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RESEARCH ARTICLE

INTRODUCING THE GREEK ADAPTATION OF 'ACUTE STRESS DISORDER SCALE' (ASDS). HIGH RELIABILITY AND VALIDITY IN AN EPIDEMIOLOGICAL SAMPLE

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Abstract

Background: Acute stress disorder is a common and profound psychological condition. It concerns the physiological activation of the neuroendocrinological bodily response against any stressors within minutes of exposure to the stimuli, and under some particular criteria until the end of the first month.

Aim: The present study is conducted with the view of providing a new, culturally adapted, self-reported measure of acute stress in the Greek population.

Material & Methods: A variety of methods and analysis were employed and performed accordingly, in order to translate the original English questionnaire and to test the new Greek version for its reliability and validity in a Greek sample (N= 1,158).

Results: The most important findings conclude a high validity of the Greek version (α= .925) and a strong correlation with resilience and psychosomatic symptoms.

Conclusion: It is highly recommended for future studies concerning the Greek population to adapt and test-retest the questionnaire, as well as for practitioners to use the Greek version of ASDS in clinical and private practice.

Keywords: Acute stress, ASDS, psychometrics, greek adaptation, psychopathology.

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INTRODUCTION

'Acute Stress' is a given name that describes a 'mental condition' in human psychology that occurs against a stressful event with both cognitive and somatic outcomes.[1-4] The condition concerns the particular neuroendocrinological activation of 'Hypothalamic–Pituitary–Adrenal' (HPA) Axis' from the time of exposure to a negative stressful event.[5-9]

Acute stress is currently diagnosed and interpreted in clinical and research practice by the use of two major systems of classification. The first is the fifth edition of the 'Diagnostic and Statistical Manual of Mental Disorder' (DSM-5) published by the American Psychiatric Association (APA).[10] The second concerns the tenth edition of the 'International Classification of Diseases' (ICD-10) published by the World Health Organization (WHO).[11]

It is noteworthy that the given names are different in the two manuals, since in DSM-5 the condition is named 'Acute Stress Disorder' (ASD), while in the ICD-10 system as 'Acute Stress Reaction' (ASR). The background physiology of HPA Axis activation and the rationale of ASD and ASR concern equally the first 'intense' activation of the HPA Axis in the stress response within minutes in both manuals. Both the DSM and ICD systems consider that acute stress progresses to 'Post-Traumatic Stress' (PTSD) when symptoms are prolonged and co-morbid with anxiety and depression.

At this particular juncture, amongst many self-reported measures of ASD and ASR the 'Acute Stress Disorder Scale' (ASDS) questionnaire designed by Bryant et al.[12] was considered by the researchers of this study to serve in the measurement of acute stress levels in the Greek population. The 19-items in the questionnaire could compile the rationale retrieved from both diagnostic classification systems.

Regarding the Greek population, the original questionnaire had to be translated and tested if it can be culturally adapted. This is the first study that this particular questionnaire is translated into the Greek language and tested for its validity and reliability.

It is noteworthy that the present study is much supported by the fact that data collection took place during the 'CoronaVirus Disease 2019' (COVID-19) outbreak in Greece. The Greek government had announced domestic restrictions and public measures against the pandemic. At that particular juncture, COVID-19 was an unknown life threatening condition without any treatment. The Greek population of the study was already aware by sources of communication about the unknown medical background and the skyrocketing ratio of spread of the disease, as well as the number of deaths in China and Europe. Therefore, the COVID-19 outbreak may had been a stressor for an 'acute stress' response in epidemic level.

As a result, the aim of the current study is to evaluate ASDS[12] for validity and reliability in the Greek population.

METHODOLOGY

Ethics

The study was approved by the Ethics Committee of Research and Conduct of City Unity College and City Unity Research Center in Athens, Greece. The approval reference number is 2020PSYRSC-003.

Original Questionnaire & Translation

The original English version of ASDS questionnaire was retrieved from Bryant et al.[12] and it was translated from the English to the Greek language. Specific information upon the process is given in the 'Results' section.

Sample, Recruitment & Conditions

The study was designed to include the highest possible amount of intellectually healthy adults who could read and answer questions in Greek, while it took place through the 'Google Forms' function, the use of social media for promotion and used the 'snowball' sampling method.[13] What is more, answers were given during the COVID-19 outbreak in Greece.

Demographics

The study recruited overall 1,158 Greek adults. The ages of the participants ranged between 18 and 78 years old, with a mean score of 40.51 (SD= ±12.8). Furthermore, people who participated in the study were already been under restrictions by government's measures against the COVID-19 outbreak in

Greece from 1 to 90 days (M= 33.3, SD= ±7.23). More information upon the frequencies is given in Table 1.

Measures

The original questionnaire consists of 19 items measuring acute stress. The original questionnaire was designed in a self-reported manner. Each item is measured via a 5-Likert scale point system.[14] The questionnaire asks to if the participant has experienced a frightening event which is answered in a 'yes or no' style. For the rest 19 items the scoring scheme is between 1 and 5, with 1= 'not at all' and 5= 'very much'.

In the proposed Greek version, this scoring system was converted between 0= 'not at all' and 4= 'very much' in the same 5-Likert style. It was considered that the first question reflects better the rationale of clinical screening at practice, rather than the one of a mass measuring tool in an epidemiological health study. Therefore, adding one point to the overall score if anyone answers 'not at all', would not allow a zero-level depiction in acute stress. This change was also supported by the idea that it would not affect the variance that would be presented between individual scores.

Design & Statistical Analysis

The design of the study was developed to firstly translate the original English questionnaire in Greek, and secondly to test the new version upon its 'item consistency', 'internal correlation', and 'internal consistency'. Finally, a 'factor analysis' was conducted as well as 'ASDS Greek version' was tested for correlation with self-reported questionnaires measuring 'resilience' and 'psychosomatics'. Analysis of the raw data was performed by the use of IBM SPSS Statistics for Windows, version 26.[15]

RESULTS

Statistical Power

The power of the study was calculated by the use of 'G*Power 3.1' software.[16] The amount of participants (N= 1,158) provided to the study an 'a priori' odds ratio of 1.274, a critical z of 1.6448 and an actual power of 95%.

Translation

The original version of ASDS in the English language was translated by 2 independent translators and then it was back translated into English, in order to evaluate the 19 items in Greek. The two versions were identical, and thus the Greek translation was considered accurate.[17]

Item Consistency

After the translation took place, 5 individuals with a psychology background, 3 with a non-psychology background and 2 under-aged people, aged at 14 years old, read and confirmed that they understand what was asked from them to do in the questionnaire, the individual 19 items and how to score accordingly. There was no individual who asked for further information or stated that s/he does not understand something on the Greek version. In such a manner, the Greek questionnaire was considered to have a good item consistency.[18]

Internal Correlation

Internal correlation was tested using Pearson's r analysis.19 The results are given in the Table 2.

Internal Consistency

Internal Consistency was tested by the use of 'Cronbach's alpha coefficient' analysis.19 The result is found at .925 in overall 19 items, suggesting a strong validity ratio of 92.5% in the new questionnaire.[19]

Factor Analysis

Factor analysis illustrated three factors/criteria within the questionnaire.[19] Nine (9) items were found in 2 factors. However, all items of the questionnaire were included in the first factor which probably considers 'acute stress'.

Adaptation in Real Life

Finally, the proposed Greek version of the questionnaire was tested if it would be effective in research and practice. Acute stress is a condition that in theory is correlated with 'stress resilience'[20-22] and 'psychosomatic symptoms' of stress.[7,23-25] Therefore, in the present study the Greek version of ASDS was tested whether it would show any correlation with the 'Nicholson McBride Resilience Questionnaire' (NMRQ) that measures in 12 items stress resilience[26] and a newly designed 'Psychosomatics Questionnaire' that include 29 items measuring 'mood and cognitive', 'cardiovascular-related' and 'non-

cognitive somatic' symptoms. Both questionnaires were answered by the same sample (N= 1,158).

The Greek questionnaire of acute stress was found to be negatively correlated with stress resilience, r(1156)= -.420, p< .001, and positively correlated with psychosomatic symptoms, r(1156)= .770, p< .001. Figure 1 and 2 illustrate the correlation matrices.

The two results are consistent to the background theory regarding the HPA Axis and may provide some support for adaptation of the Greek version of acute stress in real life conditions.

DISCUSSION

The present study shows that the new proposed Greek version of the original English ASDS[12] may be adapted in the Greek culture. The analysis provided results that include high validity and reliability in a Greek population that provides the study with a large effect size.

Moreover, the study took place during the COVID-19 outbreak in Greece. As already presented, the Greek Government had already taken measure against the spread of the disease in the Greek society. These measures included the 'lockdown' of the Greek economy and all public and private businesses were temporarily 'shut down' or did not allow their employees to work at office. The later required from a large portion of employers and employees to stop working, thus resulting in an unclear environment for their household income or their future working status. In addition, there were restrictions over free movement, while the death ratios in China, Italy and Spain were already known to the Greeks as well as that COVID-19 spreads quickly and that there is no cure or medication.

The pandemic may have worked as a 'double-edged sword' for this study. On the one hand the stressor for the development of 'acute stress' was common in a large sample of 1,158 participants, while on the other hand 'acute stress' concerns exclusively COVID-19 pandemic in Greece excluding any other 'life condition' such as traumas of any source, worries, problems in marriage and other phenomena.

Previous Studies

The introductory study of ASDS in Australia discussed in the result section about a validity of α= .96 in an Australian sample of 107 participants, who were all survivors of burnfires.[12] In Europe, a Swiss study that aimed to test ASDS for adaptation in the German language, recruited a sample of 61 parents at the University Children's Hospital Zurich.[27] The analysis shows a validity ratio of 88% in the German version of ASDS. The validity results of previous studies may support the 92.5% validity ratio that was found in the present Greek study.

What is more, factor analysis of the present study found that the Greek ASDS has 3 factors. The original English version of ASDS presented 4 factors, which were named accordingly as subscales of 'dissociation', 're-experiencing', for 'avoidance' and for 'arousal'.[12] Regarding the Swiss study[27], the authors decided to adapt a priori the subscales that were introduced by the original introductory paper.[12]

Considering these limitations, the present Greek study did not perform any further analysis, since factor analysis showed that although there were 3 factors, all items were also included in the first factor. Regardless of the introductory study in Australia and how the authors theorized and explained the 4 factors they found –since the analysis was performed exclusively on scores of 107 victims of 'fireburn'-, the factor analysis in our Greek study might consider all items as 'COVID-19 related responses' due to the pandemic in Greece.

Proposed Use

It is proposed for 'ASDS Greek-version' to be used for assessment of acute stress –based on how the condition is defined by the two major diagnostic manuals of the DSM and ICD systems- in both clinical and research practice. Furthermore, it may be used as a screening tool to predict pre-PTSD conditioning, since the later condition concerns the continuum of symptomatology of acute stress in both DSM-5[10] and ICD-10[11].

Future Studies

Future studies may test-retest the questionnaire for reliability and validity. Additionally, ASDS may attribute to the fields of 'psychopathology', 'psychosomatics', 'psychoneuroimmunolo-

gy', 'psycho-oncology' and 'psycho-cardiology'.

Limitations

Answers to the present questionnaire were received only during the COVID-19 outbreak in Greece.

CONCLUSIONS

On the whole, the present study tested the validity and reliability of the Greek version of ASDQ. The results show that the Greek version may be used in future studies concerning acute stress conditions in the Greek culture.

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CONFLICT OF INTEREST

Nothing to declare.

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ANNEX

Table 1. Demographic information

		n=	Percentage
Gender	Male	280	24.2 %
	Female	876	75.6 %
	N=	1,156	99.8 %
Education	School Level	399	34.4 %
	Undergraduate Degree	402	34.7 %
	Postgraduate Degree	357	30.9 %
	N=	1,158	100%
Marital Status	Married	508	43.9 %
	Not Married	650	56.1 %
	N=	1,158	100 %
Children	Yes	631	55.5 %
	No	527	45.5 %
	N=	1,158	100 %
Annual Income	≤10,000€	379	32.8 %
	>10,000€	778	67,2 %
	N=	1,157	99.9 %
Permanent Residence	Athens, Greece	934	80.7 %
	Other	224	19.3 %
	N=	1,158	100 %

N= total number of participants

Table 2. Significance of Person's r correlations between items (N= 1,158)

Table

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1		.655*	.451*	.615*	.433*	.264*	.308*	.241*	.362*	.274*	.238*	.282*	.305*	.462*	.529*	.596*	.453*	.536*	.360*
2	.655*		.509*	.536*	.429*	.316*	.345*	.247*	.393*	.301*	.308*	.325*	.361*	.417*	.523*	.582*	.457*	.580*	.394*
3	.451*	.509*		.597*	.275*	.217*	.236*	.313*	.357*	.300*	.275*	.309*	.307*	.304*	.378*	.380*	.388*	.410*	.263*
4	.615*	.536*	.597*		.449*	.302*	.312*	.342*	.399*	.367*	.351*	.390*	.403*	.398*	.477*	.536*	.453*	.506*	.374*
5	.433*	.429*	.275*	.449*		.416*	.444*	.260*	.401*	.328*	.323*	.376*	.323*	.294*	.348*	.423*	.310*	.384*	.507*
6	.264*	.316*	.217*	.302*	.416*		.519*	.359*	.483*	.330*	.317*	.308*	.380*	.224*	.231*	.267*	.277*	.289*	.369*
7	.308*	.345*	.236*	.312*	.444*	.519*		.376*	.547*	.410*	.373*	.374*	.415*	.363*	.310*	.337*	.298*	.302*	.447*
8	.241*	.247*	.313*	.342*	.260*	.359*	.376*		.639*	.545*	.504*	.437*	.560*	.230*	.219*	.248*	.254*	.242*	.288*
9	.362*	.393*	.357*	.399*	.401*	.483*	.547*	.639*		.622*	.583*	.543*	.635*	.352*	.361*	.326*	.364*	.357*	.476*
10	.274*	.301*	.300*	.367*	.328*	.330*	.410*	.545*	.622*		.808*	.669*	.779*	.306*	.297*	.285*	.342*	.300*	.370*
11	.238*	.308*	.275*	.351*	.323*	.317*	.373*	.504*	.583*	.808*		.761*	.766*	.295*	.311*	.295*	.328*	.292*	.371*
12	.282*	.325*	.309*	.390*	.376*	.308*	.374*	.437*	.543*	.669*	.761*		.714*	.274*	.330*	.312*	.323*	.328*	.463*
13	.305*	.361*	.307*	.403*	.323*	.380*	.415*	.560*	.635*	.779*	.766*	.714*		.332*	.332*	.350*	.386*	.340*	.391*
14	.462*	.417*	.304*	.398*	.294*	.224*	.363*	.230*	.352*	.306*	.295*	.274*	.332*		.493*	.533*	.523*	.448*	.380*
15	.529*	.523*	.378*	.477*	.348*	.231*	.310*	.219*	.361*	.297*	.311*	.330*	.332*	.493*		.645*	.516*	.777*	.403*
16	.596*	.582*	.380*	.536*	.423*	.267*	.337*	.248*	.326*	.285*	.295*	.312*	.350*	.533*	.645*		.520*	.649*	.439*
17	.453*	.457*	.388*	.453*	.310*	.277*	.298*	.254*	.364*	.342*	.328*	.323*	.386*	.523*	.516*	.520*		.535*	.360*
18	.536*	.580*	.410*	.506*	.384*	.289*	.302*	.242*	.357*	.300*	.292*	.328*	.340*	.448*	.777*	.649*	.535*		.430*
19	.360*	.394*	.263*	.374*	.507*	.369*	.447*	.288*	.476*	.370*	.371*	.463*	.391*	.380*	.403*	.439*	.360*	.430*	

p< .001*

Note: all correlations were found significant at p< .001

Figure 1. Correlation Matrix between ASDS and NMRQ

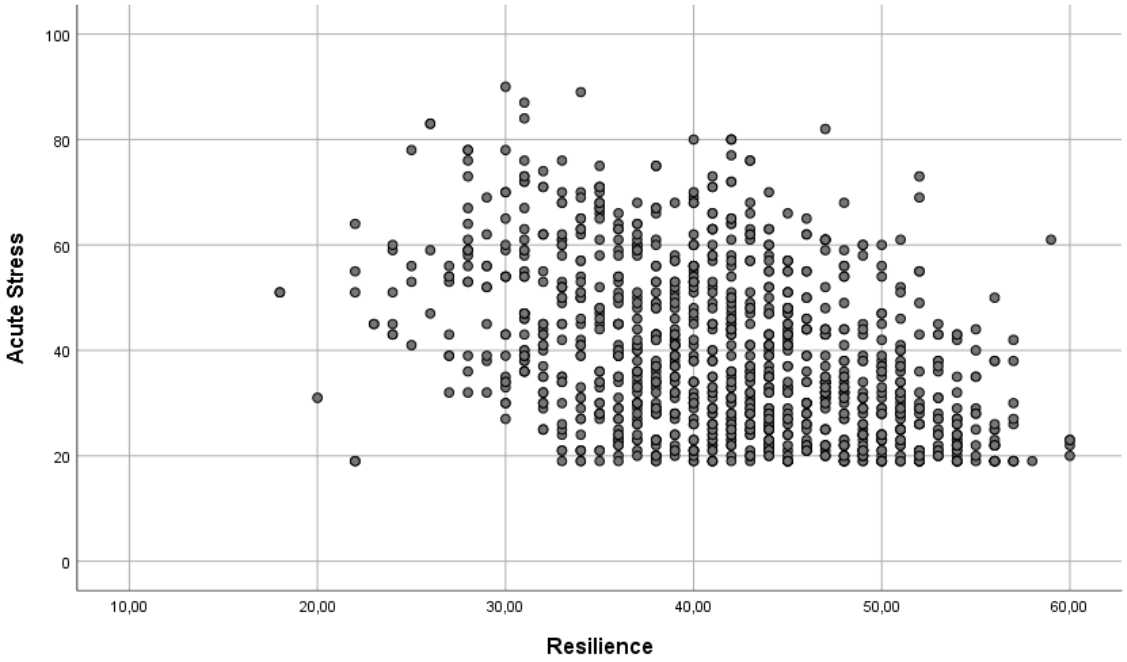

Figure 2. Correlation Matrix between ASDS and PSSQ-29