

# CONTRIBUTIONS IN ENGLISH

## PŘÍSPĚVKY V ANGLIČTINĚ

### **The Intolerance of Uncertainty Scale – psychometric characteristics of the Slovak version, associations with related constructs and applications in work psychology**

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#### **Abstract**

**Objective.** *The study presents the Slovak version of the Intolerance of Uncertainty Scale with the aim of examining its factor structure and construct validity through relationships with related variables. It also aims to sketch the possibilities of applying it in work psychology.*

**Method.** *The study consists of two datasets which included a total of 220 subjects (age 21-60, mean age 36.7, 59.5% females). The participants completed four self-reported measures – Intolerance of Uncertainty (Carleton, Norton, & Asmundson, 2007), Domain-Specific Risk-Taking (Blais & Weber, 2006), Indecisiveness Scale (Frost & Shows, 1993) and the Decision Outcomes Inventory (Bruine de Bruin, Parker, & Fischhoff, 2007).*

**Results.** *The factor structure and internal consistency of the Slovak version of the Intolerance of Uncertainty Scale was confirmed. Indecisiveness was found to be related to only one factor – inhibitory uncertainty. The intolerance of uncertainty was associated more with risk perception than with risk-taking and no relationship with decision outcomes was found.*

**Conclusions.** *The Slovak version of the Intolerance of Uncertainty Scale is an appropriate tool for measuring this construct. The results of the analysis highlight the importance of distinguishing its two factors – prospective and inhibitory anxiety.*

**Limitations.** *The study is restricted by the absence of variables more directly related to the role of the intolerance of uncertainty in a work environment.*

**Keywords.** intolerance of uncertainty; psychometrics; risk perception; indecisiveness; decision outcomes

<https://doi.org/10.5817/CZ.MUNI.P210-9488-2019-1>

## **Introduction**

People have a general tendency to prefer known risk over unknown distribution (e.g., ambiguity aversion (Ellsberg, 1961)). However, their attitudes to uncertainty differ in real life which has resulted in establishing the personality characteristic intolerance of uncertainty (for a closer look at the similarities and differences between the intolerance of uncertainty and intolerance of ambiguity, see Grenier, Barrette, & Ladouceur, 2005). While the intolerance of uncertainty (IU) was previously defined as a broad construct reflecting cognitive, emotional, and behavioural reactions to uncertainty in everyday situations (Shihata, McEvoy, Mullan & Carleton, 2016), it is currently considered to be the dispositional inability of individuals to tolerate aversive reactions due to the perceived lack of sufficient information (Bottesi, Noventa, Freeston, & Ghisi, 2019). Ladouceur, Gosselin, & Dugas (2000) have described IU as “the predisposition to react negatively to an uncertain event or situation, independent of its probability of occurrence and its associated consequences” (p934). IU has been found to be particularly related to psychopathology (Shihata et al., 2016) although it also manifests itself in the work and organizational context (Borchers, 2005; Seely, 2013; Williams & Clampitt, 2003). As a result, the need for an IU measurement in Slovakia has arisen. This study aims to present the Slovak version of the mostly used self-reported measure – the Intolerance of Uncertainty Scale-12 (IUS-12) and to sketch the possibilities of applying it in the work and organizational environment based on IU in real behaviour (risk taking, decision-making).

### **Intolerance of uncertainty in the organizational environment**

While IU has mainly been investigated in the context of emotional disorders and psychopathology (e.g., anxiety, depression, obsessive-compulsive disorder; Gentes & Ruscio, 2011), some of its general consequences have had clear implications in work psychology and some studies have directly focused on its role in the organizational environment. Moreover, the importance of this construct is emphasized by the fact that uncertainty is present in almost every decision and the tendency to seek or avoid it can have a serious impact on it. In addition, some aspects of IU can affect work behaviour to a great extent. There are several examples of IU visible in the work environment such as information-seeking behaviour as a consequence of high IU (Rosen & Knäuper, 2009), prospective IU as a vulnerability factor in excessive avoidance behaviour (Flores, López, Vervliet, & Cobos, 2018) and the contribution of IU to the initial level of behavioural risk (Kornilova, Chumakova, & Kornilov, 2018). IU is also related to negative problem orientation, limited access to emotion regulation (Ouellet, Langlois, Provencher, & Gosselin, 2019) and lower creativity (Kornilova & Kornilov, 2010). With regards to the role of IU in psychopathology, the identification of individuals with high IU can help with the prevention of severe emotional disorders, e.g. by providing counselling services.

Other studies have directly investigated IU in the work environment. Clampitt, Williams, and DeKoch (2007) have reported that organizations which embrace uncertainty foster more employee commitment, greater job satisfaction and that their employees are able to cope better with change. This pattern is independent of employees` rating of their own uncertainty management skills and organizations can even cultivate an uncertainty-embracing climate. The tolerance to uncertainty at a personal level as well as in work situations in teachers was found

to be positively related to job-related affective well-being and psychological need satisfaction (Kamel & Hashish, 2015). However, psychological uncertainty has not been found to be related to counterproductive work behaviour (Norwood, 2018). Uncertainty management affects job satisfaction and innovation (Lane & Bocarnea, 2011). On the other hand, students high in IU have been found to be more likely to make incorrect clinical decisions, although only in one of the four provided situations (Innes, Leboeuf-Yde, & Walker, 2017).

### **Measuring the intolerance of uncertainty**

IU has predominantly been measured by self-reported measures with the Intolerance of Uncertainty Scale being the dominant one (IUS, Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994). It consists of 27 items grouped into five factors (unacceptability and avoidance of uncertainty, negative social evaluation caused by uncertainty, uncertainty-related frustration, uncertainty causes stress, uncertainty preventing action) although it is the short form of the scale (IUS-12, Carleton, Norton, & Asmundson, 2007) which is most currently used. The twelve items are divided into two factors – prospective anxiety (fear and anxiety based on future events) and inhibitory anxiety (uncertainty inhibiting action or experience). Recently, Lauriola et al. (2018) presented the Intolerance of Uncertainty Inventory focused on IU and its consequences. With the exception of factor structure, the validations of these measures have mainly focused on the relationships with selected symptoms of psychopathology such as worry, anxiety and depression. In the current study, the aim is to investigate the construct validity of the scale through the correlations with other variables. It is expected that there will be a positive relationship with indecisiveness and risk perception and negative relationships with risk taking and decision outcomes.

## **Method**

### **Sample**

Two samples were used in the current study. The first sample consisted of 100 respondents aged 23 to 59 years (mean age 32.9,  $SD_{age} = 9.28$ , 50 % females, 68 % secondary school, 32 % university education). The second sample included 120 participants aged 21 to 60 years (mean age 39.9,  $SD_{age} = 15.07$ , 67.5 % females, 48 % secondary school, 52 % university education). All participants were employed and there was no profession which was more frequent than 5%. There were three variables measured in both samples – intolerance of uncertainty, risk perception and risk taking – although decision outcomes were only measured in the first sample and indecisiveness only in the second sample.

### **Measures**

The intolerance of uncertainty was measured by the short version of the Intolerance of Uncertainty scale (IUS-12, Carleton, Norton, & Asmundson, 2007) which consists of 12 items divided into two factors – prospective anxiety (7 items, e.g., *It frustrates me not having all the information I need*) and inhibitory anxiety (5 items, e.g., *When it's time to act, uncertainty*

*paralyzes me*). The items were rated from not at all characteristic of me (1) to entirely characteristic of me (5). The scale was translated into Slovak and back-translated into English by another person and the translations were compared to ensure their equivalence.

Domain-Specific Risk-Taking scale(DOSPRT, Blais & Weber, 2006) was used to measure risk perception and propensity to risk-taking. There are 30 items divided into five domains (ethical, financial, health/safety, recreational, social) which are presented twice with different instructions and response formats. Firstly, subjects were asked how risky each of the given situations are (from 1-not at all risky to 7-extremely risky) and subsequently what is the likelihood of them engaging in this activity (from 1-extremely unlikely to 7-extremely likely). A higher score (total and in each domain) means a higher perceived risk; in other words, a greater likelihood of engaging in risky behaviour.

Indecisiveness was assessed by the short version of the Indecisiveness Scale (Bavolar, 2018) which contains 9 items asking about symptoms of indecisiveness (e.g., *I try to put off making decisions*) rated on a scale from 1 (strongly disagree) to 5 (strongly agree), some items reversed.

The Decision Outcome Inventory (Bruine de Bruin, Parker, & Fischhoff, 2007) was used to assess decision outcomes. The items in this measure ask about the occurrence of selected negative decision outcomes (e.g., *missed a flight*) given a prerequisite (*take a trip by airplane*). The final score ranges from -1 to 0 with higher values reflecting better decision outcomes (fewer wrong outcomes).

## Results

The first step of the data analysis was a confirmative factor analysis with the 12 items divided into prospective anxiety (7 items) and inhibitory anxiety (5 items). The first solution was found to have unsatisfactory fit indices ( $\chi^2 = 126$ ,  $df = 53$ ,  $p < .001$ ,  $RMSEA = .08$ ,  $CFI = .89$ ), but after adding covariances in three pairs of items as indicated by the modification indices (items 8-9 in prospective anxiety and 6-7 and 6-10 in inhibitory anxiety), the fit indices were in the required intervals ( $\chi^2 = 81.6$ ,  $df = 50$ ,  $p = .003$ ,  $RMSEA = .05$ ,  $CFI = .95$ ).

The second step involved examining the relationships of intolerance of uncertainty and its subscales with other included variables – risk perception, risk-taking, indecisiveness, and decision outcomes. These correlations, along with the descriptive statistics, are presented in Table 2.

Generally, IU was positively related to risk perception, mainly in the recreational and social domains, although the associations with risk-taking were very weak. IU was also not significantly related to decision outcomes. The pattern of correlations of prospective and inhibitory anxiety was only different in the case of indecisiveness which was positively related to inhibitory, but not to prospective anxiety (the relationships of indecisiveness and decision outcomes are presented in Appendix A).

**Table 1.** Descriptive statistics and factor loadings for Intolerance of Uncertainty Scale items

UIS-12 items English Slovak	x	Mdn	SD	Skew.	Kurt.	Factor loadings Prosp. anx.    Inhib. anx.	
1. Unforeseen events upset me greatly <i>Nepredvídateľné udalosti ma veľmi rozrušia.</i>	2.71	3.00	1.04	0.42	-0.14	0.57	
2. It frustrates me not having all the information I need. <i>Znepokojuje ma, ak nemám všetky informácie, ktoré potrebujem.</i>	3.56	4.00	1.10	-0.35	-0.72	0.60	
3. Uncertainty keeps me from living a full life. <i>Neistota mi bráni žiť môj život naplno.</i>	2.65	3.00	1.37	0.27	-1.16		0.74
4. One should always look ahead so as to avoid surprises. <i>Človek by mal vždy pozerat' dopredu, aby sa vyhol prekvapeniam.</i>	3.27	3.00	1.15	-0.18	-0.71	0.42	
5. A small unforeseen event can spoil everything, even with the best of planning. <i>Malá nepredvídateľná udalosť môže všetko pokaziť, dokonca aj napriek perfektnej organizácii.</i>	2.64	3.00	1.15	0.25	-0.66	0.66	
6. When it's time to act, uncertainty paralyzes me. <i>Ked' je čas konať, ochromuje ma neistota.</i>	2.36	2.00	1.16	0.54	-0.59		0.49
7. When I am uncertain, I can't function very well. <i>Ked' som si neistý, nemôžem veľmi dobre fungovať.</i>	2.78	3.00	1.15	0.12	-0.89		0.61
8. I always want to know what the future has in store for me. <i>Vždy chcem vedieť, čo mi budúcnosť prinesie.</i>	2.85	3.00	1.27	0.12	-1.02	0.47	
9. I can't stand being taken by surprise. <i>Nemôžem ostať prekvapený/á.</i>	2.50	3.00	1.07	0.30	-0.44	0.37	
10. The smallest doubt can stop me from acting. <i>Aj najmenšie pochybnosti ma môžu zastaviť v konaní.</i>	2.40	2.00	1.10	0.49	-0.44		0.71
11. I should be able to organize everything in advance. <i>Mal/a by som byť schopný/á zorganizovať všetko vopred.</i>	3.36	3.00	1.21	-0.36	-0.76	0.36	
12. I must get away from all uncertain situations. <i>Musím uniknúť zo všetkých neistých situácií.</i>	2.68	3.00	1.21	0.26	-0.75		0.52

**Table 2. Descriptive statistics of all variables and correlations with intolerance of uncertainty**

	Mean	Mdn	SD	Cronb. $\alpha$	Correlations with		
					PA	IA	IU
Prospective anx. (PA)	20.89	21.00	4.89	.72		.61***	.91***
Inhibitory anx. (IA)	12.87	13.00	4.40	.79			.87***
Intoler. of uncert. (IU)	33.75	34.00	8.34	.83			
<b>Risk perception</b>							
Ethical	29.59	30.00	6.79	.65	.09	.14*	.13
Financial	29.72	30.00	7.76	.83	.03	.10	.07
Health/safety	29.05	30.00	6.85	.70	.12	.15*	.15*
Recreational	27.81	28.00	8.21	.82	.20**	.25***	.25***
Social	18.63	18.00	6.11	.68	.20**	.20**	.23**
Total	134.80	135.50	26.55	.89	.17*	.23**	.22**
<b>Risk taking</b>							
Ethical	14.33	13.50	5.72	.56	.04	.06	.06
Financial	14.83	13.00	7.70	.80	-.05	-.11	-.09
Health/safety	21.21	22.00	7.84	.67	.00	.03	.01
Recreational	18.95	19.00	9.44	.76	-.15*	-.13	-.16*
Social	27.10	27.50	5.89	.51	.02	-.10	-.04
Total	96.42	98.00	25.78	.86	-.06	-.08	-.08
Indecisiveness	20.78	20.00	6.58	.81	.06	.39**	.24**
Decision outcomes	-0.13	-0.13	0.10	-	-.08	.10	.01

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

## Discussion

This study has presented the Slovak version of the short form of the Intolerance of Uncertainty Scale. A factor analysis has confirmed the two-factor structure of the IUS-12 distinguishing prospective and inhibitory anxiety, which is consistent with the original study. Similarly, the internal consistency of the whole scale and its subscales was in satisfactory interval. The correlations of IU with risk perception, risk taking, indecisiveness and decision outcomes were examined to investigate the construct validity and possible applications of the scale.

The correlation analysis found that risk perception is higher in individuals with higher IU. In other words, people with higher IU perceive risks to be more serious. This was mainly found to be the case in the recreational and social domains. There was a weak correlation in the domain of health/safety which is in line with O'Neill et al. (2006). They reported a similar value ( $r = .11$ ) in women endangered by breast cancer. On the other hand, IU was related only to the recreational domain of risk-taking, which indicates that it is manifested more in risk perception than in real risk behaviour. A similar result was found in decision outcomes as another behavioural measure not related to IU.

While the relationships of IU with risk perception and risk taking were not strong and mostly similar for inhibitory and prospective anxiety, this was not found to be the case for associations with indecisiveness. It was not related to anticipatory anxiety, but was associated

with inhibitory anxiety. This indicates that people may be indecisive not only because they are aware of the uncertainty related to the forthcoming decision, but more because of their fear of the unknown. The reduction of this uncertainty can help them make a decision.

While the present study has brought new information about the associations of IU with selected variables, its results have some limitations in terms of generalizability. The included variables do not represent “classic” variables used in IU research concerning psychopathology and emotional disorders in particular. They are focused more on the manifestations of IU likely to occur in daily situations. On the other hand, this has allowed IU to be used as a predictor of some of the included variables (risk perception, indecisiveness) with a potential role in certain decisions. Despite the given limitations, measuring IU seems to be a useful tool in identifying people able (and not able) to deal with IU. As perceived uncertainty can have the potential to evoke work-related stress, recognizing people with different levels of IU can help find an appropriate position for current or prospective employers. People with higher IU would be more satisfied and useful in positions with more stable and structured work, while individuals more tolerant to uncertainty would fit positions associated with more frequent changes. On the other hand, weak relationships with variables describing behaviour (risk taking, decision outcomes) show that the association with real behaviour are not straightforward and further studies should focus on the role of IU in particular situations.

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## Appendix A

### *Correlations of indecisiveness and decision outcomes with risk perception and risk-taking*

	Risk perception					
	E	F	H/S	R	S	T
Indecisiveness	.04	.04	-.04	.10	.20*	.09
Decision outcomes	.23*	.18	.32**	.25*	-.08	.26**
	Risk-taking					
	E	F	H/S	R	S	T
Indecisiveness	.22*	-.17	.33***	-.03	-.26**	.02
Decision outcomes	-.32**	-.25*	-.46***	-.22*	.00	-.38***

E – ethical, F – financial, H/S – health/safety, R – recreational, S – social, T – total

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