The grit scale: Psychometric properties of the Ukrainian translation

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ABSTRACT

The purpose of this work was to translate the Grit Scale into Ukrainian and to assess its construct validity and reliability. The original Grit Scale comprised 12 items, capturing two dimensions of grit: consistency of interest and perseverance of effort. The translation process involved two bilingual researchers utilizing the committee approach, ensuring accurate and linguistically equivalent translation. The translated items, along with instructions and response categories, are presented in this paper. Following pilot-testing with Ukrainian participants, two items were identified as having poor fit with the model and were subsequently removed. This process resulted in the 10-item Ukrainian version of the Grit Scale, which exhibited robust construct validity and reliability. Consequently, this version is considered a valid and reliable tool for assessing consistency of interests and perseverance of effort among Ukrainian adults.

- We translated, adapted, and evaluated the psychometric properties of the Grit Scale in the Ukrainian language.
- The Ukrainian version of the Grit Scale can be used to measure two dimensions of git: consistency of interests and perseverance of effort in Ukrainian adults.
- However, further research is needed to strengthen the validation of this scale and its applicability in different contexts.

Specifications table

Subject area:	Psychology
More specific subject area:	*Positive Psychology, Measurement*
Name of your method:	*Ukrainian Versions of the Grit Scale*
Name and reference of original method:	Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087–1101. 10.1037/0022-3514.92.6.1087
Resource availability:	The methods described here are implemented using the following software: Mplus. Full details of the code are provided. Data associated with this work are provided in Supplementary Material.

Method details

The aim of this study was to translate the Grit Scale [1] into Ukrainian and examine its construct validity. The Grit Scale measures the ability to maintain long-term goals and overcome challenges in their pursuit. Consisting of two subscales, consistency of interest

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Table 1

The items of the grit scale: the Ukrainian version and its English original.

Ukrainian Version (Translation)	Original English Version [1]
Сталість Інтересів	**Consistency of Interests**
1. Я часто ставлю якусь мету, але пізніше міняю її на іншу.	I often set a goal but later choose to pursue a different one.
3. Нові ідеї та нові проекти іноді відволікають мене від колишніх.	New ideas and new projects sometimes distract me from previous ones.
5. Кожні кілька місяців я починаю цікавитися якимись новими справами.	I become interested in new pursuits every few months.
7. Мої інтереси змінюються рік від року.	My interests change from year to year.
9. Якась певна ідея володіє мною короткий час, а потім я втрачаю інтерес до неї.	I have been obsessed with a certain idea or project for a short time but later lost interest.
11. Мені важко зосередитися на завданнях, які тягнуться багато місяців.	I have difficulty maintaining my focus on projects that take more than a few months to complete.
Наполегливість у Зусиллях	**Perseverance of Effort**
4. Я досяг(ла) мети, на яку пішли роки роботи.	I have achieved a goal that took years of work.
6. Я подолав(а) перешкоди, щоб вирішити серйозну проблему.	I have overcome setbacks to conquer an important challenge.
12. Я закінчую все, що починаю.	I finish whatever I begin.
8. Перешкоди не зупиняють мене.	Setbacks don't discourage me.
2. Я працьовита людина.	I am a hard worker.
10. Я наполеглива людина.	I am diligent.

Note. The instructions are: "Будь ласка, прочитайте кожне твердження нижче і вкажіть, наскільки ви згодні або не згодні з кожним з них. Тут немає правильних або неправильних відповідей. Будь ласка, будьте відкриті та чесні у своїх відповідях." The response categories are: "цілком не згоден" (1), "не згоден" (2), "трохи не згоден" (3), "десь посередині" (4), "трохи згоден" (5), "згоден" (6), "цілком згоден" (7). Items of the Consistency of Interests dimension are negatively worded and need to be reversed scored before analysis.

and perseverance of effort, the Grit Scale has been extensively used in various studies, demonstrating its predictive validity in educational attainment, career outcomes, and retention across multiple contexts [2–6]. Given the significance of grit, the Grit Scale has been translated into multiple languages. Accordingly, the Ukrainian version of the Grit Scale was developed and tested in this study.

The translation process involved two proficient researchers fluent in Ukrainian and English. Following the committee approach [7], one researcher conducted the initial translation, while the other ensured the accuracy and linguistic equivalence of the translated items. Their combined expertise and rigorous methodology guaranteed the fidelity and integrity of the Ukrainian version of the scale.

Table 1 presents the Ukrainian version of the Grit Scale alongside its English original, facilitating easy comparison and enabling the construction and administration of the Ukrainian version for Ukrainian-speaking participants.

Method validation

The Ukrainian version of the Grit Scale was validated as a part of a larger study with two datasets: 159 (65.4 % men, M_{age} = 19.4 years, administered in November 2021 – January 2022) and 107 (61.7 % men, M_{age} = 19.9 years, administered in April – June 2022). All participants provided informed consents before completing the questionnaires, which were administered online via Qualtrics. The data were analyzed using Mplus software, version 8.9 [8]. We used several indices to evaluate the fit of the models, such as the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root-mean-square-error of approximation (RMSEA), and the standardized-root-mean residual (SRMR). Traditionally, values of CFI and TLI higher than 0.90 and 0.95, values of RMSEA and SRMR of lower than 0.08 and 0.06 are interpreted as good and excellent fit [9].

Missing data on the individual items ranged from 0 to 0.6 % in dataset-1 and from 0 to 2.8 % in dataset-2, and were missing completely at random (MCAR) based on the Little's MCAR test: $\chi^2(1, N = 159) = 0.67$, $p = .413$ and $\chi^2(41, N = 107) = 39.38$, $p = .543$ in dataset-1 and −2, respectively.

The 12 items were submitted to confirmatory factor analysis, in which six items of consistency of interests and six items of perseverance of effort were specified to represent their respective factors. This model, which is depicted in Fig. 1A, had a poor fit: $\chi^2(53, N = 159) = 109.84$, $p < .001$, RMSEA = 0.082, 90 % CI [.060, 0.104], CFI = 0.843, TLI = 0.804, SRMR = 0.087 in dataset-1 and $\chi2(53, N = 107) = 90.70$, $p = .001$, RMSEA = 0.082, 90 % CI [.052, 0.110], CFI = 0.874, TLI = 0.843, SRMR = 0.091 in dataset-2. Examination of item loadings and modification indices revealed two problematic items. In dataset-1, item 5 of the consistency of interests dimension ("I become interested in new pursuits every few months") exhibited a low factor loading below the threshold of 0.40. Furthermore, this item displayed high modification indices in both dataset-1 and dataset-2. Similarly, in both dataset-1 and dataset-2, item 6 of the perseverance of effort dimension ("I have overcome setbacks to conquer an important challenge") demonstrated lower factor loadings compared to other items within the same dimension.

The two items were removed and the analyses were re-run. Fig. 1B depicts a diagram of the revised measurement model. The result showed good fit of the models in dataset-1: $\chi^2(34, N = 159) = 49.48$, $p = .042$, RMSEA = 0.054, 90 % CI [.011, 0.084], CFI = 0.946, TLI = 0.928, SRMR = 0.063, and in dataset-2: $\chi^2(34, N = 107) = 34.39$, $p = .449$, RMSEA = 0.010, 90 % CI [.000, 0.071], CFI = 0.998, TLI = 0.998, SRMR = 0.056. The correlations between the two dimensions of grit were: 0.39 in dataset-1 and 0.32 in dataset-2. Fig. 2 shows Mplus syntax for the two models.

The factor loadings are presented in Table 2. For consistency of interests, factor loadings ranged from 0.45 to 0.78 in dataset-1 and from 0.45 to 0.73 in dataset-2. Regarding perseverance of effort, factor loadings varied between 0.47 and 0.76 in dataset-1 and between 0.26 and 0.90 in dataset-2. Reliability estimates for consistency of interests were 0.74 and 0.71 in dataset-1 and dataset-2,
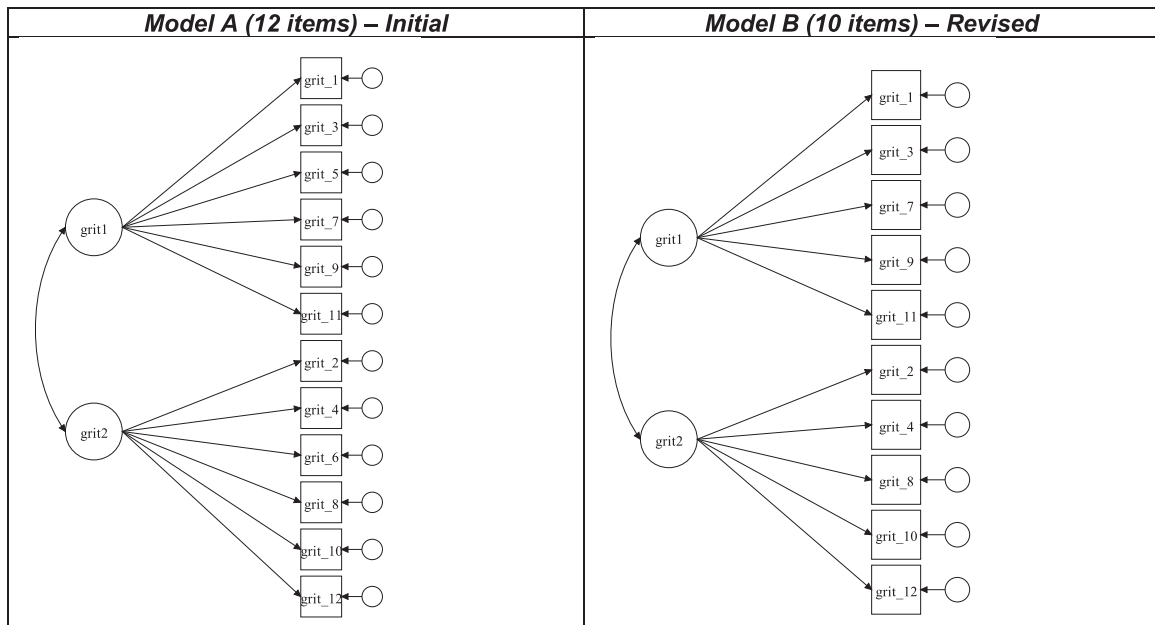
Model A (12 items) — Initial	Model B (10 items) — Revised

Fig. 1. Measurement models of the grit scale.

Model A (12 items) — Initial	Model B (10 items) — Revised
TITLE: The Ukrainian Version of Grit Scale **DATA**: FILE IS GritScale.csv; **VARIABLE**: NAMES ARE Dataset	**TITLE**: The Ukrainian Version of Grit Scale **DATA**: FILE IS GritScale.csv; **VARIABLE**: NAMES ARE Dataset
Grit_1 Grit_2 Grit_3 Grit_4 Grit_5 Grit_6 Grit_7 Grit_8 Grit_9 Grit_10 Grit_11 Grit_12; MISSING ARE ALL (-999); USEOBSERVATIONS ARE (Dataset EQ 1); !1=dataset-1 2=dataset-2 USEVARIABLES ARE Grit_1 Grit_3 Grit_5 Grit_7 Grit_9 Grit_11 Grit_2 Grit_4 Grit_6 Grit_8 Grit_10 Grit_12; **ANALYSIS**: Estimator = MLR; **MODEL**: Grit1 BY Grit_1-Grit_11; Grit2 BY Grit_2-Grit_12; **OUTPUT**: SAMPSTAT STDYX MODINDICES CINTERVAL;	Grit_1 Grit_2 Grit_3 Grit_4 Grit_5 Grit_6 Grit_7 Grit_8 Grit_9 Grit_10 Grit_11 Grit_12; MISSING ARE ALL (-999); USEOBSERVATIONS ARE (Dataset EQ 1); !1=dataset-1 2=dataset-2 USEVARIABLES ARE Grit_1 Grit_3 Grit_7 Grit_9 Grit_11 Grit_2 Grit_4 Grit_8 Grit_10 Grit_12; **ANALYSIS**: Estimator = MLR; **MODEL**: Grit1 BY Grit_1-Grit_11; Grit2 BY Grit_2-Grit_12; **OUTPUT**: SAMPSTAT STDYX MODINDICES CINTERVAL;

Fig. 2. Mplus syntax for testing the measurement model of the Ukrainian version of the grit scale.

respectively. Similarly, reliability estimates for perseverance of effort were 0.77 and 0.81 in dataset-1 and dataset-2. These reliability estimates exceeded the threshold of 0.70, indicating good levels of reliability [10]. Overall, these results provide evidence of the construct reliability and validity of the items in the Ukrainian version of the Grit Scale.

In summary, the concept of grit has been recognized as significant in relation to educational achievement, career success, and persistence in various settings, necessitating the need to have a reliable tool for assessing grit among the Ukrainian-speaking population. In this work, we translated, adapted, and evaluated the psychometric properties of the Grit Scale in the Ukrainian language. The Ukrainian version of the Grit Scale can be used to measure two dimensions of git: consistency of interests and perseverance of effort

Table 2
Factor Loadings for the 10-item grit scale.

	Dataset-1	Dataset-2
Consistency of Interests		
Grit_1	.69	.45
Grit_3	.45	.47
Grit_7	.47	.58
Grit_9	.78	.73
Grit_11	.60	.61
Perseverance of Effort		
Grit_2	.65	.80
Grit_4	.47	.26
Grit_8	.74	.71
Grit_10	.76	.90
Grit_12	.52	.61

in Ukrainian adults. However, further research is needed to strengthen the validation of this scale, such as convergent and divergent validity with similar constructs, and its applicability in different contexts.

Related research article

Yukhymenko-Lescroart, M. A., Sharma, G., & Voiedilova, O. (2023). Maintaining well-being before and during the war: Ukrainian college students with strong life purpose experience flourishing and grit. *Heliyon* (HELIYON-D-22–32962; originally submitted on: 2022–12–15; resubmitted: 2023–06-XX).

Ethics statements

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

CRediT authorship contribution statement

Mariya A. Yukhymenko-Lescroart: Conceptualization, Methodology, Formal analysis, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration. **Olena Voiedilova:** Conceptualization, Methodology, Data curation, Writing – review & editing.

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Declaration of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary materials

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.mex.2023.102469.

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