and that there was no obligation to participate or to continue participating. Data were collected in the fall semester of 2017-2018. A group of 59 pupils completed the GQ-6-J twice, separated by a 4-week interval (Time 1 and time 2). All other measures were administered only at time 1.

*Statistical analysis*

Cronbach’s alpha for GQ-6 at Time 1 and Time 2 were investigated. The test-retest reliability coefficients were calculated. Exploratory factor analysis was employed to examine the structure of GQ. Correlations among GQ-6, satisfaction with life and anger as a personality trait were used to study their relationships.

**Results**

*Internal consistency and temporal stability*

Table 1 shows the means, standard deviations, range of scores, and Cronbach’s alpha for the GQ-6 at Time 1 and Time 2. Cronbach’s alpha was higher at Time 1 ( $\alpha=0.74$ ).

Table 2 presents the means and standard deviations of all items of GQ together with item-total correlations. All corrected item-correlations were at a satisfactory level ( $r=0.62$  to  $0.88$ ).

**Table 1. Means, Standard Deviations, range of scores, and Cronbach’s  $\alpha$  for GQ-6 at Time 1 and Time 2 (N=59)**

Time	M	SD	Range of Scores	Cronbach’s $\alpha$
Time 1	36.36	2.91	26-42	0.74
Time 2	34.78	2.46	29-40	0.60

**Table 2. Means, Standard Deviations and Corrected Item-total Correlations of Items in the GQ (N=59)**

Items	M	SD	Item-total correlation
1	6.18	0.71	0.760**
2	5.64	0.88	0.877**
3	5.93	0.77	0.737**
4	6.02	0.76	0.621**
5	5.75	0.80	0.704**
6	6.04	0.85	0.779**

**Findings Related to Validity Study of the GQ**

*Exploratory factor analysis relating to Construct Validity of the GQ*

Before beginning factor analysis of the GQ, the adequacy of the factorability of the total sample and of the samples of boys and girls was assessed. Bartlett’s test of sphericity of the total sample yielded a measure of 2105,001,  $p<0.001$ , while KMO was 0.796. A sample of girls yielded a measure of 990.982 on Bartlett’s test of sphericity and KMO=0.749 while the sample of boys yielded Bartlett’s test 1043, 103,  $p<0.003$  and KMO was 0.813. A principal axis analysis with Varimax rotation suggested the same result for all samples, the one-factor solution. Factor loadings were above 0.40 for the five items respectively. Eigenvalues were 2.62 (total sample), 2.65 (boys) and 2.49 (girls). The solution explained the total sample variance of 43.62%, while the boys’ sample exhibited 44.09% of variance and the girls’ sample 41.43% of variance (Table 3).

**Table 3. Results of exploratory factor analyses**

Items	Total sample	Sample boys	Sample girls
	1	2	3
I have so much in life to be thankful for	0.668	0.645	0.691
If I had to list everything that I felt grateful for, it would be a very long list	0.619	0.621	0.608
When I look at the world, I don’t see much to be grateful for	0.566	0.615	0.524
I am grateful to a wide variety of people	0.545	0.544	0.488
As I get older I find myself more able to appreciate people, events,	0.524	0.534	0.484
Long amounts of time can go by before I feel grateful to something or someone	0.484	0.477	0.464

### Concurrent validity of the GQ

Pearson *r* correlations were conducted to identify the relationship between GQ (total and all items) with Satisfaction with Life Scale and State-Trait Anger Scale scores. As evidence for the concurrent validity of the GQ, significant associations were found between the total gratitude scale and SWLS ( $r=0.51$ ,  $p<0.01$ ) and STAS ( $r=-0.26$ ,  $p<0.01$ ). Total score of GQ and all items were positively associated with satisfaction with life and negatively with State-Trait Anger score. The correlations are not high, however they are respected as acceptable (Table 4).

### Discussion

The purpose of the present study was to assess the reliability and construct validity of the translated GQ-6 into Greek using data from school children aged 11 to 12 years. The findings of this study support the construct validity of the GQ-6. The exploratory factor analysis indicated that the Greek GQ-6 has the same single factor structure as the original GQ-6 [11]. Some studies from Taiwan [35], America [9], Chile [36] and Turkey [37] referred to a five-item version (omitting item 6), because item 6 revealed a poor factor loading. The obvious disadvantage of Item 6 was not found in the Greek sample. According to cross-cultural research, the expression of connective gratitude increased with age, regardless of society [6].

The scale was found to have sufficient reliability with Cronbach's alpha ranged from 0.74 to 0.60. The Cronbach's  $\alpha$  of the GQ-5 among adolescents ranged from 0.73 to 0.80 [35] [36] [37]. The higher coefficient of Time 2 in these studies may be explained by the omission of Item 6. Test-retest reliability over four weeks revealed a high correlation between

the scores at Time 1 and Time 2. These results are consistent with the findings of the original GQ-6 [11], and therefore support the construct of Greek measure.

The correlations between scores on the Greek GQ-6-J and well-being measure were moderate. Participants who reported as being more grateful were considerably higher in satisfaction with life. Moreover, compared with their less grateful pupils, they are lower in negative emotion of anger. Considering earlier literature on correlation of gratitude with positive and negative affect [11][38], the results provide support for the construct validity and reliability of Greek measure. According to results, gratitude is an affective trait distinct from satisfaction of life. Their connection might be useful to explore if gratitude contributes to promotion of well-being. Furthermore, grateful disposition leads children to improve themselves by experiencing fewer negative emotions [39], such as anger.

The construct validity and the reliability of the present study provide preliminary support for the use of the GQ-6-J as a measure of dispositional gratitude among children aged 11 to 12 years.

However, the present study was limited to conducting exploratory factor analysis of the same sample. Firstly, it would be useful to conduct exploratory and confirmatory factor analyses of at least two separate samples in the future research. Secondly, it is important to examine test-retest reliability over a longer time. Finally, it is important to study developmental changes with ages in type of gratitude, including children added from 7 to 14 years. Studies indicated that younger children are more likely to express concrete gratitude and less likely to express connective gratitude than did older children [6] [40] [41].

**Table 4. Pearson *r* correlations between GQ (total and 6 items), SWLS and STAS (N=1931)**

Scales and Variables	M	SD	Total GQ	1	2	3	4	5	6
1. Gratitude	33.79	5.16	–	–	–	–	–	–	–
2. SWLS	40.45	6.79	0.51**	0.41**	0.34**	0.30**	0.35**	0.32**	0.31**
3. STAS	16.52	5.15	-0.26**	-0.18**	-0.20**	-0.18**	-0.13**	-0.15**	-0.20**

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