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СОДРЖИНА

Трудови од областа на педагошката психологија

Трудови од областа на личноста и индивидуалните разлики

Трудови од областа на насилството

Трудови од областа на психолошкото тестирање и мерење

Трудови од областа на здравствената психологија

Трудови од областа на психологија на трудот и организациона психологија

Трудови од областа на психологија на мирот

CONTENTS

Papers from the field of educational psychology

Papers from the field of personality and individual differences

Papers from the field of violence

Papers from the field of psychological testing and measurement

Papers from the field of health psychology

Papers from the field of work and organizational psychology

Papers from the field of psychology of peace

COMPARISONS OF DIFFERENT MEASURES OF ANXIETY SENSITIVITY

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COMPARISONS OF DIFFERENT MEASURES OF ANXIETY SENSITIVITY

Abstract

Anxiety sensitivity refers to the fear of anxiety based on the belief that anxiety has damaging physical, psychological and social consequences, which is the significant risk factor for the development of anxiety disorders and other pathology. Although the most commonly used measure of anxiety sensitivity is Anxiety Sensitivity Index (ASI), over time other versions have been constructed. The aim of this study is to compare ASI with three later versions: Anxiety Sensitivity Index-Revised (ASI-R), Anxiety Sensitivity Profile (ASP) and Anxiety Sensitivity Index–3 (ASI-3). The sample consisted of 400 adults from Serbia (50% male and 50% female) aged between 18 and 59 years. Criterion for inclusion was no history of psychiatric treatment. Analysis of internal consistency show that all instruments, including their subscales, have good internal consistency. Principal component analysis with promax rotation of AS scores show that only ASI-3 has factor structure which is consistent with the findings from previous studies. In accordance with expectations, correlations and partial correlations of AS measures with trait anxiety and depression show that instruments have significant partial correlations with trait anxiety and with depression. ASI-3 has the highest partial correlation with trait anxiety. We can conclude that ASI-3 has the best characteristics and is recommended for use. However, these findings need to be verified on clinical population.

Key words: *measures of anxiety sensitivity, factor analysis, reliability*

Introduction

In the field of anxiety research, few constructs have attracted so much interest as the concept of anxiety sensitivity. The significance of "fear of fear" (or anxiety) was recognized by therapists of different schools (e.g. Beck & Emery, 1979; Ellis, 1979; Fenichel, 1945). For example, the well-known cognitive-behavioral model of the occurrence and maintenance of panic attacks indicates that people who have had a panic attack have a tendency to interpret common symptoms of anxiety in a catastrophic manner because they perceive them as signs of physical or mental illness, which leads to an even greater arousal (Clark, 1986). A more comprehensive set of propositions about fear of fear was developed by Reiss and McNally (1985), who introduced the term "anxiety sensitivity", which enhanced research on this topic.

In order to measure this construct, over the past few decades four successive questionnaires have been designed, whose psychometric properties and factor analyses are still the subjects of examination. An adequate questionnaire would enable us to identify persons with high anxiety sensitivity and provide them adequate help, in order to prevent the development of disorders that are affected by anxiety sensitivity. Such an instrument could also be useful in evaluating the effects of the counseling/treatment. Therefore, it is important to compare existing questionnaires and determine which one would be the most useful for achieving these goals.

Anxiety sensitivity and its first operationalization – Anxiety Sensitivity Index

According to Reiss and Mc Nally (1985), the concept of "anxiety sensitivity" refers to the fear of anxiety-related symptoms (e.g., racing heart, blushing, feeling dizzy, shaking etc.) due to the belief that there will be some harmful physical (e.g. one might die), psychological (e.g. one might go mad) and social (e.g. one might be socially rejected)

consequences. People who have low anxiety sensitivity interpret it as a current experience that has no special significance besides short-term feeling of discomfort. On the other hand, those with high anxiety sensitivity are vigilant to threats and preoccupied with anxiety, which is perceived as very harmful. Thus, the fear of anxiety can maintain a vicious cycle, in which beliefs about physiological arousal (and other accompanying signs of anxiety) predispose a person to respond with fear to these reactions.

Studies suggest that anxiety sensitivity is a personality trait that is different from the trait anxiety (McWilliams & Cox, 2001). It is related to a variety of anxiety disorders (Ball, Otto, Pollack, Uccello, & Rosenbaum, 2005; Cisler, Reardon, Williams, & Lohr, 2007; Olatunji, & Wolitzky-Taylor, 2009; Rector, Szacun-Shimizu, & Leybman, 2007; Schmidt, Keough, Timpano, & Richey, 2008). Yet, it is an especially significant vulnerability factor for panic disorder (Taylor, 1999), post-traumatic stress disorder (Taylor, 2003), hypochondriasis (Watt & Stewart, 2000) and social anxiety (Deacon, & Abramowitz, 2006). Anxiety sensitivity is also a vulnerability factor for major depressive disorder (Taylor, Koch, Woody, & McLean, 1996), chronic pain (Asmundson, 1999), substance use disorders (Otto, Safren, & Pollack, 2004), etc.

Research has found that genetic predispositions, experiential learning and adopting beliefs about the potentially damaging effects of arousal play a significant role in the development of anxiety sensitivity (Olatunji et al., 2005; Scher & Stein, 2003; Taylor, Jang, Stewart, & Stein, 2008). However, even though it is a personality trait, it can be alleviated by adequate psychological treatment (Smits, Berry, Tart, & Powers, 2008).

The initial operationalization of the construct of anxiety sensitivity in adults is the Anxiety Sensitivity Index developed by Reiss and associates (ASI; Reiss, Peterson, & Gursky, 1986). The anxiety sensitivity is conceptualized as a dimensional variable that is more or less present in everyone, which is confirmed by later studies (e.g. Broman-Fulks et al., 2010). Anxiety Sensitivity Index has good internal consistency (from .82

to .92) and .71 test-retest reliability over a period of 3 years (Maller & Reiss, 1992). Correlations between ASI and Spielberger's State-Trait Anxiety Inventory range from .40 to .60 (Isyanov & Calamari, 2004; McWilliams & Cox, 2001). Correlations between ASI and Beck's Inventory of depression are around .41 (Smári, Erlendsdóttir, Björgvinsdóttir, & Ágústsdóttir, 2003).

The issue of the instrument factor structure gained the greatest attention and has remained controversial to date (e.g Deacon & Abramowitz, 2006; Hinton, Pich, Safren, Pollack, & McNally, 2005; Zinbarg, Brown, Barlow, & Rapee, 2001). Although anxiety sensitivity was originally conceived as a unitary construct, studies have provided support for a hierarchically organized, multidimensional structure that consists of a single higher-order factor (i.e., anxiety sensitivity) and a certain number of of lower-order factors (e.g. Rodriguez, Bruce, Pagano, Spencer, & Keller, 2004). Yet, there is still a significant disagreement among researchers regarding the exact number of low-order factors.

Most studies report of a tri-factor solution that consists of Physical Concern (that relates to physical consequences of anxiety), Psychological Concern (that relates to psychological consequences of anxiety), and Social Concern (that relates to social consequences of anxiety) (e.g. Jurin, Jokić-Begić, & Korajlija, 2011; Rodriguez et al., 2004; Taylor, 1999; Vukosavljević-Gvozden, Batinić, & Peruničić, 2012; Zinbarg, Barlow, & Brown, 1997; Zvolensky, McNeil, Porter, & Stewart, 2001). However, some studies suggest a single factor solution (Sandin, Chorot, & McNally, 1996), some a two-factor solution (Asmundson, Frombach, & Hadjistavropoulos, 1998; Cintrón, Carter, Suchday, Sbrocco, & Gray, 2005; Schmidt & Joiner, 2002), and some a four-factor solution (Vujanovic, Arrindell, Bernstein, Norton, & Zvolensky, 2007).

Studies also suggest that the factor Social Concern has a relatively low internal consistency and that it accounts for the lowest percentage of the variance of anxiety sensitivity, probably because it consists of only two items (e.g. Zvolensky et al., 2001). Finally, researchers suggest that

some items are unclear (e.g. "Unusual body sensations scare me") (Taylor & Cox, 1998a). All of this has contributed to the motivation to develop an instrument that will be a more stable measure of the lower order factors and will consider the possibility that there are more than three factors.

Attempts to improve the measurement of Anxiety Sensitivity

In order to improve Anxiety Sensitivity Index (ASI), three other versions have been developed during time. In the first attempt to improve ASI, Taylor and Cox have taken away problematic items and added more new ones, creating a 36-item questionnaire, Anxiety Sensitivity Index-Revised (ASI-R; Taylor & Cox, 1998a). This questionnaire was constructed with the intent to be more comprehensive than the ASI. The factors Psychological and Social Concerns were retained, but the factor Physical Concern was represented by 4 factors (cardiovascular, respiratory, gastrointestinal and neurological-dissociative symptoms), so that the total number of dimensions was six. However, a few studies obtained a four-factor solution, and none obtained six-factor solution. In those studies, items related to physical concerns were distributed into two factors, and the remaining two factors were related to psychological and social concerns (Bernstein et al, 2006; Deacon, Abramowitz, Woods, & Tolin, 2003; Taylor & Cox, 1998a). A large multinational study found that a two-factor solution was the most appropriate - the first factor was related to Physical Concern, and the second consisted of Psychological Concern and Social Concern, which were merged (Zvolensky et al., 2003). ASI-R shows good internal consistency ranging from .93 to .95 (Deacon et al., 2003). Most factors have moderate correlations to trait anxiety, whereas the factor Psychological Concern correlates with depression, but not with trait anxiety (Taylor & Cox, 1998a).

In order to improve measurement of the previously mentioned six dimensions, Taylor and Cox have developed a new 60-item questionnaire, Anxiety Sensitivity Profile (ASP; Taylor & Cox, 1998b). As with ASI-R, factor analyses do not suggest six, but four factors (Ayvasik & Tutarel-

Kislak, 2004; Olatunji et al, 2005; Taylor & Cox, 1998b). Three of them relate to various physical concerns, while the fourth relates to psychological concern. It is important to point out that the factor Social Concern was completely absent in these studies, even though it was represented by 10 items. One study suggests a single factor structure, even though the confirmatory factor analysis showed that the six-factor structure, suggested by Taylor and Cox, is also an appropriate solution (Van der Does, Duijsens, Eurelings-Bontekoe, Verschuur, & Spinhoven, 2003). ASP shows good internal consistency (Cronbach's $\alpha > .88$) (Van der Does et al., 2003), moderate correlation with anxiety trait (Elwell, 2004), and low correlation with depression (Olatunji et al., 2005).

Finally, Taylor and associates have tried to overcome the flaws of previous instruments by developing Anxiety Sensitivity Index–3 (ASI-3; Taylor, Zvolensky, & Deacon, 2007). ASI-3 is defined by three subscales: Physical Concern, Cognitive Concern and Social Concern. Using ASI-R, Taylor and associates created every item of ASI-3 content specific and representative for one of three pre-defined domains. Different studies have used confirmatory factor analysis and tri-factor solutions were obtained that fit the original concept (e.g. Kemper, Lutz, Bähr, Rüddel, & Hock, 2012; Lim & Kim, 2013). ASI-3 shows good internal consistency (Cronbach's $\alpha > .80$) (Osman et al., 2010). However, the correlations with trait anxiety and depression have not yet been thoroughly explored.

The aim of this study is to compare Anxiety Sensitivity Index (ASI) with three later versions: Anxiety Sensitivity Index-Revised (ASI-R), Anxiety Sensitivity Profile (ASP) and Anxiety Sensitivity Index–3 (ASI-3). The reliability of the instruments, the factor structure and the correlations with trait anxiety and depression have been studied. As far as we know, so far there has been no research that compared all four measures of anxiety sensitivity.

Method

Sample and procedure

The convenience sample consisted of 400 adults from Serbia (50% male and 50% female) aged between 18 and 59 years (M = 30.98, SD = 7.07). The criterion for inclusion was no history of psychiatric treatment. Respondents were employed at several companies based in Belgrade and completed questionnaires at their workplaces. All subjects provided informed consent before entering the study.

Measures

Measures of anxiety sensitivity include 4 questionnaires: 1. *Anxiety Sensitivity Index* (ASI) (Reiss et al, 1986) is a 16-item self report measure designed to assess concerns about symptoms of anxiety on a 5-point Likert-type scale (from 0 to 4); 2. *Anxiety Sensitivity Index-Revised* (ASI-R) (Taylor & Cox, 1998a) is a 36-item self report measure designed to assess concerns about symptoms of anxiety on a 5-point Likert-type scale (from 0 to 4); 3. *Anxiety Sensitivity Profile* (ASP) (Taylor & Cox, 1998b) is a 60-item self report measure designed to assess concerns about symptoms of anxiety on a 7-point Likert-type scale (from 1 to 7); 4. *Anxiety Sensitivity Index-3* (ASI-3) (Taylor et al, 2007) is a 18-item self report measure designed to assess concerns about symptoms of anxiety on a 5-point Likert-type scale (from 0 to 4). The Serbian versions of the measures of anxiety sensitivity were developed following back-translation method (Brislin, 1970).

The State-Trait Anxiety Inventory (STAI; Spielberger, 1983). The STAI was developed for the assessment of two related but different constructs: the trait and state of anxiety. Because the present investigation was primarily interested in more stable differences in anxiety and not in participants' estimation of the degree to which they felt anxious at the time of completing the questionnaire, only the scale of trait anxiety was used. It is a 20-item self report measure assessing anxiety on a 4-point Likert-type

scale (from 1 to 4). The STAI-T has demonstrated adequate psychometric properties in previous studies in Serbia (e.g. Stanković & Vukosavljević-Gvozden, 2011). Cronbach's α of the STAI-T in the present study is .94.

The Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure widely used for assessing symptoms of depression on a 4-point Likert-type scale (from 0 to 3). In nonclinical samples BDI is used as a measure of dysphoric mood, rather than of clinical depression (Dykman & Johll, 1998). The BDI-II has demonstrated adequate psychometric properties in previous studies in Serbia (e.g. Stanković & Vukosavljević-Gvozden, 2011). Cronbach's α of the BDI-II in the present study is .88.

Results

Table 1 presents the means and the standard deviations of the total scores of anxiety sensitivity measures on the sample of 400 subjects.

Table 1: ***Means and Standard deviations***

	M	***SD***
ASI	20.24	11.08
ASI-R	32.24	28
ASP	148.10	70.45
ASI-3	16.46	13.42
STAI-T	41.26	11.93
BDI	8.81	8.15

Factor analyses of the anxiety sensitivity measures

The values of Kaiser-Meyer-Olkin measure of sampling adequacy range between .88 and .97, which means that correlation matrices of each questionnaire are appropriate for factor analysis. A Principal Component Analysis of anxiety sensitivity measures, followed by Promax rotation

with Kaiser Normalization of retained components, was applied on collected data.

The first factor analysis of *Anxiety Sensitivity Index (ASI)* had pointed to four factors. Cattell's scree criterion was applied in order to determine number of non-trivial factors. The two-factor solution was estimated as the most appropriate. Afterwards, the factor analysis was repeated with an a priori set criterion. The first factor, named Physical Concern, explains 37.83% of variance. The second factor, named Psychological Concern, explains 9.42% of variance. The correlation between the factors is .6, and it is statistically significant on the level .01. The Pattern Matrix of ASI is presented in Table 2.

Table 2: ***ASI Pattern Matrix***

		Factors	
		1	2
6.	It scares me when my heart beats rapidly.	**.92**	-.13
4.	It scares me when I feel faint.	**.84**	-.02
10.	It scares me when I am short of breath.	**.83**	-.11
9.	When I notice that my heart is beating rapidly, I worry that I might have a heart attack.	**.82**	-.13
3.	It scares me when I feel 'shaky' (trembling).	**.64**	.19
14.	Unusual body sensations scare me.	**.47**	.26
11.	When my stomach is upset, I worry that I might be seriously ill.	**.43**	.28
8.	It scares me when I am nauseous.	**.38**	.38
12.	It scares me when I am unable to keep my mind on a task.	-.07	**.81**

16.	It scares me when I am nervous.	.09	**.74**
2.	When I cannot keep my mind on a task, I worry that I might be going crazy.	-.06	**.73**
15.	When I am nervous, I worry that I am mentally ill.	.01	**.7**
7.	It embarrasses me when my stomach growls.	-.07	**.55**
13.	Other people notice when I feel shaky.	.04	**.51**
1.	It is important to me not to appear nervous.	-.06	**.49**
5.	It is important to me to stay in control of my emotions.	-.01	**.37**

The first factor analysis of *Anxiety Sensitivity Index-Revised (ASI-R)* had pointed out to five factors. Cattell's scree criterion was applied in order to determine number of non-trivial factors. The four-factor solution was estimated as the most appropriate. Afterwards, the factor analysis was repeated with an a priori set criterion. The first factor, named Physical Concern, explains 50.08% of variance. The remaining three factors together explain 18.48% of variance (the individual factors contribute from 4.2% to 7.9%). The second factor is named Physical Concern-Serious Illness, the third factor is named Psychological Concern, and the forth factor is named Social Concern. The correlations between the factors range from .53 to .8, and are statistically significant on the level .01. The Pattern Matrix of ASI-R is presented in Table 3.

Table 3: ***ASI-R Pattern matrix***

		Factors			
		1	2	3	4
3.	It scares me when I become short of breath.	**.93**	-.14	.01	.06
1.	When I feel like I'm not getting enough air, I get scared that I might suffocate.	**.89**	-.11	.06	.02
2.	Smothering sensations scare me.	**.88**	-.25	.00	.13
4.	When my chest feels tight, I get scared that I won't be able to breathe properly.	**.88**	.09	-.02	-.04
8.	When my breathing becomes irregular, I fear that something bad will happen.	**.81**	.06	.08	.01
6.	When my throat feels tight, I worry that I could choke to death.	**.71**	.09	.15	.01
7.	It scares me when my heart beats rapidly.	**.70**	.24	-.01	-.05
5.	It scares me when I feel faint.	**.67**	.13	-.11	.16
9.	It scares me when I feel "shaky" (trembling).	**.58**	-.08	.30	.14
10.	When I have trouble swallowing, I worry that I could choke.	**.46**	.25	.11	.04
26.	When my stomach is upset, I worry that I might be seriously ill.	-.26	**.98**	.10	.06

20.	When I feel a strong pain in my stomach, I worry that it might be cancer.	-.29	**.94**	.02	.14
21.	When my head is pounding, I worry that I could have a stroke.	.18	**.82**	-.08	-.05
25.	When I feel dizzy, I worry there is something wrong with my brain.	.08	**.81**	.06	-.04
23.	When my face feels numb, I worry that I might be having a stroke.	.20	**.76**	-.07	-.05
28.	When I get diarrhea, I worry that something might be wrong with me.	-.03	**.63**	.12	.05
24.	When I feel pain in my chest, I worry that I'm going to have a heart attack.	.46	**.60**	-.11	-.11
22.	When I notice my heart is beating rapidly, I worry that I might have a heart attack.	.45	**.60**	-.06	-.13
27.	When I notice my heart skipping a beat, I worry there is something seriously wrong with me.	.42	**.58**	-.05	-.05
29.	It scares me when I am nauseous.	-.00	**.46**	.25	.16
30.	It scares me when I feel tingling or prickling sensations in my hands.	.32	**.41**	.13	-.01
34.	When I cannot keep my mind on a task, I worry that I might be going crazy.	-.01	-.03	**.98**	-.12

33.	When I have trouble thinking clearly, I worry there is something wrong with me.	.03	.01	**.92**	-.04
35.	It scares me when I am unable to keep my mind on a task.	.02	-.04	**.87**	-.02
32.	When my thoughts seem to speed up, I worry that I might be going crazy.	.13	-.11	**.87**	-.04
31.	When I feel "spacey" or spaced out, I worry that I might be mentally ill.	-.04	.15	**.86**	-.13
36.	When my mind goes blank, I worry there is something terribly wrong with me.	.04	.06	**.85**	-.12
11.	It frightens me when my surroundings seem strange or unreal.	.17	.02	**.47**	.20
12.	It scares me when my body feels strange or different in some way.	-.09	.19	**.42**	.31
13.	It is important to me not to appear nervous.	-.01	-.00	-.17	**.80**
14.	I believe it would be awful to vomit in public.	.10	.04	-.23	**.77**
19.	It scares me when I blush in front of people.	.09	-.13	.03	**.73**
16.	I worry that other people will notice my anxiety.	.06	-.07	.18	**.72**
15.	I think it would be horrible for me to faint in public.	.20	.12	-.26	**.71**

18.	When I begin to sweat in a social situation, I fear people will think negatively of me.	-.13	.12	.24	**.66**
17.	When I tremble in the presence of others, I fear what people might think of me.	-.04	.06	.30	**.61**

The first factor analysis of *Anxiety Sensitivity Profile (ASP)* had pointed out to eight factors. Cattell's scree criterion was applied in order to determine number of non-trivial factors. The four-factor solution was estimated as the most appropriate. Afterwards, the factor analysis was repeated with an a priori set criterion. The first factor, named Neurological-dissociative Concern, explains 50.26% of variance. The remaining three factors together explain 19.22% of variance (the individual factors contribute from 2.1% to 7.2%). The second factor is named Psychological Concern, the third factor is named Respiratory and Cardiovascular Concern, and the forth factor is named Gastrointestinal Concern. The correlations between the factors range from .66 to .87, and are statistically significant on the level .01. The Pattern Matrix of ASP is presented in Table 4.

Table 4: ***ASP Pattern matrix***

		Factors			
		1	2	3	4
52.	Your face feels numb.	**. 93**	-.17	-.12	.03
43.	You have tingling sensations in your lips.	**.92**	-.06	-.02	-.01
17.	You feel numb all over.	**.86**	-.17	.06	.04
60.	You feel like things are spinning around you	**.86**	-.01	.01	-.00

	(vertigo).				
33.	You feel faint or lightheaded.	**.84**	-.06	-.04	.08
9.	You feel like you're in a fog.	**.73**	.20	-.05	-.04
29.	Familiar surroundings seem strange or unreal to you.	**.69**	.43	-.22	-.11
45.	Your throat feels tight.	**.66**	-.10	.33	.01
53.	The muscles in your face twitch.	**.64**	.11	-.12	.23
6.	You have pain in your chest.	**.62**	-.06	.43	-.10
51.	Your heart skips a beat.	**.59**	-.03	.37	-.08
5.	You have tingling sensations in your hands.	**.59**	.05	.25	-.01
42.	Your heart beats erratically.	**.59**	.03	.39	-.12
19.	You feel out of breath even though you haven't	**.58**	.05	.35	-.06
	been exerting yourself.				
30.	You feel like you're choking.	**.56**	-.16	.49	.05
59.	You feel like you can't breathe properly.	**.55**	-.03	.45	-.05
58.	Your hands are trembling.	**.49**	.36	.04	.02
34.	Your heart starts beating slower.	**.49**	-.08	.16	.17
20.	Your heart pounds in your ears.	**.48**	-.00	.45	.00
35.	You shiver even though you're not cold.	**.46**	.20	.11	.15

31.	You feel your heartbeat pulsing in your neck.	**.46**	.00	.41	.07
22.	Your body feels strange or different in some way.	**.38**	.36	-.05	.14
23.	Your face sweats even though you're not hot.	**.33**	.21	.21	.14
10.	Hot flushes sweep over you.	**.31**	.17	.22	.16
7.	Your thoughts seem jumbled.	-.08	**.92**	.18	-.20
46.	You feel "spacey" or spaced out.	-.19	**.86**	-.09	.18
25.	You can't keep your mind on the task.	-.11	**.85**	.18	-.12
44.	Your mind goes blank.	.11	**.82**	-.16	.09
56.	You have difficulty concentrating.	-.00	**.81**	.02	.06
36.	You have trouble thinking clearly.	.20	**.79**	-.01	-.08
54.	You are easily distracted.	-.07	**.79**	.04	.12
2.	Your thoughts seem slower than usual.	-.09	**.76**	.21	-.19
41.	You have trouble remembering things.	.40	**.67**	-.27	-.02
18.	Thoughts seem to race through your mind.	-.22	**.67**	.37	.01
13.	You keep getting distracted by unwanted thoughts.	.02	**.61**	.05	.10

12.	You are "jumpy" or easily startled.	-.07	**.49**	.40	.01
24.	Your voice quavers (trembles or sounds shaky).	.01	**.48**	.32	.10
57.	You have to urinate more frequently than usual.	.201	**.37**	-.06	.26
48.	Your face blushes.	-.092	**.36**	.26	.25
39.	You're awake but feel like you're in a daze.	.157	**.31**	-.02	.21
21.	You feel like something is stuck in your throat.	-.010	.05	**.69**	.18
3.	You feel like you can't take a deep breath.	.165	.09	**.66**	-.01
1.	Your heart is pounding.	.187	.14	**.64**	-.22
8.	Your heart is beating so loud that you can hear it.	.292	.11	**.63**	-.14
26.	You have difficulty swallowing.	.152	.04	**.63**	.05
14.	Your heart beats rapidly.	.027	-.03	**.60**	.00
15.	You feel like you're suffocating.	.526	-.11	**.53**	-.03
47.	You feel like you're not getting enough air.	.386	.10	**.50**	-.03
55.	Your chest feels tight.	.128	.08	**.50**	.24
37.	You feel that there's a lump in your throat.	-.148	.34	**.41**	.28
11.	You have diarrhea.	-.083	-.18	.04	**.93**

27.	Your stomach aches.	-.005	.02	.09	**.80**
40.	Your stomach is upset.	-.090	.11	.10	**.77**
32.	You are constipated.	.116	.15	-.34	**.70**
50.	You feel sick in your stomach (nausea).	.262	-.01	-.05	**.70**
38.	You feel like you're about to vomit.	.318	-.07	-.07	**.67**
28.	You have burning sensations in your chest (heartburn).	.069	-.10	.21	**.66**
4.	Your stomach is making loud noises.	-.304	.10	.36	**.60**
49.	You feel bloated (gassy).	.041	.31	-.20	**.59**
16.	You have a knot in your stomach.	.058	.04	.26	**.57**

The factor analysis of *Anxiety Sensitivity Index-3 (ASI-3)* pointed out to three factors. The first factor, named Psychological Concern, explains 45.29% of variance. The second factor, named Physical Concern, explains 9.78% of variance. The third factor, named Social Concern, explains 8.3% of variance. The correlations between factors range from .55 to .61, and are statistically significant on the level .01. The Pattern Matrix of ASI-3 is presented in Table 5.

Table 5: ***ASI-3 Pattern Matrix***

		Factors		
		1	2	3
10.	When I feel "spacey" or spaced out, I worry that I may be mentally ill.	**.91**	-.05	-.03
14.	When my thoughts seem to speed up, I worry that I might be going crazy.	**.88**	-.00	-.04
18.	When my mind goes blank, I worry there is something terribly wrong with me.	**.83**	.10	-.10
16.	When I have trouble thinking clearly, I worry that there is something wrong with me.	**.81**	.09	-.00
2.	When I cannot keep my mind on a task, I worry that I might be going crazy.	**.79**	.03	-.09
5.	It scares me when I am unable to keep my mind on a task.	**.77**	.02	.04
8.	When I feel pain in my chest, I worry that I am going to have a heart attack.	-.03	**.91**	-.05
12.	When I notice my heart skipping a beat, I worry that there is something seriously wrong with me.	.01	**.90**	-.05
3.	It scares me when my heart beats rapidly.	-.00	**.88**	-.06

7.	When my chest feels tight, I get scared that I won't be able to breathe properly.	.03	**.77**	.09
15.	When my throat feels tight, I worry that I could choke to death.	.19	**.61**	.10
4.	When my stomach is upset, I worry that I might be seriously ill.	.12	**.52**	.15
1.	It is important for me not to appear nervous.	-.28	.08	**.78**
11.	It scares me when I blush in front of people.	.11	-.25	**.78**
9.	I worry that other people will notice my anxiety.	.31	-.05	**.65**
17.	I think it would be horrible for me to faint in public.	-.13	.26	**.60**
13.	When I begin to sweat in a social situation, I fear people will think negatively of me.	.31	-.03	**.60**
6.	When I tremble in the presence of others, I fear what people might think of me.	-.11	.14	**.58**

Analysis of internal consistency of the anxiety sensitivity measures

Analysis of internal consistency shows that all questionnaires and majority of their factors have good internal consistency. For ASI $\alpha = .88$ (for factors: .87, .76); for ASI-R $\alpha = .97$ (for factors ranging from .87 to .95); for ASP $\alpha = .98$ (for factors ranging from .92 to .97), for ASI-3 $\alpha = .92$ (for factors ranging from .77 to .91).

Correlations and partial correlations of the anxiety sensitivity measures with trait anxiety and depression

Pearson correlations between questionnaires and their factors with trait anxiety and depression range from .32 to .58. Considering that the correlation between STAI-T and BDI is .68, we have also calculated the partial correlations, presented in Table 6 (only $p < .05$). Partial correlations of AS measures with trait anxiety show that all instruments, except ASP, have significant partial correlations with trait anxiety (ranging from .14 to .32). ASI-3 has the highest partial correlation with trait anxiety. Partial correlations of AS measures with depression show that all instruments have significant partial correlations with depression (ranging from .21 to .36). ASI-3 and ASI-R have the highest partial correlations with depression.

Table 6. ***Partial correlations (p< .05)***

	STAI-T	**BDI**
ASI	.19	.25
Factor 1 (Physical Concern)	.14	.21
Factor 2 (Psychological Concern)	.14	.23
ASI-R	.14	.36
Factor 1 (Physical Concern)	-	.30
Factor 2 (Physical Concern – Seriouss Ilness)	-	.33
Factor 3 (Psychological Concern)	.28	.30
Factor 4 (Social Concern)	-	.27
ASP	-	.34
Factor 1 (Neurological-dissociative Concern)	-	.32
Factor 2 (Psychological Concern)	-	.30

Factor 3 (Respiratory and Cardiovascular Concern)	-	.30
Factor 4 (Gastrointestinal Concern)	-	.26
ASI-3	.20	.36
Factor 1 (Psychological Concern)	.32	.29
Factor 2 (Physical Concern)	-	.31
Factor 3 (Social Concern)	.14	.24

Discussion

The aim of this study is to determine the factor structure and psychometric characteristics of the questionnaires measuring anxiety sensitivity, in order to determine which of them can be recommended for further research and use in the clinical context. The results mostly go in favor of the most recent questionnaire – Anxiety Sensitivity Index-3 (ASI-3), because of the factor structure that corresponds to previously determined structures and correlations with trait anxiety and depression.

First of all, it should be mentioned that the mean values of the measures of anxiety sensitivity correspond to values that we find in research conducted on non-clinical samples in other countries (Deacon et al., 2003; Jurin et al, 2011; Lim & Kim, 2013; Olatunji et al., 2005). However, mean value for Anxiety Sensitivity Index (ASI) is somewhat lower than value obtained in non-clinical sample in the previous research in Serbia (Vukosavljević-Gvozden et al, 2012).

While in the previous research of Anxiety Sensitivity Index (ASI) in the Balkans, a tri-factor structure was obtained that included Physical, Psychological, and Social Concerns (Jurin et al, 2011; Vukosavljević-Gvozden et al., 2012), in this research we obtained a two-factor structure consisting just of Physical Concern and Psychological Concern. The factor Social Concern has been merged with the factor Psychological Concern.

This result could be explained by the fact that factor Social Concern consists of too few items, so three-factor structure is unstable (e.g. Zvolensky et al., 2001). Yet, this result is in accordance with the results of Asmundson et al. (1998) as well as Cintrón et al. (2005), who also obtained a similar two-factor structure.

The factor structure of Anxiety Sensitivity Index-Revised (ASI-R) is in accordance with the result of Deacon et al. (2003), who obtained very similar factors on a non-clinical sample, only they named them differently - factor Physical Concern-Serious Illness is similar to the factor Beliefs about the Harmful Consequences of Somatic Sensations, Physical Concern is similar to the factor Fear of Somatic Sensations without Explicit Consequences, Psychological Concern is similar to the factor Fear of Cognitive Dyscontrol, and Social Concern corresponds to the factor Fear of Publicly Observable Anxiety Reactions. Four-factor structure was also obtained in the studies of Taylor and Cox (1998a) and Bernstein et al. (2006). However, the only factors which resemble those that we obtained are related to the psychological and social concerns, although they were named differently.

In the case of Anxiety Sensitivity Profile (ASP), we obtained a four-factor structure, which was also obtained in other studies (Ayvasik & Tutarel-Kislak, 2004; Olatunji et al., 2005; Taylor & Cox, 1998b). However, only two factors - Psychological Concern and Gastrointestinal Concern correspond to similar factors from the previous studies (Ayvasik & Tutarel-Kislak, 2004; Olatunji et al., 2005; Taylor & Cox, 1998b). In our study, Respiratory and Cardiovascular Concern are merged into one factor, which has not previously happened. Thus, the factor structure of ASP deviates very much from the factor structures that have been determined so far. It should be pointed out that the factor Social Concern was not found, as neither was in the previous studies, since items that represent it have been absorbed by other factors.

Finally, in the case of Anxiety Sensitivity Index-3 (ASI-3), we obtained a tri-factor structure in accordance with the research of Taylor et

al., and with pre-determined domains based on which the questionnaire was designed (Taylor et al., 2007). They are: Psychological Concern (which corresponds to Cognitive Concern), Physical Concern and Social Concern. Given that these results are obtained by other authors too (Kemper et al., 2012; Lim & Kim, 2013), it seems that this tri-factor structure is stable. Therefore, when it comes to the factor structure, it appears that the ASI-3 has an advantage over previously created measures of anxiety sensitivity.

Analysis of internal consistency shows that all instruments and the majority of their factors have good internal consistency, which is in line with the previous research (Deacon et al., 2003; Maller & Reiss, 1992; Osman et al., 2010; Van der Does et al., 2003). For Anxiety Sensitivity Index (ASI) $\alpha = .88$. All three instruments that were created with the aim of improving ASI have a value of α over .90, while their factors are of somewhat lower, but acceptable values. Anxiety Sensitivity Profile (ASP) shows the best reliability of the scale as a whole and of the factors.

Pearson correlations between anxiety sensitivity questionnaires and their factors with Trait Scale from Spielberger's State-Trait Anxiety Inventory (STAI-T) and Beck's Depression Inventory (BDI) range from low to moderate. Considering that the correlation between STAI-T and BDI is .68, we have also calculated partial correlations to get better insight into the relationship between anxiety sensitivity measures and anxiety and depression.

Partial correlations of anxiety sensitivity measures with trait anxiety show that all instruments, except Anxiety Sensitivity Profile (ASP), have significant partial correlations with trait anxiety, ranging from low to moderate. Anxiety Sensitivity Index-3 (ASI-3) has the highest partial correlation with trait anxiety which, in addition to a stable factor structure, represents another comparative advantage over other instruments. However, since some ASI-3 and ASI-R subscales do not correlate significantly with trait anxiety when depression is controlled, we can assume that STAI-T is not an entirely good measure of trait anxiety.

The inspection of items shows that these include depression and low self-esteem, besides anxiety. This problem with the STAI was pointed out by Reiss himself (1997), but nevertheless, this instrument continued to be widely used in studies of anxiety sensitivity.

When it comes to partial correlations of measures of anxiety sensitivity with depression, the results show that all questionnaires, as well as their factors, have significant partial correlations with depression that range from low to moderate. Anxiety Sensitivity Index-3 (ASI-3) and Anxiety Sensitivity Index-Revised (ASI-R) show the highest partial correlations with depression. However, while the previous studies have often emphasized correlation between the factor of Psychological Concern and depression (e.g. Cox, Borger, & Enns, 1999) as well as correlation between the factor of Physical Concern and trait anxiety (e.g. Smári et al., 2003), these correlations are not particularly distinct in this study. We suppose that the reason for that is the use of non-clinical sample in this research.

We can conclude that comparisons of Anxiety Sensitivity Index with its revised versions suggest that Anxiety Sensitivity Index-3 (ASI-3), the last questionnaire that was designed, is recommended for further use, because of the factor structure that corresponds to previously determined structures and correlations with trait anxiety and depression. Our results also suggest that Anxiety Sensitivity Profile (ASP), despite its high reliability, is the most questionable questionnaire because of the factor structure that differs from those previously obtained, as well as the lack of partial correlation with trait anxiety. However, these findings need to be verified on clinical population. In light of the observed differences in anxiety sensitivity among men and women (e.g. Stewart, Taylor, & Baker, 1997), further research is also needed to determine whether the factor structures of the measures of anxiety sensitivity are congruent between subsamples of women and men. Since the search for an adequate measure of anxiety sensitivity has not been finished yet, we hope that results of this study will stimulate further research.

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СПОРЕДБА НА РАЗЛИЧНИ МЕРКИ ЗА СЕНЗИТИВНОСТ НА АНКСИОЗНОСТ

Кратка содржина

Анксиозната сензитивност се однесува на страв од анксиозност, кој произлегува од верувањето дека анксиозноста може да има физички, психолошки и социјални последици, и кој претставува и значаен ризик фактор за развој на анксиозни растројства и друга патологија. Иако, најчесто користена мерка за анксиозна сензитивност е Индексот на анксиозната сензитивност (Anxiety Sensitivity Index, ASI), со тек на време биле конструирани и други верзии. Целта на оваа студија е да се направи компарација помеѓу Индексот на анксиозна сензитивност, ASI со три подоцнежни верзии: Индекс на анксиозна сензитивност-ревидиран (Anxiety Sensitivity Index-Revised, ASI-R), Профил на анксиозна сензитивност (Anxiety Sensitivity Profile, ASP) и Индекс на анксиозна сензитивност-3 (Anxiety Sensitivity Index-3, ASI-3). Примерокот го сочинуваа 400 возрасни испитаници од Србија (50% мажи и 50% жени) на возраст од 18 до 59 години. Критериум на вклучување на испитаниците беше отсуство на историја на психијатриски третман. Анализата на внатрешната конзистентност покажува дека сите прашалници и поголем дел од нивните фактори имаат добра внатрешна конзистентност. Главната компонентна анализа со промакс ротација на AS скоровите покажува дека само ASI-3 има трифакторска структура, што е конзистентно со резултатите од претходните студии. Во согласност со очекувањата, корелациите и парцијалните корелации на AS мерките со анксиозноста како црта и депресијата покажуваат дека инструментите имаат значајна парцијална

корелација со анксиозноста како црта и со депресијата. Највисока парцијална корелација со анксиозноста како црта има ASI-3. Можеме да заклучиме дека ASI-3 ги има најдобрите карактеристики и препораки за користење. Понатаму, останува овие наоди да бидат проверени на клиничка популација.

Клучни зборови: *мерки на анксиозна сензитивност, факторска анализа, релијабилност*