

Measuring hope: Standardization of the Czech version of the Adult Dispositional Hope Scale in healthy adults

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Abstract

OBJECTIVES: Hope is an important factor that influences mental state of individuals and efficacy of systematic and supportive psychotherapy. The goal of the study was to translate the Adult Dispositional Hope Scale (ADHS) to Czech, evaluate its psychometric properties and create norms to interpret the scale scores.

METHODS: The scale consists of twelve items. Four items assess the ability of pathway thinking, four items measure agency, and the remaining four items are fillers that are not interpreted. There were 394 adult participants with negative psychiatric history who completed the ADHS and BDI-II. Their mean age was 27.1 ± 11.7 years, most of them were women ($n=303$; 76.9%).

RESULTS: There was no significant relationship between age or sex and hope. Reliability was analyzed by Cronbach alpha ($\alpha=0.82$) and the split-half method (Spearman-Brown coefficient = 0.81). The factor structure of the scale was approved by the results of exploratory and confirmatory factor analysis, except the ninth item that similarly saturated both subscales. The ADHS moderately negatively correlated with BDI-II. Norms were created for the scores of the entire scale and both subscales.

CONCLUSION: The Czech version of the Adult Dispositional Hope Scale shows adequate psychometric properties.

INTRODUCTION

Hope has fascinated humankind since ancient times. It was identified as one of the fundamental strengths that help individuals to strive in difficult times and build their psychological resiliency against stress (Park *et al.* 2004). Due to its benefi-

cial nature, hope has been in the center of focus of a number of psychologists and psychiatrists who have tried to define it and create ways to its enhancement (Snyder 2000).

The elusive character of hope has led to various definitions of hope. A considerable part of these definitions understood hope as an emotion (e.g.

Lazarus 1999; Roth & Hammelstein 2007). For example, behaviorists like Mowrer (1960) thought of hope as an emotion that is opposite to fear. Mowrer (1960) also connected hope to goal-directed behavior. However, the characteristics of hope, which were based purely on emotions, seemed to be too one-dimensional. They lacked the inclusion of other important parts of psyche, such as motives, cognitions and behavior, or social influences which also shape the way in which individuals experience and function in life (Lench *et al.* 2013; Bernardo 2013).

Another influential author, Erikson, considered hope as “the enduring belief in the attainability of fervent wishes” (Erikson 1964, p. 118). Apart from placing hope among motives, Erikson also thought that hope was a first virtue that a person may acquire during the development (Erikson 1964). In the field of healthcare, Menninger (1959) was among the first modern authors who put an emphasis on the role of hope in treatment. According to Menninger (1959), patients’ hope significantly influences the efficacy of the daily work of health care professionals, and it should be increased in treatment to gain favorable results. Frank (1971) held a similar opinion when he claimed that hope is a common factor in all psychotherapeutic treatments and that it should be increased to make the psychotherapeutic treatment effective.

Snyder (2000, 2002) created a more complex theory of hope which was based on cognitions, motivation, emotions, and behavior. The author defined hope as “a positive motivational state that is based on an inter-actively derived sense of successful (a) agency (goal-directed energy) and (b) pathway thinking (planning to meet goals)” (Snyder 2000, p. 8). According to Snyder (2000), hope is connected to the presence of goals. It is related to expected positive future outcomes. What sets hope apart from similar concept, such as optimism, is the emphasis on the individual’s activity to reach the goals (compare with Scheier & Carver 1987). A successful goal attainment leads to a higher ability to experience positive emotions (Snyder *et al.* 1996). Positive emotions then may increase the cognitive flexibility and frustration tolerance to enhance further goal-achievement (Fredrickson 2001). Agency refers to a determination to achieve the desired goals. It is a motivational aspect of hope that characterizes the thought “Whatever happens, I will reach the goal.” Pathways thinking is an ability to generate workable ways to meet goals (Snyder *et al.* 1991). As we proposed elsewhere, coping strategies may also be part of hope, specifically as a part of pathways thinking (Ociskova *et al.* 2015). Both fundamental parts of hope, agency and pathways are thinking, are closely related to each other (Snyder *et al.* 1991). The mean level of hope remains stable in time. While certain situations may temporarily decrease or increase hope, it usually tends to regress back to the average levels in time (Snyder *et al.* 1991).

Higher rates of hope, as understood by Snyder, are connected to lower depressive symptoms (Snyder *et al.* 1997) and higher well-being (Diener 1984). It predicts higher self-esteem (Halama & Dedova 2007) and academic success (Snyder *et al.* 2002). Former offenders with higher levels of hope have a lower probability of repeated incarceration (Dekhlyar *et al.* 2012). In the field of psychotherapy, hope has been found to increase its efficacy (Mathis *et al.* 2009; Geraghty *et al.* 2010; Snyder *et al.* 2002; Snyder *et al.* 2000). It has positive impact on the outcomes of systematic psychotherapy of mental disorders (Perry *et al.* 2007; Cheavens *et al.* 2006; Irving *et al.* 2004; Snyder 2000), as well as supportive psychotherapy in patients with severe somatic illnesses like cancer (Benzein *et al.* 2001; Lin & Bauer-Wu 2003). The Snyder’s theory of hope has also been an inspiration for researchers of psychotherapeutic processes (Lopez *et al.* 2004). It has been implemented as a part of positive psychotherapy (Shekarabi-Ahari *et al.* 2012) and included in more traditional treatments, such as cognitive-behavioral therapy (Snyder *et al.* 2000; Neenan & Dryden 2002).

RESEARCH OBJECTIVE

Hope is a major factor that positively influences the mental state of individuals (e.g. Diener 1984; Snyder *et al.* 1997) and the efficacy of psychotherapy (e.g. Irving *et al.* 2004; Snyder 2000; Lin & Bauer-Wu 2003). However, scales in Czech, which would assess hope, are lacking. The purpose of this research was to introduce one of such measures to the Czech psychologists and other mental health professionals. The Adult Dispositional Hope Scale was chosen as the best for this cause (Snyder 2000). Partial goals were to translate the scale to Czech, verify the psychometric properties of the translation and create norms to interpret its scores.

METHODS

Subjects

Healthy adults with no history of psychiatric or psychological treatment were asked to participate in the study. The sampling method was snowball – every individual offered the participation to others in his or her social environment. This way, 394 completed batteries of scales were obtained.

The final group consisted of 303 women (i.e. 76.9%) and 91 men (i.e. 23.1%). The mean age was 27.1 ± 11.7 years. The youngest participant was 18 years old, the eldest one had 75 years of age. Most of the probands were 20 to 29 years old ($n=227$; i.e. 57.6%). The most common education level was secondary ($n=309$; i.e. 78.4%), followed by the college absolvents ($n=77$; i.e. 19.5%), individuals with completed vocational education ($n=4$; i.e. 1%) and primary education ($n=2$; i.e. 0.5%). Two participants did not state their level of education. The employment status of the group was

following – 273 probands (i.e. 69.3%) were university students, 113 individuals were employed or self-employed (i.e. 28.7%), and 8 participants (i.e. 2%) were taking the old age pension. Most of the probands were single (n=300; i.e. 76.1%) or married (n=84; i.e. 21.3%). A small part of individuals were divorced (n=8; i.e. 2%) or widowed (n=2; i.e. 0.5%).

Measurements

The Adult Dispositional Hope Scale (AHDS; Snyder *et al.* 1991) – This scale assesses the dispositional level of hope that is relatively stable in time (Snyder *et al.* 2000). It is commonly used in the studies (e.g. Gana *et al.* 2013; Creamer *et al.* 2009; Pacico *et al.* 2013; Sun *et al.* 2012; Halama 2001), and may be applied to individuals older than 15 years (Snyder *et al.* 1991). The scale consists of 12 items – four items measure pathways thinking (items 1, 4, 6 and 8), four items focus on agency (items 2, 9, 10 and 12), and four items serve as fillers and are not interpreted. Respondents choose one number from an eight-point Likert scale according to their level of agreement with each statement. The range of total scores is between 8 and 64 points with 48 points being the average level of hope in the general population (Lopez *et al.* 2000).

As Snyder *et al.* (1991) stated, the inner consistency of the scale was good. The Cronbach alphas of the whole scale ranged from 0.74 to 0.84. The subscales showed similar results (the alphas of pathways thinking were between 0.63 and 0.80, and the alphas of agency ranged from 0.71 to 0.76) (Snyder *et al.* 1991). The test-retest correlation coefficients for two measurements performed in 10 weeks apart were also good – rs were 0.80 or above (Snyder *et al.* 1991). The factor analysis approved the supposed structure of the scale – the two factors explained 52–63% of the variance in the total scale scores (Snyder *et al.* 1991). The validity of the measure was supported by the study of Snyder *et al.* (1991). In the Central Europe area, Halama (2001) translated the scale to Slovak and showed that the translation had similar psychometric properties as the original version of the scale.

The scale was translated into Czech independently by two linguists and a psychologist. By using the three translations, two psychologists then created a Czech version of the scale. The backward translation in English was performed. The first version of the scale was distributed among the students of the psychology of the Palacky University in Olomouc and the students of economy and information technology of the Silesian University in Opava (n=166). A subsequent psychometric analysis of the scale showed the necessity to improve the wording of several items to increase the reliability of the scale. The resultant second version of the scale was used in this study.

Beck Depression Inventory – Second Edition (BDI-II, Beck *et al.* 1988) – The scale measures the level of the depressive symptoms experienced during the last two

weeks. It includes 21 common symptoms of depression. Individuals choose which symptoms they experienced and how intense they were (Beck *et al.* 1988). Spren and Straus (1991) created following cut-off scores – 0 to 9 points indicate the absence of the depressive symptoms (i.e. a normal finding), 10 to 15 points speak for minimal signs of depression, 16 to 19 points mild to moderate depression, 20–29 points moderate to severe depression, and 30 to 63 points may indicate severe depression. Internal consistency of the scale in the general population is good (Cronbach alpha=0.81) (Storch *et al.* 2004). The Czech version of the scale was validated and published by Preiss and Vacir (1999).

Statistics

The statistical analyzes were performed by using SPSS 17.0 and the trial version of AMOS. The descriptive statistics was applied to the demographic data, mean scores and a character of data distribution. The differences between sexes were calculated by Mann-Whitney U test. Pearson and Spearman correlation coefficients were used to analyze the relationship between the variables. Reliability was analyzed by the calculation of Cronbach alphas and Spearman-Brown coefficient. Both exploratory and confirmatory factor analysis was performed. Norms were based on stens. The threshold for the statistical significance was set at 5%.

Ethics

All participants signed an informal consent with the participation. The research was conducted by the ethical principles formulated by the Helsinki Declaration (World Medical Association 2013) and the American Psychological Association (2010).

RESULTS

Descriptive analysis

Table 1 shows the mean scores on the scale and its subscales in all participants and different subgroups. The overall level of hope and its subscales were close to the average level of hope in general population stated by Lopez *et al.* (2000) and similar to Halama (2001), who identified 23 points as the mean total score while using 4-point Liker scale. The average levels of both subscales were almost identical, which is a sign of adaptively developed hope (Snyder 2000). The average level of depression was in the range of the normal findings in the general population (Spren & Strauss 1991). The mean score of BDI-II was 7.9 +7.0 points, with zero points being minimum and 37 points maximum.

There was no significant relationship between sex and hope measured by the ADHS. The result of the correlation between age and hope was similarly non-existent. Only the pathways thinking very weakly correlated with age, indicating that the ability to find workable ways to achieve goals may slightly decrease with age. Other comparisons could not be performed

because of the overly different numbers of the participants in several subgroups. Thus, the average scores of the scale and subscales in some groups could suggest the existence of the substantial differences among them but it was not possible to statistically confirm their significance. However, the data showed several trends. It is possible that the individuals with age higher than 60 (among them were also the old age pensioners and widowers) and those with the lower education levels incline to feel more hopeless than the younger adults and those with the secondary or tertiary education level. This limitation in the stratification of the sample is further elaborated in the Discussion.

Reliability of the ADHS

Reliability of the scale was evaluated by the analysis of the inner consistency of the scale and the split-half method. The Cronbach alphas of the scale and its subscales were acceptable to good (Table 2). None of the scale items lowered the overall consistency of the scale. The split-half method showed similarly favorable results. The Spearman-Brown coefficients were sufficiently high for the scale and the subscales (Table 2).

Factor analysis of the ADHS

Both exploratory and confirmatory factor analyzes were performed. The exploratory factor analysis was done by applying the maximum likelihood method with the varimax rotation and Kaiser normalization. Two identified factors explained 42.8% of the scale scores variance. This result fulfills the requirements for a sufficient factor structure formulated by Gorsuch (1983). One factor (pathways thinking) explained 22.1%, and the other (agency) accounted for 20.7% of the variance. Most of the items dominantly saturated the subscale that it should have been part of. The exception was the item 9 which saturated more the pathways thinking subscale than the agency subscale (Table 3). Both subscales significantly correlated with each other (Pearson correlation coefficient $r=0.61$ $p<0.001$). The firm inter-relatedness of the subscales also showed in the high covariance between the subscales (Table 4).

The confirmatory factor analysis, specifically the maximum likelihood method, supported the theoretical structure of the scale, although item 9 saturated its factor rather weakly (Table 4). The goodness-of-fit indi-

Tab. 1. Arithmetic means of the scale and its subscales for the entire group and subgroups and differences between them.

ADHS		Total score	Pathways Thinking	Agency
All participants (N=394)		46.14±7.80	23.03±4.47	23.13±4.26
Gender	Males (N=91)	46.16±8.25	23.44±4.69	22.84±4.71
	Females (N=303)	46.13±7.68	22.91±4.40	23.22±4.12
	Mann-Whitney U test	U=13,624.500; ns	U=12,708.500; ns	U=13,009.500; ns
Age		-0.61 ^s ; ns	-0.10^s; p<0.05	-0.02 ^s ; ns
Age groups	18-19 years (N=70)	46.56±6.10	23.27±3.58	23.29±3.90
	20-29 years (N=227)	47.19±7.21	23.70±4.26	23.54±3.89
	30-39 years (N=39)	45.64±6.78	22.13±4.26	23.51±3.43
	40-49 years (N=26)	41.23±9.13	20.62±4.87	20.62±5.31
	50-59 years (N=22)	44.67±9.58	21.86±5.25	22.78±4.71
	60+ years (N=10)	37.20±15.34	18.60±7.52	18.60±8.22
Education level	Primary (N=2)	39.00±9.89	19.50±4.95	19.50±4.95
	Vocational (N=4)	35.25±9.29	16.50±5.00	18.75±5.06
	Secondary (N=309)	46.36±7.87	23.30±4.44	23.09±4.34
	Tertiary (N=77)	46.03±7.16	22.38±4.32	23.62±3.79
Employment status	Students (N=273)	47.04±7.00	23.65±4.13	23.42±3.91
	Employed and self-employed (N=113)	44.91±8.17	22.00±4.57	22.91±4.42
	Old age pensioners (N=8)	32.75±13.50	16.50±6.80	16.25±7.27
Marital status	Single (N=300)	46.78±7.16	23.39±4.22	23.42±3.95
	Married (N=84)	44.22±9.28	21.92±5.06	22.30±5.02
	Divorced (N=8)	44.63±9.56	22.75±4.20	21.88±5.67
	Widowed (N=2)	37.00±14.14	17.50±9.19	19.50±4.95

S=Spearman's correlation coefficient r

ces in Table 5 were interpreted according to the cut-off scores defined by Byrne (1994), Hu and Bentler (1999) and Ullman (1996). All indicators showed a good model fit.

Validity of the ADHS

In this part of the study, hope (ADHS) was correlated with depressive symptoms (BDI-II) to find some support for the validity of the measure. Table 6 shows the results of the correlation between hope and intensity of the depressive symptoms. The whole scale scores moderately correlated with the symptoms of depression. This relationship was stronger for the agency subscale than for the pathways thinking (Table 6).

Norms

The last step of the standardization dealt with the norms that could be used for interpretation of the resulting scores of the scale. The norms, based on the sten scores, were created for the entire scale and both subscales. The reason for the use of the stens was the relatively small range of the possible scale scores. Because of the absence of the significant differences between sexes in their mean levels of hope and the lack of the substantial relationship between age and the total scale score, the norms were created for the whole adult population. This decision has its interpretative limitations that are discussed further in the text.

As for the scoring, the score for the pathways thinking is obtained by summing the checked Likert-points of each of its items (1, 4, 6 and 8). The same goes for the agency subscales where the items 2, 8, 9 and 10 are used. The score for the entire scale is counted by summing the eight interpretable scale items – 1, 2, 4, 6, 8, 9, 10 and 12. Table 7 shows the norms for the total score of the scale and both subscales. The sten scores 4 to 6 speak for the average level of hope when compared to the general population of the Czech adults. The sten scores higher than six or lower than four indicate the significantly greater or lower level of hope when compared to the norms.

DISCUSSION

The Czech version of the scale was a synthesis of three independent translations created by two professional linguists and a psychologist. The scale was translated back to English. The first version of the scale was distributed among 166 students from two universities to analyze its psychometric properties. Several changes

Tab. 2. Reliability of the Czech translation of the scale.

The scale and its parts	Internal Consistency		Split-half Reliability
	N	Cronbach Alpha	Spearman-Brown Coefficient
Entire scale	393	0.82	0.81
Pathways thinking	393	0.71	0.72
Agency	394	0.73	0.71

Tab. 3. Factor loadings of the scale items.

Items	Factor 1	Factor 2
Pathways Thinking Items		
Item 1	0.51	0.19
Item 4	0.54	0.18
Item 6	0.69	0.40
Item 8	0.54	0.28
Agency Items		
Item 2	0.38	0.57
Item 9	0.36	0.27
Item 10	0.35	0.63
Item 12	0.22	0.74

Tab. 4. Standardized regression coefficients of the scale items and covariance between the subscales.

Scale Items	Standardized Regression Coefficients
Pathways Thinking	
Item 1	0.53
Item 4	0.54
Item 6	0.83
Item 8	0.60
Agency	
Item 2	0.71
Item 9	0.44
Item 10	0.73
Item 12	0.70
Covariance between the subscales	0.81

Tab. 5. Goodness-of-fit indices of the CFA model of the scale.

	χ^2	df	p	CFI	Fit Indices				
					NFI	GFI	RMSEA	RMR	RFI
Defined model	18.594	19	0.483	1.00	0.978	0.988	0.04	0.058	0.968

Tab. 6. Correlation between ADHS and BDI-II.

Scale	Total score of the ADHS	Pathways Thinking	Agency
BDI-II	-0.41 ^p ; $p < 0.001$	-0.33 ^p ; $p < 0.001$	-0.44 ^p ; $p < 0.001$

^p=Pearson's correlation coefficient r

Tab. 7. Norms for the scale and its subscales.

Total score of the ADHS		Pathways Thinking		Agency	
Raw score	Sten	Raw score	Sten	Raw score	Sten
Up to 30	1	Up to 14	1	Up to 14	1
31-34	2	15-16	2	15-16	2
35-38	3	17-18	3	17-18	3
39-42	4	19-20	4	19-21	4
43-46	5	21-23	5	22-23	5
47-50	6	24-25	6	24-25	6
51-53	7	26-27	7	26-27	7
54-57	8	28-29	8	28-29	8
58-61	9	30-31	9	30-31	9
62-64	10	32	10	32	10

had to be made. After their incorporation, this study took place.

There were 394 participants. All of them were an adult and had not undergone any psychiatric or psychotherapeutic treatment in past. Most of them were women (76.9%), individuals younger than 40 years (85.3%) and students (69.3%) or employees (28.7%). There were no unemployed participants and only eight of individuals were taking disability rent. Also, merely eight individuals (2%) were divorced, and two (0.5%) were widowers.

The numbers of the participants in the subgroups according to their level of education, employment status or marital status were too different to allow the statistical comparisons among them. The only analyzes that could be performed were the correlation between hope and age and the Mann-Whitney U test between sexes and hope. As expected, there was no significant relationship between men and women in their average levels of hope. This is in accordance with the results of the studies by Snyder *et al.* (1991) or Bailey and Snyder (2007). As Snyder (2000) stated, there is no statistical proof that men and women differ in their mean abilities to experience hope.

Age was also not significantly connected to hope in our sample, apart from a somewhat minor significant negative correlation coefficient between age and pathways thinking. Bailey and Snyder (2007) found that individuals older than 54 years tend to be less hopeful

than their younger counterparts. On the other side, Moraitou *et al.* (2006) stated that Greek seniors of age 60 to 93 years old were more hopeful with increasing age. However, the correlation coefficients were only minor (for pathways thinking: Pearson $r = 0.21$, $p < 0.05$; and for agency: Pearson $r = 0.18$, $p < 0.05$). One explanation for these different results offers the look at the samples from the studies. While Bailey and Snyder (2007) worked with individuals, who had mainly 35 to 54 years, Moraitou *et al.* (2006) collected data from elder population, and the participants in our research were mostly 20 to 29 years old. The different age groups may offer various results considering the relationship between age and hope. Another explanation lies in the age structure of our sample. There were few individuals older than 60 years and the subgroups of age between 30 and 59 years were also significantly smaller than the subgroup of adults younger than 30 years. The raw data suggest that there may be a significant decline of hope in adults older than 60 years. This hypothesis should be questioned in a future research.

The same goes for other underpopulated subgroups of the participants. As there were no unemployed participants and only a few of them were divorced or widowed, a future research should analyze the differences in mean levels of hope in them when compared to individuals, who are employed, single or married. The study of Bailey and Snyder (2007) suggest that separated, divorced or widowed individuals are less hopeful than persons who are single or married. Although the raw data of this study also shows the same direction, the answer to this research question remains unanswered.

As for the psychometric properties of the scale, most of them were similar to the original version (Snyder *et al.* 1991). The inner consistency of the scale and both subscales were in the range of the Cronbach alphas stated by Snyder *et al.* (1991). One pitfall is a lack of the test-retest. The methodology of the study was based on the snowball sampling and purely anonymous collection of the data. Thus, it proved to be impossible to collect other data from the same individuals, and then pair them with their first batteries of the scales. The lack of the test-retest evaluation is one of the limits of the study.

The factor structure of the scale was acceptable. The two identified factors explained 42.8% of the scale scores variance. Snyder *et al.* (1991) stated that the range of the variances of the original scale was between 52 and 63%. Our result is somewhat lower than their findings. Halama (2001) found that two factors of his Slovak translation of the scale explained 33.3% of the scale variance. The factor analysis also showed that the ninth item of the scale saturates the pathways thinking more its own agency subscale. This was also reflected in confirmatory factor analysis. This seems to be a flaw in the reliability of the scale. However, both scales correlated with each other rather strongly (Pearson $r = 0.61$, $p < 0.001$). Similar results offer both Snyder *et al.* (1991)

and Halama (2001). Thus, the dissociation of the item between both subscales should not have significant practical implications.

Validity was analyzed only by the correlation between hope and depressiveness measured by BDI-II (Preiss & Vacir 1999). The relationship between hope and depressiveness was moderately strong (Pearson $r = -0.41$, $p < 0.001$). This is in accordance with the measurements performed by using the original version of the scale (Snyder 2000; Snyder *et al.* 1997; Peleg *et al.* 2009). The stronger relationship between the intensity of depressive symptoms and agency, compared to pathways thinking, may be a manifestation of hypobulia and general lack of energy, common symptoms of depression (World Health Organization 1992). The difficulties with attention, memory and executive function could then explain the relationship between pathways thinking and the depressive symptoms (World Health Organization 1992; DeBattista 2005). Also, lack of hope could be a partially independent factor that influences the intensity of the depressive symptoms and predicts their severity (Rajandram *et al.* 2011).

The main limitations of the standardization of the Czech ADHS is the lack of particular groups of adult population (unemployed, divorced, widowed, elder adults or individuals with the vocational training or primary education level), the absence of the test-retest analysis of reliability and the fact that one item of the scale significantly saturates both subscales instead of only its own. When using the norms, that were created, it should be taken into consideration that these are reliable mainly in adults younger than 60 years who have not recently experienced a loss and reached the secondary education level or higher.

CONCLUSION

Until recently, the Czech mental health professionals did not have a standardized scale that would measure the levels of hope in adults. In this study, the Adult Dispositional Hope Scale was translated to Czech. It was shown that the translation has adequate psychometric properties. The norms, based on stens, may be used for the interpretation of the scale scores in general adult population. The Czech version of the scale may serve mental health professionals in the research and therapeutic work with clients.

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