

# Arabic adaptation of the Dimensions of Anger Reactions Scale-5 (DAR-5)

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## Short Report

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# **Abstract**

## **Background:**

Anger is a normal human emotion that is a common response to potentially traumatic events and implicated in the development and maintenance of post-traumatic stress disorder (PTSD). Anger is also a risk factor for aggression and violence. With millions of Syrians having to flee and being refugees in other countries, anger was rarely assessed as there was no brief robust tool for anger in Arabic.

## **Objective:**

To develop and validate an Arabic version of the Dimensions of Anger Reactions 5 (DAR-5) scale, a five-question scale to screen for anger distress and problematic anger.

## **Method:**

DAR-5 was translated into Arabic, then back translated into English, and finally re-checked for accuracy. Participants were 1641 Syrian adults, with 621 (37.8%) males and 1020 (62.2%) females. Only Arabic speaking participants were included. Questionnaires were distributed online that contained demographic data, the DAR5 Arabic version and the Depression Anxiety Stress Scale-21 (DASS 21).

## **Results:**

High levels of internal reliability were reported (Cronbach's  $\alpha$  of .86) and factor analysis found that DAR-5-A scores fit as a single-factor model. Problematic anger rates were 36.7% across the population using the cut-off point for DAR-5-A of  $\geq 12$ . This cut off score also successfully differentiated between scores high versus low scores on anxiety, depression and stress.

## **Conclusions:**

DAR-5-A is a reliable and valid tool for clinicians and researchers, written in formal Arabic that can be used as a brief measure to assess problematic anger in Syrians and other Arabic-speaking communities.

# **Introduction**

Anger is a normal human emotion that manifests in a spectrum of expression from frustration and irritability to fury and rage (1). Most of the time anger serves as an adaptive and appropriate expression of emotion. However anger can be considered problematic when it occurs with a level of frequency, intensity, or duration that causes significant distress, actively interferes with interpersonal relationships and functioning, and is associated with aggressive behaviours towards others.

Anger is also a common response to potentially traumatic events such as natural disasters (2) and war (3). It has been found to be implicated in the development and maintenance of PTSD, a significant co-morbidity associated with post-traumatic stress disorder (PTSD) beyond the PTSD items themselves that overlap with anger such as irritability (4), a risk factor for aggression and violence (5) and in the attenuation of PTSD treatment responsivity (6). However, despite the ubiquitous nature of anger in trauma exposed populations

and trauma survivors seeking treatment for PTSD, it is rarely assessed. This is partly due to the less prominent representation of problematic anger in the clinical and research literature compared to anxiety and depression, but also the historic limitations to the availability of brief and robust measurement tools.

The State Trait Anger Expression Inventory-2 (STAXI 2) is considered the gold standard for assessing anger. However, a significant limitation to the STAXI-2 is that it is lengthy and hence does not easily lend itself to inclusion in brief survey assessment or treatment outcome batteries. In this context, there has been considerable interest in the development, utility, testing and translation of the Dimension of anger reactions 5 (DAR-5) scale (7). The DAR-5 is a brief 5 item measure that assesses the frequency, duration and intensity of anger, aggression orientation, and its interference with social relationship and general functioning and has demonstrated strong psychometric properties (7, 8). The measure is used widely internationally in military and veteran populations (9), disaster population studies (10), and community groups (11). One limitation has been its lack of availability in other languages. To begin to redress this, the measure was recently translated, tested and published in French (12).

Syria is a country that has been experiencing ongoing military conflict since 2011 and with refugees from this conflict escaping in their millions across the world particularly to Turkey, Jordan and across Europe. Given the considerable trauma exposure load experienced by the population, both still residing in Syria and as refugee across the world , it is of critical importance that anger be included as part of assessments for this population. This psychological distress increased further for Syrians in multiple countries due to COVID-19 as PTSD symptoms and mental disorder prevalence grew larger (13).

In view of the brevity, utility, psychometric robustness and increasingly wide-scale use of the DAR-5 (7), this study sought to develop an Arabic version of this measure, translating and testing it with a large community sample across Syria.

## Methods

### **Participants:**

Our study included 1641 participants with 621 (37.8%) males and 1020 (62.2%) females and a mean age of 25.4 (SD = 6.6). Questionnaires were distributed online through the Department of Medicine, Damascus University and communicated through multiple social media channels. Distribution covered the period between June 8 – 17, 2020. Only Arabic speaking participants, particularly Syrians and/or who lived in Syria were included. Ethical approval was provided by the Damascus University Deanship. The questionnaires included a series of questions relating to demographic data, the DAR5 Arabic version and the DASS 21.

### **Measures**

#### **DAR-5**

The DAR-5 (7) is a 5-item scale that measures anger experience over the past 4 weeks. In response to items such as 'When I got angry, I got really mad,' respondents rate their anger experience on a 5-point scale ranging from 1 ('None or almost none of the time') to 5 ('All or almost all of the time'). The five scores are summed, with

a total DAR-5 score ranging from 5 to 25. Higher scores indicate more severe anger experiences. The DAR-5 has demonstrated strong psychometric properties and been evaluated across community and trauma exposed populations (7, 14). It has been translated into French (12). Scores of 12 or above are indicative of problematic anger.

### ***The Arabic adaptation of the DAR-5 (DAR-5A)***

DAR-5 was translated into formal Arabic by the first author AK, a bi-lingual Syrian researcher and then back translated into English by co-author KA a bilingual expert academic and then re-checked for accuracy by co-author DF, developer of the DAR-5 version of the DAR, confirming the accuracy of the translation. A copy of the DAR-5- A can be seen in Table 1.

### ***DASS 21***

Depression Anxiety Stress Scale-21 (DASS-21) is a probabilistic scale of psychological distress with 3 subscales of depression, anxiety, and stress. It is a shorter version of DASS 42 that meant to minimise the overlapping between depression and anxiety (15). It has 21 questions with each 7 question covering one of the subscales. Each question has four answers with scores ranging from 0 to 4. The total score is then multiplied by 2 and then transferred to the DASS profile sheet that gives percentile ranking and severity labels. It has been demonstrated to have strong psychometric properties and is widely used. The DASS21 has been successfully translated into Arabic (16).

## **Results**

### *Internal reliability*

Consistent with the English and French versions of the DAR-5, the DAR-5A demonstrated strong internal reliability with a Cronbach's  $\alpha$  of .86, with item total correlations ranging from .73 - .80 and no meaningful change associated with the deletion of any item, with  $\alpha$  ranging from .79-.81. Also consistent with English and French versions of the DAR-5, the DAR5A demonstrated a one factor structure using principal components factor analysis demonstrating one factor with an eigenvalue  $> 1$  (2.96).

### *Cut off and prevalence*

As outlined the cut off for problematic anger identified in previous studies was a DAR-5 score of  $\geq 12$ . This study identified that 602 participants (36.7% of the population) met this criteria for problematic anger. The average DAR-5 score was 11.62 (SD = 4.38).

### *Discriminant validity*

Multivariate Analysis of Variance indicated that respondents reporting DAR-5-A scores above the cut off for problematic anger recorded significantly greater scores on depression, anxiety and stress using the DASS21. Depression mean scores for the high and low anger groups were 24.65 (SD = 11.14) and 15.26 (SD = 9.77) respectively [ $F(1551) = 20.98, p < .001$ ]. Anxiety mean scores for the high and low anger groups were 14.45 (SD = 9.58) and 6.93 (SD = 6.90) respectively [ $F(1551) = 103.72, p < .001$ ]; Stress mean scores for the high

and low anger groups were 24.47 (SD = 9.85) compared with 13.29 (SD = 9.28), respectively [F = 51.57 (1551), p < .001].

## Discussion

Anger is a common problem commonly observed in the community exposed to trauma, in particular trauma exposed clinical populations. However despite its ubiquitous nature and association with aggression and violence, anger is rarely assessed in routine clinical practice. This has historically been due, in part, to the absence of an accessible and validated brief measure of anger. Addressing this gap, the DAR-5 (7) is a brief measure of anger increasingly used across a range of trauma exposed populations internationally. Its brevity, strong psychometric properties make it an ideal tool for the screening, assessment and detection of problematic anger in populations. The DAR-5's sensitivity to change also renders it a brief tool suited to the inclusion in treatment outcome batteries where anger is present in the clinical presentation. A French version of the DAR-5 (DAR-5-F) has now also been developed and successfully evaluated.

Given the prevalence of trauma exposure, and mental disorders including PTSD experienced across the Syrian population both those still residing in Syria and in Syrian refugee populations in adults and school students (17, 18), there was a need for a validated brief Arabic language measure to assess anger. This study developed an Arabic version of the DAR -5 (called the DAR-5-A) and demonstrated that consistent with the English and French versions of the measure, the Arabic version is psychometrically robust. The study identified that the measure demonstrated strong internal reliability and discriminant validity. The study also identified a rate of 32% of problematic anger across an adult community sample in Syria.

The DAR-5-A (as seen in Table 1) therefore represents a quick and easy to use tool to assess anger for use by any researcher or clinician working with Arabic speaking clients in either Syria or any Arabic speaking population. It represents a potential valuable addition to research and clinical practice protocols either as a screening tool, a component of multifaceted assessment or as part of a minimum data set treatment outcome battery.

## Declarations

- **Ethics approval and consent to participate:**

Online informed consent was taken before proceeding with the survey for participating in the research, and for using and publishing the data. We assured to maintain confidentiality and asked no questions that might reveal the person's identity. No subjects were under age of 14. For subjects under age of 16 years, an online informed consent was taken that the guardian agreed that the subjects can participate in the survey as this method was agreed in the study protocol.

Our study protocol and ethical aspects were reviewed and approved by Damascus University deanship, Damascus, Syria.

- **Consent for publication:**

Online consent for using and publishing the data were taken before participating in the research.

- **Availability of data and materials:**

The data can be made available upon reasonable request.

- **Competing interests:**

We have no conflict of interest to declare.

- **Funding:**

No funding was received for this study

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## Tables

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