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Measuring depression as a short-term state and as a trait: multilevel approach

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Abstract

Introduction: The Whole Trait Theory allows to conceptualise constructs as a short-term state and as a trait. Depression also can be understood in two ways as a short-term state and as a trait. The aim of the presented study was to verify the factor structure of depression scale at both the inter- and intra-individual levels and to examine the correlation between the density of depression state and depression as a trait.

Material and methods: The study used the depression scale from the DASS-21, and conducted a diary study that lasted 14 days and was based on repeated measurements on a sample of 147 people (49.3% female, 50.7% male). The research was conducted as an online survey, with items displayed in random sequence for each person every day. Respondents reported daily on the intensity of their experience of depression.

Results: A two-level confirmatory factor analysis proved that single-factor structures are the best way to explain the inter- and intra-individual variance of depression. The congeneric reliability for the measurement of depression as a state and as a density of states was high. The correlation between the average measurement of depression as a state and a single measurement of depression as a trait was very strong, thus providing empirical evidence of the Whole Trait Theory.

Conclusions: The present study opens new possibilities for measuring depression in research and clinical practice using repeated measurements of depression as a state. The study of the dynamics of changes in depression states allows for more precise prediction of a person's tendency to experience depression.

Keywords: depression, state, trait, DASS-21, multilevel approach

Streszczenie

Wstęp: Teoria Całościowej Cechy pozwala na konceptualizację konstruktów jako krótkotrwałego stanu i jako cechy. Depresja również może być rozumiana na dwa sposoby, jako krótkotrwały stan i jako cecha. Celem naszego badania była weryfikacja struktury czynnikowej skali depresji zarówno na poziomie inter-, jak i intraindywidualnym oraz zbadanie korelacji między gęstością stanu depresji a depresją jako cechą.

Materiał i metody: W badaniu wykorzystano skalę depresji DASS-21 i przeprowadzono trwające 14 dni badanie dzienniczkowe oparte o pomiar powtarzany na próbie 147 osób (zbadano 49.3% kobiet oraz 50.7% mężczyzn). Badanie przeprowadzono za pomocą ankiety internetowej, w której pozycje skali były wyświetlane w losowej kolejności dla każdej osoby każdego dnia. Respondenci codziennie oceniali intensywność wskaźników depresji.

Dyskusja: Dwupoziomowa konfirmacyjna analiza czynnikowa dowiodła, że struktury jednoczynnikowe są najlepszym

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sposobem na wyjaśnienie między- i wewnątrzindywidualnej wariancji depresji. Rzetelność dla pomiaru depresji jako stanu i jako gęstości stanów była wysoka. Korelacja uśrednionego pomiaru depresji jako stanu z jednorazowym pomiarem depresji jako cechy była bardzo silna, dostarczając tym samym empirycznych dowodów na słuszność głównej tezy Teorii Całościowej Cechy.

Wnioski: Niniejsze badanie otwiera nowe możliwości pomiaru depresji w badaniach i praktyce klinicznej przy użyciu powtarzanych pomiarów depresji jako stanu. Badanie dynamiki zmian w stanach depresji pozwala na bardziej precyzyjne przewidywanie tendencji danej osoby do doświadczania depresji.

Słowa kluczowe: depresja, stan, cecha, DASS-21, podejście wielopoziomowe

1. Introduction

Depression can be conceptualized and operationalised as a relatively constant tendency, over a given period of time, to frequently experience depressive states (i.e., a trait) and also as a transient, short-term state [1, 2]. In both basic research and clinical practice, there is a need for scales to measure depression as both a trait and a state [3]. The use of existing tools constructed to measure depression as a trait requires not only the reformulation of the questionnaire instructions and statements but also testing tools in longitudinal studies with multiple repeated measures to be able to demonstrate the sensitivity of the tool to changes in depression states. Psychometric verification of factor relevance and reliability of state and trait measurement requires a two-level approach [4]. The aim of this paper is to develop a depression scale that is able, according to Whole Trait Theory [5], to accomplish both goals: to measure depression both as a trait and as a state in longitudinal studies.

1.1 States and Traits

The division into traits and states is significant, resulting from the need to distinguish between human behavior undertaken in a particular situation and that which is undertaken on a regular basis [6, 7, 8, 9]. In psychology, in parallel with the study of interpersonal differences, intra-individual differences expressed within the person are also studied. Zuckerman [9] assumes that a state can manifest itself as a present activity, a temporary mood or a state of mind. Similarly, Spielberger [1] distinguished between depression understood as a state and as a trait. The construct of depression was presented as consistent with the theory he later developed [10], according to which he makes a distinction between two interrelated but conceptually distinct aspects of emotional experience. The distinction relates to situationally conditioned emotional states and relatively enduring individual differences related to the predisposition to experience certain states. As dynamic theories of personality have developed, the theory of latent state-traits [11] has emerged, which applies when we examine the consistency of behavior, its variability, and changes in behavior over time. Consequently, states and traits are defined in terms of probability theory.

1.2 The concept of a trait as a state density

Whole Trait Theory states that the descriptive side of traits is best thought of as density distributions of states [5,12]. Density distribution is a distribution of the frequency of appearance of a trait at both the inter-individual and intra-individual levels. The explanatory part of traits consists of social-cognitive mechanisms. This perspective explains the consistency and variability across traits. Although the theory mainly refers to traits known from personality models, it can be extended to the wider concept of traits and states. This means that states are supposed to consist of the same emotional, behavioral, and cognitive attributes as the corresponding traits [13], which makes it possible to study other constructs in the same way by adjusting the measurement methods. The differentiating element between trait and state measurement in Fleeson's [12] approach is duration. The duration of states has varied in previous research: states have referred to current activities [14,15], states can last for the last few hours [16], states can also refer to experiences of the last day [17]. The issue of aggregate states considered in Whole Trait Theory, which are understood as traits, is still debated in the scientific community [18]. The Whole Trait Theory has been shown to apply not only to personality but also to narrower constructs such as interpersonal trust [19] or self-criticism [20]. In the case of depression, the literature similarly considers the construct both as a short-term state and as a trait [1].

1.3 A multi-level approach to state and trait measurement

The most appropriate approach to conceptualising a trait as a density of states is a multilevel approach, in which it is possible to separate the within-person variance

(states) and between-person variance (traits). In turn, a method to generate such variance at two levels is diary studies [4]. Diary studies are designed for the purpose of analyzing variability in data, providing data regularly over relatively long period of time [21]. They usually last for an extended period of time from a few days to several weeks and longer, for which measurements are collected at uniform intervals. Daily measurements are nested within the data from individuals, taking into account within-person variability. In addition, between-personal variability can also be detected by compiling measurements from a sample of individuals. Data nesting occurs when observations from one level are contained in another. Intra-individual and inter-individual variability are represented by separate models. Participating in diary studies also requires much more effort from the respondent than a cross-sectional study, as it obliges the respondent to analyse repeatedly the questionnaire's statements, as well as to be diligent in completing the questionnaires each day [22].

1.4 Depression and related terms in psychology

Depression is one of the most commonly diagnosed mood disorders [23]. According to the ICD-11 [24] and DSM V [25] classifications, depression can take the form of a depressive episode or be recurrent. The mentioned classifications divide a depressive episode, based on the severity of presented symptoms, into mild, moderate, and severe. Depending on the severity and frequency of depressive symptoms; difficulties in concentration, feelings of worthlessness, excessive guilt, feelings of hopelessness, recurrent thoughts of death or suicide, changes in appetite or sleep, and fatigue, the condition of the patient is diagnosed.

Depression can be considered as a static construct that reflects relatively stable tendencies of a person, but at the same time, attempts have been made to distinguish between the tendency to depression and the state of depression [26]. First of all, according to Teasdale [26], the type of events that ultimately trigger clinical depression initially trigger transient depression. In Beck's Cognitive model [27] it is assumed that people at risk for depression tend to experience depression because they have acquired dysfunctional cognitive patterns and cognitive schemas in childhood. All of the mechanisms involved in the occurrence of depressive symptoms interact with environmental factors such as environmental stressors, social support, and biological predisposition, which ultimately determine the cognitive-affective cycle.

Depression can be understood as a kind of dynamic structure, which is exemplified by a short-term state. Systematic analyses of the usefulness of the tool for assessing depression as a trait and depression as a state at the same time are still lacking. Some of the earliest attempts to distinguish between trait depression and state depression can be found by researchers [2,28]. There have been studies, where depression was treated as a short-term state, taking into account intra-individual differences [3,29,30], while Spielberger [1] also treated depression as a trait and depression as a state as separate constructs. Developed by Spielberger [1], the Sate-Trait Depression Scales (STDS) include two components of Euthymia and Dysthymia, within each scale. However, there is inconsistent evidence on the psychometric properties, especially in terms of the tool's validity [31,32]. Moreover, the factor analyses did not use a multilevel approach, even though the construct indicated such a choice of analyses.

Modifying the DASS depression scale by changing the instructions as well as designing a test method that complies with the accepted concept of assuming a distinction between state and trait will allow to obtain valid data. By adopting Whole Trait Theory [5], it is possible to measure the construct of depression in terms of a short-term state, which allows for the observation of variability in the range of depression symptoms experienced, and at the same time consider aggregate data, as a density of states.

1.5 Psychometric specifics of the DASS questionnaire

Based on the three-factor model the Depression Anxiety Stress Scales (DASS-42) questionnaire was developed [33] and there are certain similarities and differences between the DASS structure and the Clark and Watson model [34]. In both models, the presence of anhedonia in depression is emphasized, but in DASS, hopelessness and devaluation of life also appear. Factor analysis confirmed that items on the stress scale do not indicate symptoms characteristic of anxiety or depression, and longitudinal stability of the stress scale confirms its existence as a separate component [35].

The Depression Anxiety Stress Scale demonstrates cross-cultural relevance, with the tool that currently has been translated into 58 languages [36]. Use of the DASS questionnaire is possible in both non-clinical [37,38] and clinical samples [39,40]. The correlation between depression, anxiety, and stress is common, as the DASS oblique three-factor model contains interrelated factors of depression, anxiety, and stress [41,42]. Apart from the full version, shortened versions have also been developed, which contain: 9 items [43], 12 items [44,45], and 18 items [46], while the most popular is the 21-item version, used in many countries, including Poland [45].

The DASS-21 is characterized by having the same factor structure as the full version of the tool, making it preferable for scientific research. DASS-21 items were selected based on the following criteria: high factor

loadings; coverage of all subscales within each scale; and item means that were comparable to each scale and corresponded to half of the full scale scores [47].

2. The aim of the research

There are still gaps in the psychology regarding the study of states and traits and their interrelationships and interdependencies. In particular, there is a lack of such research in the area of depression, which may shed light on the mechanism of the development of depression and help to clarify the links between the experience of a short-term depressive state and personal tendencies to experience depressive states. A peculiarity of depression as a state is its variability over time. Therefore, the most suitable method for generating this intra-individual variance of the state is longitudinal studies. As Fleeson [12] assumes, a trait is a density of states, so this concept can also be extended to other psychological variables such as depression. This makes it possible to respond to the following research questions: (1) Is the structure of intra-individual and inter-individual variance of state depression one-dimensional? (2) Is the density of states the same construct as a trait?

3. Method

3.1. Participants

The selection of participants was conducted by quota sampling, where gender (male vs. female) and age (18-30, 31-45, and 46 and over) were used as control variables. There were no respondents diagnosed with depression and they did not report their mental state or medical history, if it existed, before the study. In the study, took part a total of N = 147 Ss (49.3% female, 50.7% male). The mean age of the sample was M = 36.7 years (SD = 12.6). 84.9% of Ss lived in the city/town, and 15.1% in the countryside. The education level was presented as follows: 50.6% had a high school education, 16.5% had a bachelor's degree, and 32.9% had a master's degree.

The complexity of the data structures in multilevel modeling and confirmatory factor analysis provides many challenges in the sample size determination at both levels. The sample of 147 people, the case-to-item ratio, and 14 measurements within one person allows for optimal power and precision of the correlation estimate in the population at both levels and are consistent with the recommendations of the literature [4,48].

3.2. Measurement

Due to the specificity of the state measurement, it was necessary to modify the scale instructions. In the present study, for the measurement of depression as a trait and for the measurement of short-term depression, we used the depression scale included in the shortened 21 items version of the Depression, Anxiety and Stress Scales (DASS-21) [41], which originally contained 42 items (DASS-42) [33]. The depression scale used in the study consists of 7 items. The authors [33] suggest that the scales from the tool can be used separately. It was translated into Polish by Makara-Studzińska and colleagues [45]. The Depression Scale derived from the 21-item version of the tool was selected because of the high prevalence of using this version in psychological research. In the Polish version of the full Depression, Anxiety and Stress Scale (DASS-42) [45] the depression scale in a group of healthy participants achieved high reliability expressed as the Cronbach's α coefficient of .93.

In the present study, two versions of the depression scale were applied (1) the original version was used to measure depression as a trait once, (2) the modified version was used to repeat measurement of depression as a short-term state (see Table 1). Respondents answered using a 5-point scale to measure depression as a trait; ranged from 0 – not at all to 4 – to a very large extent. Cronbach's alpha calculated on the basis of the collected data for depression as a trait was .90.

The instruction and the content of the items were also modified; the phrase "today" was added for measuring the short-term state of depression (see Table 1). Respondents answered using the same five-point scale.

3.3. Procedure

The study was anonymous, confidential, and the participants were informed that they could withdraw from the study if they wished to do so. The research was conducted as an online survey, with items displayed in random sequence for each person every day. Four survey interviewers stayed in daily contact with the respondents. Due to the challenging design of the study, with two-week repeated measurement, survey interviewers monitor the process of completing questionnaires by reviewers in terms of regularity. They coordinated with the respondents an appropriate reminder time, and ensured regular hours of questionnaire completion. The procedure of the diary study lasted fourteen consecutive days. The anonymity of the respondents was ensured in that the interviewers did not have access to the database. The person with access to the database did not know the personal data of respondents. Over 95.4% of respondents who completed the questionnaire on the first day of the study participated until the last day of the study, systematically completing the questionnaire.

3.4. Data analyses

The data are presented in a two-level structure in which daily measures of depression states were nested within a single participant. To test the hypotheses, we

used the Mplus 7.3 software package to examine a within-person-level and between-person-level phenomenon [49]. To test the factor structure of the depression scale, the two-level confirmatory factor analysis was used. The parameters of the factor model were estimated by the maximum likelihood robust (MLR) method. The following indices were used to assess model fit: the chi^2 goodness-of-fit statistic, the root-mean-square error of approximation (RMSEA), the standardized root-mean-square residual (SRMR), and the comparative fit index (CFI). RMSEA and SRMR values below .07 indicated an acceptable fit, while values below .05 indicated a good fit. CFI higher than .90 indicated a good fit and CFI values above .95 indicated a very good fit [50].

4. Results

4.1. Construct validity

Table 1 shows descriptive statistics and the intra-individual and inter-individual level correlations between state depression scale items. In order to answer the question of whether the structure of the state and the trait depression (as a density of states) is one-factor at the day and aggregate levels, respectively a two-level confirmatory factor analysis was performed. The total number of observations (descriptions of the day depression states) was 2094, and the mean number of daytime observations per person was 14.3. The following fit indices of the one-factor model to input data were obtained: MLR $\chi^2(27) = 232.45$, RMSEA = .060, CFI = .942, and TLI = .910. The SRMR fit index was SRMR (within) = .037 at the day (state) level and SRMR (between) = .055 at the aggregate (trait) level. The obtained fit indices should be regarded as acceptable. This means that the structure of data at the day level (intra-individual variance) and aggregate level (inter-individual variance) is one-factor.

4.2. Congeneric reliability

Congeneric reliability for the measurement of depression as a state (within-level) was $\omega = .84$, while for the measurement of depression understood as a density of states (between-level), it was $\omega = .94$. The values obtained can be considered as very good.

4.3. Depression as state density vs. depression as disposition

The correlation between-level depression factor (average depression state) and depression measured a single time using original depression scale items was calculated to establish the relationship between depression as state density and depression as disposition (congeneric reliability $\omega = .90$). Both variables were conceptualised as latent variables at the between-person level: MLR $\chi^2(89) = 534.60$, RMSEA = .049, CFI = .914, and SRMR (within) = .037 and SRMR (between) = .072. The correlation between constructs was r = .94, CI95 (.90; .98).

Table 1. Items of the DASS-21 depression scale, descriptive statistics, within-level and between-level standardized factor loadings and linear correlations between items.

		DASS-21						Item			
			Item	*M*	*SD*	*r*	1	2	3	4	5	6
within	1	(3)	I couldn't seem to experience any positive feeling today.	-	0.77	.57						
	2	(5)	I found it difficult to work up the initiative to do things today.	-	0.90	.51	.39					
	3	(10)	I felt that I had nothing to look forward to today.	-	0.74	.72	.41	.35				
	4	(13)	I felt down hearted and blue today.	-	0.87	.77	.46	.44	.54			
	5	(16)	I was unable to become enthusiastic about anything today.	-	0.81	.61	.42	.56	.43	.51		
	6	(17)	I felt I wasn't worth much as a person today.	-	0.75	.72	.35	.33	.51	.55	.43	
	7	(21)	I felt that life was meaningless today.	-	0.58	.71	.37	.30	.54	.52	.38	.58
between	1	(3)	I couldn't seem to experience any positive feeling today.	0.97	0.64	.85						
	2	(5)	I found it difficult to work up the initiative to do things today.	1.37	0.70	.87	.65					
	3	(10)	I felt that I had nothing to look forward to today.	0.93	0.81	.93	.87	.73				
	4	(13)	I felt down hearted and blue today.	1.10	0.69	.95	.77	.82	.88			
	5	(16)	I was unable to become enthusiastic about anything today.	1.11	0.69	.92	.78	.95	.81	.85		
	6	(17)	I felt I wasn't worth much as a person today.	0.92	0.80	.90	.72	.78	.83	.87	.77	
	7	(21)	I felt that life was meaningless today.	0.64	0.73	.89	.76	.65	.88	.85	.73	.86

DASS – Depression Anxiety Stress Scale (item numbers from the original scale are indicated in brackets). M = mean; SD = standard deviation; r = standardized factor loadings. All factor loadings and correlation coefficients are significant at the level of p < .01.

5. Discussion

The completed research, together with two-level analyses, allowed us to measure and control the variability in depression states at the intra-individual and inter-individual levels. Two-level confirmatory factor analysis showed that the measurement of depression using the DASS has a one-factor structure at both levels. The averaged depression based on 14-day measurements of depression was correlated very strongly (r = .94) with the measurement of depression as a trait. This supports the more general thesis of Fleeson and Gallagher [16] that a trait is the density of daily states, with regard to depression as well. Depression as a relatively permanent predisposition to a specific pattern of reacting over a given period of time is revealed in the form of variable daily states at the person level, with these states having their own dynamics [5,51,52]. The correlation obtained in the present study is higher than the obtained by Baird and colleagues [53] and Fleeson [12] for personality dimensions.

Socio-cognitive mechanisms [54,55], which can be observed, through the study of states, among other phenomena, are indicated as structures that partially explain the concept of traits. However, state densities provide information about certain individual tendencies to experience them, as a result of techniques used for measurement and analysis in the study. The results of the study suggest that the intrapersonal dynamics of depression states reflect patterns of depression as a more stable individual trait, which is consistent with the study by Di Blas and et al. [30].

Analyzing the obtained results from a psychometric point of view, it should be noted that in addition to the one-factor construct at both levels (intra-personal variability of states and inter-personal variability of state density variation), the measurement of state depression and trait depression using the DASS subscale showed very high congeneric reliability. In turn, the high correlation of state density with the depression measurement as a predisposition can also be interpreted in terms of the validity of the depression measurement as a trait in diary studies of daily states taking into account the hierarchical two-level structure of the data. This opens new possibilities for the measurement of depression in research and clinical practice by using repeated measurements of depression as a state in order to learn about the dynamics of changes in depression states at the personal level, and as well as to estimate depression as a predisposition over a given period of time [28]. The inclusion of both levels increases the potential for analysis compared to studies that do not use the potential of multilevel analysis [1,3,30,31,32].

6. Conclusions

The study confirms one-factor structure of the DASS depression scale for both intra-individual and inter-individual levels showing good construct validity. Congeneric reliability was high for the measurement of depression as a state (within-level) and the measurement of depression understood as a density of states (between-level). The 7-item scale of DASS depression can be a useful tool for measuring the dynamics of changes in depression state in a longitudinal study in scientific studies and clinical practice. Longitudinal studies seem to be a promising alternative to one-time measurements, partly due to the duration of observation of symptoms, lasting about two weeks, as reported in the DSM-V [25] and ICD-11 [24] classifications.

Conflict of interest

The authors have declared no conflict of interest.

References:

1. Spielberger C.D. State-Trait Depression Scales (Form X-1). Palo Alto, CA; Mind Garden: 1995.
2. Ritterband L.M., Spielberger C.D. Construct validity of the Beck Depression Inventory as a measure of state and trait depression in nonclinical populations. Depression and Stress. 1996; 2: 123–145.
3. Mayerl H., Schultz A., Freidl W., Stolz E. Short-term dynamics of loneliness and depressive symptoms: Gender differences in older adults. Arch Gerontol Geriatr. 2024; 123: 105423.
4. Nezlek J. B. A multilevel framework for understanding relationships among traits, states, situations, and behaviors. Eur J Pers. 2007; 21: 789-810.
5. Fleeson W., Jayawickreme E. Whole trait theory. J Res Pers. 2015; 56: 82–92.
6. Allen B. P., Potkay C. R. On the arbitrary distinction between states and traits. J Pers Soc Psychol. 1981; 41(5): 916-928.
7. Chaplin W. F., John O. P., Goldberg L. R. Conceptions of states and traits: Dimensional attributes with ideals as prototypes. J Pers Soc Psychol. 1988; 54(4): 541–557.
8. Fridhandler B. M. Conceptual note on state, trait, and the state–trait distinction. J Pers Soc Psychol. 1986; 50(1): 169-174.
9. Zuckerman M. The Distinction Between Trait and State Scales Is Not Arbitrary: Comment on Allen and Potkay's 'On the Arbitrary Distinction Between Traits and States'. J Pers Soc Psychol. 1983; 5: 1083-1089.
10. Spielberger C. D. Cross-cultural assessment of emotional states and personality traits. Eur Psychol. 2006; 11: 297–303.
11. Steyer R., Mayer A., Geiser C., Cole D. A. A theory of states and traits—Revised. Annu Rev Clin Psychol. 2015; 11(1): 71-98.
12. Fleeson W. Toward a structure- and process- integrated view of personality: Traits as density distributions of states. J Pers Soc Psychol. 2001; 80(6): 1011–1027.
13. Fleeson W., Furr R.M., Jayawickreme E., Helzer E.G., Hartley A.G., Meindl P. Personality science and the foundations of character. W: Miller C.B., Furr R.M., Knobel A., Fleeson W. red., Character: New directions from philosophy, psychology, and theology. Oxford; Oxford University Press: 2015: 41–71.
14. Horstmann K. T., Rauthmann J. F., Sherman R. A., Ziegler M. Unveiling an exclusive link: Predicting behavior with

personality, situation perception, and affect in a preregistered experience sampling study. J Pers Soc Psychol. 2021; 120(5): 1317–1343.
15. Rauthmann J. F., Horstmann K. T., Sherman R. A. Do self-reported traits and aggregated states capture the same thing? A nomological perspective on trait-state homomorphy. Soc Psychol Personal Sci. 2019; 10(5): 596–611.
16. Fleeson W., Gallagher P. The implications of Big Five standing for the distribution of trait manifestation in behavior: Fifteen experience-sampling studies and a meta-analysis. J Pers Soc Psychol. 2009; 97(6): 1097–1114.
17. Nübold A., Hülsheger U. R. Personality states mediate the effect of a mindfulness intervention on employees' work outcomes: A randomized controlled trial. Eur J Pers. 2021; 35(4): 646–664.
18. Finnigan K. M., Vazire S. The incremental validity of average state self-reports over global self-reports of personality. J Pers Soc Psychol. 2018; 115(2): 321–337.
19. Fleeson W., Leicht C. On delineating and integrating the study of variability and stability in personality psychology: Interpersonal trust as illustration. J Res Pers. 2006; 40(1): 5–20.
20. Zuroff D. C., Sadikaj G., Kelly A. C., Leybman M. J. Conceptualizing and measuring self-criticism as both a personality trait and a personality state. J Pers Assess. 2016; 98(1): 14–21.
21. Ohly S., Sonnentag S., Niessen C., Zapf D. Diary studies in organizational research: An introduction and some practical recommendations. J Pers Psychol. 2010; 9(2): 79–93.
22. Hektner J.M., Schmidt J.A., Csikszentmihalyi M. Experience sampling method: Measuring the quality of everyday life. Thousand Oaks, CA; Sage: 2007.
23. Chisholm D., Sweeny K., Sheehan P., Rasmussen B., Smit F., Cuijpers P., Saxena S. Scaling-up treatment of depression and anxiety: a global return on investment analysis. Lancet Psychiatry. 2016; 3(5): 415-424.
24. World Health Organization. International Statistical Classification of Diseases and Related Health Problems. 11th Ed. Geneva; World Health Organization: 2019.
25. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Arlington, VA; American Psychiatric Association; 2013.
26. Teasdale J. D. Cognitive vulnerability to persistent depression. Cogn Emot. 1988; 2: 247–274.
27. Haaga D. A., Beck A. T. Perspectives on depressive realism: Implications for cognitive theory of depression. Behav Res Ther. 1995; 33(1): 41-48.
28. Dumenci L., Windle M. A latent trait-state model of adolescent depression using the Center for Epidemiologic Studies-Depression Scale. Multivariate Behav Res. 1996; 31: 313–330.
29. Altweck L., Freund J., Hahm S., Schmidt S., Tomczyk S. Collective loneliness: The impact of the social network on loneliness and depression during the coronavirus pandemic in older Europeans. Int J Geriatr Psychiatry. 2024; 39(1): e6045.
30. Di Blas L., Borella M., Ferrante D. Short-term effects of fluctuations in self-esteem, perceived stress and loneliness on depressive states. Psihologijske Teme. 2021; 30(1): 99-114.
31. Krohne H. W., Schmukle S. C., Spaderna H., Spielberger C. D. The State-Trait Depression Scales: An International Comparison. Anxiety Stress Coping. 2002; 15(2): 105-122.
32. Vera-Villarroel P., Buela-Casal G., Celis-Atenas K., Córdova-Rubio N., Encina-Olea N., Spielberger C. D. Chilean experimental version of the State-Trait Depression Questionnaire (ST-DEP): Trait sub-scale (T-DEP). Int J Clin Health Psychol. 2008; 8(2): 563-575.
33. Lovibond S.H., Lovibond P.F. Manual for the Depression Anxiety Stress Scales. 2nd ed. Sydney; Psychology Foundation: 1995.
34. Clark L. A., Watson D. Tripartite model of anxiety and depression: psychometric evidence and taxonomic implications. J Abnorm Psychol. 1991; 100(3): 316-336.
35. Lovibond P. F., Lovibond S. H. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther. 1995; 33(3): 335-343.
36. Depression Anxiety Stress Scales (DASS) [strona domowa w Internecie]. Sydney: University of New South Wales; 2007 [aktualizowana 5 marca 2007; cytowana 22 marca 2025]. Dostępna z: http://www2.psy.unsw.edu.au/dass
37. Gomez R., Stavropoulos V., Griffiths M. D. Confirmatory factor analysis and exploratory structural equation modelling of the factor structure of the Depression Anxiety and Stress Scales-21. PLoS ONE. 2020; 15: e0233998.
38. González-Rivera J. A., Pagán-Torres O. M., Pérez-Torres E. M. Depression, Anxiety and Stress Scales (DASS-21): construct validity problem in Hispanics. Eur J Investig Health Psychol Educ. 2020; 10: 375–389.
39. Park S. H., Song Y. J., Demetriou E. A., Pepper K. L., Thomas E. E., Hickie I. B., et al. Validation of the 21-item Depression, Anxiety, and Stress Scales (DASS21) in individuals with autism spectrum disorder. Psychiatry Res. 2020; 291: e113300.
40. Randall D., Thomas M., Whiting D., McGrath A. Depression Anxiety Stress Scales (DASS-21): factor structure in traumatic brain injury rehabilitation. J Head Trauma Rehabil. 2017; 32: 134–144.
41. Antony M. M., Bieling P. J., Cox B. J., Enns M. W., Swinson R. P. Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. Psychol Assess. 1998; 10(2): 176–181.
42. Patias N. D., Machado W. L., Bandeira D. R., Dell'Aglio D. D. Depression Anxiety and Stress Scale (DASS21) - Short Form: Adaptação e Validação para Adolescentes Brasileiros. Psico-USF. 2016; 21(3): 459–469.
43. Kyriazos T. A., Stalikas A., Prassa K., Yotsidi V. Can the depression anxiety stress scales short be shorter? Factor structure and measurement invariance of DASS-21 and DASS-9 in a Greek, non-clinical sample. Psychol. 2018; 9: 1095–1127.
44. Lee E. H., Moon S. H., Cho M. S., Park E. S., Kim S. Y., Han J. S., et al. The 21-item and 12-item versions of the depression anxiety stress scales: psychometric evaluation in a Korean population. Asian Nurs Res. 2019; 13: 30–37.
45. Makara-Studzińska M., Tyburski E., Załuski M., Adamczyk K., Mesterhazy J., Mesterhazy A. Confirmatory Factor Analysis of Three Versions of the Depression Anxiety Stress Scale (DASS-42, DASS-21, and DASS-12) in Polish Adults. Front Psychiatr. 2022; 12: e770532.
46. Syahputra Y., Hafni M., Solihatun S., Istiana I., Rahmat C. P., Karisma S. P., Erwinda L. Confirmatory Factor Analysis of the DASS-18 Scale for Assessment of Depression, Anxiety, and Stress Symptoms. Madania J Ilmu-Ilmu Keislaman. 2024; 14(1): 17–25.
47. Henry J. D., Crawford J. R. The 21-item version of the Depression Anxiety Stress Scales (DASS–21): Normative data and psychometric evaluation in a large non-clinical sample. Br J Clin Psychol. 2005; 44: 227–239.
48. Kline R.B. Principles and practice of structural equation modeling. 4th ed. New York; Guilford Publications: 2016.
49. Muthén L.K., Muthén B.O. Mplus user's guide. 7th ed. Los Angeles; Muthén & Muthén: 2015.
50. Hu L., Bentler P. M. Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. Psychol Methods. 1998; 3(4): 424–453.
51. Sherman R. A., Rauthmann J. F., Brown N. A., Serfass D. G., Jones

A. B. The independent effects of personality and situations on real-time expressions of behavior and emotion. J Pers Soc Psychol. 2015; 109: 872–888.
52. Su R., Stoll G., Rounds J. The nature of interests: Toward a unifying theory of trait-state interest dynamics. In: Vocational interests in the workplace. Routledge; 2019: 11–38.
53. Baird B. M., Le K., Lucas R. E. On the nature of intraindividual personality variability: Reliability, validity, and associations with well-being. J Pers Soc Psychol. 2006; 90(3): 512–527.
54. Clifton A., Kuper L. E. Self-reported personality variability across the social network is associated with interpersonal dysfunction. J Pers. 2011; 79(2): 359–390.
55. McCabe K. O., Fleeson W. What is extraversion for? Integrating trait and motivational perspectives and identifying the purpose of extraversion. Psychol Sci. 2012; 23(12): 1498–1505.

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