Cyberchondria and Questionable Health Practices: The Mediation Role of Conspiracy Mentality

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Cyberchondria is a pattern of repetitive search for health information online, which has adverse psychological consequences in spite of its intention to relieve anxiety. This phenomenon is particularly relevant in the current pandemic accompanied by increased levels of uncertainty and fear, which can lead to increased volume of health information search on the internet, as well as cyberchondria. The first objective of this study was to test the factor structure, reliability, and convergent validity of Serbian adaptations of the Cyberchondria Severity Scale (CSS-12) and the Short Cyberchondria Scale (SCS). The second aim was to test the direct effects of cyberchondria on pseudoscientific practices (PSP) and the use of complementary/alternative medicine (CAM) as well as its indirect effects through conspiracy mentality (CMQ). The sample included 511 participants (73.6% women) from Serbia, from the general population. The results support the adequate alpha reliabilities and four-factor structure of CSS-12 and the single-factor structure of SCS, as well as their positive correlations with health anxiety (HAQ), internet addiction (IAT), and obsessive-compulsive symptoms (OCI-R Obsessions) and a negative correlation with self-esteem (a single-item scale). Additionally, the composite cyberchondria score had both direct and indirect effects on both questionable health practices. Our results revealed conspiracy mentality as one of the possible mechanisms through which cyberchondria is related to the use of PSP/CAM. It stems from distress related to cyberchondria and leads to an increased likelihood of adopting PSPs or CAM as a tool for maintaining a sense of control in an uncertain situation.

Key words: cyberchondria, complementary/alternative medicine, pseudoscientific practices, conspiracy mentality

Cyberchondria and its Correlates

Cyberchondria is a repetitive pattern of excessive search for health-related information on the internet with the purpose of relieving distress or anxiety (Starcevic & Berle, 2013). Unlike the 'classical reassurance seeking', where an individual can actually achieve a decrease in anxiety, in cyberchondria the levels of anxiety, distress, and possibly confusion, are higher than before the online information search (Starcevic, 2017; Starcevic & Berle, 2013). In a recent review, cyberchondria was determined as a 'transdiagnostic compulsive behavioral syndrome', due to it being related to various groups of disorders such as anxiety, behavioral, and obsessive-compulsive and related disorders (Vismara et al., 2020).

There are several proposed vulnerability factors and mechanisms of the development and maintenance of cyberchondria. For example, low self-esteem could be a risk factor for various dysfunctional behaviors, including problematic use of technology such as the internet and smartphones, as well as cyberchondria. However, these dysfunctionalities could also result in decreased self-esteem (Bajcar & Babiak, 2019). Next, metacognitive beliefs (e.g., 'Worrying about an illness is likely to make it happen' or 'Dwelling on thoughts of illness is uncontrollable') or some of their dimensions seem to be related to cyberchondria (Fergus & Spada, 2017, 2018). Other mechanisms include pain catastrophizing (Gibler et al., 2019), intolerance to uncertainty (Fergus, 2013, 2015; Norr, Albanese, et al., 2015), and anxiety sensitivity (Fergus, 2015; Norr, Albanese, et al., 2015). However, not all relevant studies have found a relationship between intolerance to uncertainty and anxiety sensitivity on the one side and cyberchondria on the other (Fergus & Spada, 2017). Clinical or subclinical constructs that are most strongly related to cyberchondria are health anxiety (Baumgartner & Hartmann, 2011; Fergus & Russell, 2016; McMullan et al., 2019), obsessive-compulsive symptoms (Fergus & Russell, 2016; Norr, Oglesby, et al., 2015), and problematic internet use (PIU; Durak Batıgün et al., 2020). Yet, cyberchondria appears to be distinct enough from these closely related constructs (Fergus & Russell, 2016; Mathes et al., 2018; Starcevic et al., 2019).

Measuring Cyberchondria

There are several proposed measures of cyberchondria, with the two briefest tools being the 12-item Cyberchondria Severity Scale (CSS-12, McElroy et al., 2019) and the Short Cyberchondria Scale (SCS; Jokić-Begić, 2019). Items from the original 33-item CSS (McElroy & Shevlin, 2013) were developed based on a review of the existing literature on cyberchondria and conceptually similar constructs. They should reflect the multidimensional structure of cyberchondria, including both anxiety and excessive searching behaviors. The final solution suggested five factors: compulsion, distress, excessiveness, reassurance, and mistrust of medical professionals, with the latter showing poor validity. Therefore, the short form of CSS (CSS-12; McElroy et al., 2019) consists of only four factors.

On the other hand, the authors of the SCS believe that the original CSS is too long and perhaps contains items that are not strictly relevant to cyberchondria. Hence, they sought to develop a valid, reliable, and short scale that would capture the essential features of cyberchondria – excessiveness, reassurance seeking, and distress. After a thorough analysis, only four items that capture the negative consequences of online health information search were retained (Jokić-Begić et al., 2019). In this research, we intended to examine the psychometric properties of Ser-

bian adaptations of both brief tools and determine their similarities and differences.

Cyberchondria amid the COVID-19 Pandemic

Cyberchondria has been explored in the context of the coronavirus crisis (Farooq et al., 2020; Jokic-Begic et al., 2020; Jungmann & Witthöft, 2020; Maftei & Holman, 2020; Seyed Hashemi et al., 2020; Starcevic et al., 2020; Zheng & Tandoc, 2020). Specifically, the current pandemic is accompanied by high levels of uncertainty and fear, which could lead to a considerable increase in online health information search, as well as cyberchondria (Farooq et al., 2020). For example, it has been suggested that both PIU and cyberchondria are directly and indirectly related to the fear or anxiety related to COVID-19 (Jungmann & Witthöft, 2020; Seyed Hashemi et al., 2020). Furthermore, according to a recently proposed model, fear, uncertainty, and information overload related to the COVID-19 pandemic play a significant role in the development of cyberchondria (Starcevic et al., 2020). Compulsive online search for symptoms not only increases anxiety, but may also lead to other risks, such as choosing to self-medicate for an illness that one does not have or taking a medication or herbal remedy that may have side effects or no effect at all. Moreover, much of the health information available online is not complete. Thus, we could assume that in uncertain situations such as the COVID-19 pandemic, people with greater cyberchondria may resort to questionable health practices to prevent infection. What remains unknown is the mechanism through which cyberchondria could lead to a greater use of problematic health practices.

One of the mechanisms could be the tendency toward conspirative thinking. It has been suggested that individuals with this tendency are more likely to approve of complementary/alternative medicine (CAM) treatments and the use of pseudoscientific practices (PSP) with the aim of preventing a coronavirus infection (Lamberty & Imhoff, 2018; Pennycook et al., 2015; Pummerer et al., 2021; Teovanović et al., 2021). Furthermore, believing in conspiracy theories is a form of dealing with something uncertain and unfamiliar and it is related to the disapproval of science (Lewandowski et al., 2013; Sadeghiyeh et al., 2020). Therefore, we find it relevant to investigate the mediation role of conspiracy mentality in relations between cyberchondria and questionable health practices in the context of COVID-19, as well as in the general context.

Objectives and Hypotheses

This research had two objectives. The first was to explore the psychometric properties of Serbian adaptations of the 12-item Cyberchondria Severity Scale (CSS-12; McElroy et al., 2019) and the Short Cyberchondria Scale (SCS; Jokić-Begić et al., 2019). Therefore, we strived to examine and compare the characteristics and performance of the SCS and the short form of the CSS. More precisely, we tested the factor structure, convergent validity, and reliability of the scales. We expected acceptable fit indices of the originally proposed four-factor model of the CSS-12, a bifactor model, and the single-factor model of the SCS. We further anticipated moderate to high positive correlations with health anxiety, internet addiction, and obsessive-compulsive symptoms and a negative correlation with self-esteem.

The second objective was to explore the prediction of questionable health practices (CAM and PSP related to COVID-19) based on cyberchondria. Additionally, we tested the mediation role of conspiracy mentality in these relations. We expected that cyberchon-

dria would positively predict the use of both CAM and PSP and that these relations would be mediated by conspiracy mentality.

Method

Participants and Procedure

The sample included 511 participants (73.6% women), aged from 18 to 77 (M = 41.37, Mdn = 41, SD = 10.95). More than half of the participants (52.5%) had a college or university degree or more, 42.10% finished only high school, 2.35% finished only primary school, and 3.13% were university or college students. On a scale from 1 (*very poor*) to 5 (*excellent*), participants rated their health status as 4.03 (SD = 0.90) on average. Men were under-represented in the sample. However, the average age of the overall sample, as well as women and men separately, roughly resembled the estimated averages in the Serbian population (Statistical Office of the Republic of Serbia, 2020, 2021). Additionally, there was a higher proportion of highly educated people in the sample, compared to the Serbian population, where around 11% of people have an academic degree (Social Inclusion and Poverty Reduction Unit, 2013). In summary, the sample was convenient and not representative of the Serbian adult population. Therefore, the generalizability of the results must be taken with caution.

The study was approved by the Ethics Committee of the Department of Psychology, Faculty of Philosophy, University of Novi Sad (Code: 202102111130_SPhQ). Data were collected online, over the course of March 2021, using the *Qualtrics* platform. The link to the set of questionnaires was shared via social networks.

Measurement

The Serbian Adaptation of the Cyberchondria Severity Scale (*CSS-12*; McElroy et al., 2019, for the Serbian adaptation, see Supplement). Based on the Croatian adaptation of the CSS (Jokić-Begić et al., 2019), we selected 12 items for the CSS-12 and adapted them to the Serbian language, given the similarities between the two languages. The CSS-12 has four sub-scales: Excessiveness (repeated search for health information on the internet), Distress (the increase in anxiety, distress, and uneasiness after doing an online health information search), Reassurance (the need for seeking reassurance from health specialists as a result of distress caused by online health information search), and Compulsion (the interference of online health information search with other online or offline activities, e.g., professional and social). Participants answered on a 5-point Likert scale (from 1 = *never* to 5 = *always*). According to the authors, the best model of the scale is a bifactor model. Thus, they recommend using the total score of all 12 items.

The Serbian Adaptation of the Short Cyberchondria Scale (*SCS*; Jokić-Begić et al., 2019, for the Serbian adaptation, see Supplement). The SCS is a 4-item scale that measures general cyberchondria, covering negative reactions related to online health information search. The response format is a 5-point Likert scale (from 1 = *I totally disagree* to 5 = *I totally agree*).

The Complementary–Alternative Medicine (CAM) Questionnaire. This questionnaire was developed for the purpose of this study. It consists of five items measuring the frequency of use of various preventive and/or healing methods that could be classified as CAM (phytotherapy, bioenergetic medicine, dietotherapy, chiropractic, and acupuncture), regardless of the current COVID-19 situation. Responses are given on a 5-point Likert scale (from 1 = *never or very rarely* to 5 = *very often*).

The Pseudoscientific Practices Scale (*PSPS*; Teovanović et al., 2021). This scale measures

people's use of the most common pseudo-scientific practices as preventive measures against coronavirus infection (such as consuming large amounts of garlic, drinking water every 15 minutes, and taking colloidal silver). In this study, participants reported the use of such practices during the previous 3 months. Although the content somewhat overlaps with the CAM questionnaire, it specifically captures the use of certain unproven methods as coronavirus infection prevention measures. The response format is a 5-point Likert scale (from 1 = *never* to 5 = *very often*).

The Conspiracy Mentality Questionnaire (*CMQ*; Bruder et al., 2013, for the Serbian adaptation, see Lukić et al., 2019)*.* This 5-item questionnaire measures a generic propensity for conspiracist ideation and assesses the person's general susceptibility to explaining various events using conspiracy theories. The participants answered using a 5-point Likert scale (from 1 = *I totally disagree* to 5 = *I totally agree*).

The Internet Addiction Test (*IAT*; Widyanto & McMurran, 2004; for the Serbian adaptation, see Dukanac et al., 2016). This 20-item measure assesses problematic internet use. In this study, the total score of all 20 items was used. The response format is a 5-point Likert scale (from 1 = *almost never* to 5 = *always*).

The Obsessing Scale from the *Obsessive-Compulsive Inventory − Revised* (*OCI-R,* Foa et al., 2002, for the Serbian adaptation, see Purić et al., 2018). The scale comprises 3 items that assess difficulty in controlling intruding thoughts that cause distress. The response format is a 5-point Likert scale (from 1 = *not at all* to 5 = *extremely*).

The Health Anxiety Questionnaire (*HAQ;* Lucock & Morley, 1996, for the Serbian adaptation, see Supplement)*.* We adapted the Croatian version of the HAQ (Jokić-Begić et al., 2019) to the Serbian language. We used the total score of all 21 items to measure health anxiety. The response format is a 4-point Likert scale (from 1 = *not at all or rarely* to 4 = *most of the time*).

The Single-Item Self-Esteem Scale (*SISE;* Robins et al., 2001). We measured self-esteem using a single item ('I have high self-esteem' or 'Imam visoko samopoštovanje' in Serbian) to which participants could respond from 1 = *not very true of me* to 7 = *very true of me.*

Means, standard deviations, and alpha reliabilities of all scales are shown in Table 2. All variables had good internal consistencies, with the CAM questionnaire demonstrating the lowest, but still acceptable value. For all scales and subscales, the scores were calculated by summing the items.

Data Analysis

First, a confirmatory factor analysis (CFA) of the proposed models for the CSS-12 and the SCS was performed in the R software (R Core Team, 2021), v. 3.6.2, using the 'lavaan' package (Rosseel, 2012) in order to test their factor structure. Due to the violation of the multivariate normality assumption of CSS-12 and SCS items, an ML estimator with robust standard errors (MLR) was used. A model fit was considered acceptable with the CFI and the TLI being ≥ .90 and the RMSEA and the SRMR ≤ .08 and good with the CFI and the TLI being ≥ .95 and the RMSEA and the SRMR ≤ .05 (Hu & Bentler, 1999).

Several CSS-12 structures were tested: 1) a single-factor model, 2) a four-factor model, 3) a hierarchical model, 4) a classical bifactor model with 4 specific factors, and 5) the asymmetrical bifactor model (more specifically, the bifactor S-1 model). Since a single-level sampling process often results in data that are not suitable for the traditional bifactor model (e.g., fixed instead of random, mutually interchangeable indicators or facets, see Burns

et al., 2020), bifactor models often result in anomalous results (e.g., negative variance). Therefore, the bifactor S-1 model was proposed as an alternative. In this model, one domain (subscale or facet) is chosen as the reference domain, so the items belonging to it only load on the general factor, which would represent the common true score variance of the underlying reference domain. Thus, there is one specific factor fewer than in the traditional bifactor model. Importantly, the specific factors in this model are allowed to correlate, while the general and specific factors are orthogonal, as in the traditional bifactor model. By applying this approach, the meaning of the general factor would not change by changing the indicators and models would result in interpretable factors and a non-anomalous solution (for details, see Eid et al., 2017). The choice of the reference domain is somewhat arbitrary, and it should be based on a theory and ease of interpretation (Burns et al., 2020). In the case of the CSS-12, Compulsion was chosen as a reference factor, since it represents the interference of cyberchondria with the person's professional, social, and everyday activities and its content differs most from the content of the other three factors.

Second, correlations between the CSS-12, the SCS, and other measures were examined in order to test the convergent validity of the two scales. The profile similarity between the two scales was calculated as Cronbach and Gleser's (1953) D statistics, which are based on Euclidean distances. Therefore, lower values indicated greater profile similarity and D could be interpreted as Cohen's d (Cohen, 1992), with values .20 indicating small, .50 medium, and .80 large dissimilarities.

Third, the mediation models were run using the PROCESS macro, v.3.4.1 (Hayes, 2018) in SPSS software (IBM Corp., 2020). In both models, cyberchondria was the predictor, operationalized as a score on the first extracted principal component of both CSS-12 and SCS sum scores (see the Supplemental material), and conspiracy mentality was the mediator. In the first model, the outcome variable was PSP, while in the second model, the outcome variable was CAM use. Unstandardized coefficients (b) with 95% percentile bootstrap confidence intervals (with 5,000 bootstrap samples) were reported along with standardized (β) coefficients. Due to the high skewness and kurtosis, CAM and HAQ variables were normalized using the Rankit transformation.

Results

Factor Structure of Serbian Adaptations of the CSS-12 and the SCS

Fit indices of all tested models are presented in Table 1. The single-factor model exhibited a poor fit, while the fit of the four-factor model was good. The hierarchical model did not show an acceptable fit, but after the inspection of modification indices, it was clear that the first-order factors of Distress and Compulsion on the one hand and Reassurance and Excessiveness on the other might have to be correlated in order to improve the fit. In fact, the inter-factor correlations of Distress-Compulsion and Reassurance-Excessiveness were above .70.

The traditional bifactor model exhibited an anomalous result with a negative variance of item 9 as well as a non-significant loading of item 4 on the specific factor of Distress. It appears that this specific factor did not have a clear meaning. However, the bifactor S-1 model with Compulsion as the reference domain showed the best fit of all models, including the models where each of the other three domains served as the reference domain. The

Table 1 *The Fit Indices of the Proposed CSS-12 Models*

Model	$\chi^2(df)$	CFI	TLI	RMSEA	SRMR
Single-factor	589.829(54)	.712	.648	.160	.103
Four-factor	164.251(48)	.941	.919	.077	.052
Hierarchical	234.618(50)	.908	.878	.094	.077
Bifactor*	171.118(42)	.934	.896	.087	.068
Bifactor S-1	81.511(42)	.980	.968	.048	.027

Note. Robust fit indices were used.

* The model had a negative variance.

CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

three specific factors (Excessiveness, Distress, and Reassurance) correlated significantly and moderately (.49 - .69). We should note that item 1 from the specific factor of Excessiveness did not load significantly on the general factor.

In the case of the SCS, the CFA showed an excellent fit with caution that it could reflect an overfit ($\chi^2(2) = 1.65$, $p = .44$, CFI = 1.00, TLI = 1.00, RMSEA = 0.000, SRMR = 0.008). The CFI of 1 and the TLI of even >1 could be expected in a very simple model such as this one, where the χ^2 is not significant. Additional item statistics for CSS-12 and SCS items and detailed CFA parameters (including CSS-12 bifactor S-1 model) for both scales can be found in the Supplemental material.

Validity Correlations of Serbian Adaptations of the CSS-12 and the SCS

The CSS-12 and the SCS demonstrated similar patterns of correlation with other measures (Table 2). Unsurprisingly, both scales most strongly correlated with each other, with the correlation being moderate. The next strongest correlations of the two scales were with health anxiety, followed by internet addiction and obsessing, supporting their convergent validity. The relationship between the two cyberchondria scales and self-esteem was negative, as expected. Furthermore, high profile similarity was obtained between the two scales ($D = 0.03$).

The total CSS-12 scale, its subscales, and the SCS showed good alpha reliabilities, presented in Table 2. Additionally, omega total coefficients were: ω = .86 (total CSS-12), ω = .82 (Excessiveness and Distress), ω = .74 (Reassurance), ω = .73 (Compulsion), and ω = .84 (SCS).

Mediation Analyses

The results of mediation analyses showed a significant direct effect of cyberchondria on pseudoscientific practices related to COVID-19, $b = 1.181$, 95% CI [0.570, 1.792], with the standardized coefficient $\beta = .162$, as well as an indirect effect through conspiracy mentality ($b = 0.182$, 95% CI [0.025, 0.364], $\beta = .025$). Regarding the second model, cyberchondria had a significant direct effect on CAM: $b = 0.109$, 95% CI [0.026, 0.193], $\beta = .114$, as well as an indirect effect, although the lower level of CI was very close to zero ($b = 0.011$, 95% CI [.001, .026], $\beta = .011$). Figure 2 and Figure 3 in the Supplemental material illustrate the two mediation models.

Table 2 *Means, standard deviations, internal consistencies, and zero-order correlations*

Scale	M(SD)	α	1	2	3	4	5	6	7	8	9	10	11	12
1. Excessiveness	8.08(2.83)	.81	1											
2. Distress	6.04(2.84)	.81	.51***	1										
3. Reassurance	6.13(2.53)	.71	.56***	.47***	1									
4. Compulsion	4.25(2.17)	.72	.24***	.58***	.26***	1								
5. Cyberchondria Severity Scale	24.77(7.95)	.86	.78***	.85***	.76***	.65***	1							
6. Short Cyberchondria Scale	8.40(3.59)	.82	.44***	.69***	.38***	.49***	.66***	1						
7. PSP	23.67(7.31)	.81	.11*	.16***	.19***	.08	.18***	.17***	1					
8. CAM	10.43(3.60)	.70	.08	.09	.17***	.04	.13**	.10*	.47***	1				
9. Conspiracy mentality	18.66(3.94)	.82	.03	.09*	.03	.11*	.08	.13**	.25***	.12*	1			
10. Health anxiety	32.16(9.43)	.94	.41***	.58***	.40***	.32***	.57***	.51***	.15***	.13**	.08	1		
11. Internet addiction	37.30(11.95)	.92	.35***	.36***	.27***	.30***	.42***	.33***	.11*	.08	.08	.37***	1	
12. Obsessing	5.61(2.65)	.88	.29***	.39***	.18***	.28***	.38***	.37***	.09	.13**	.07	.52***	.36***	1
13. Self-esteem	4.83(1.73)	-	-.11*	-.13**	-.03	-.10*	-.12*	-.09*	.04	.06	.06	-.12*	-.09	-.21***

Note. M = mean; *SD* = standard deviation; PSP = Pseudoscientific practices; CAM = Complementary/ Alternative medicine; *p*-values were adjusted via the Benjamini-Hochberg method. No notable changes in significance levels occurred after the adjustment.
*p < .05; ***p* < .01; ****p* < .001.

Discussion

The first aim of this study was to explore the psychometric properties of Serbian adaptations of two brief cyberchondria measures, the CSS-12 and the SCS. First, the factor structure was explored. For the SCS, the one-factor model showed an excellent model fit and scores on all items showed good reliability. For the CSS-12, the bifactor S-1 model showed the best fit, which allowed for the use of the total score as well as the subscale scores. In previous research (McElroy et al., 2019), the traditional bifactor model showed the best model fit, but alternative bifactor models were not tested. However, the traditional bifactor model exhibited an anomalous result in our research, reflecting problems in the specific factor of Distress. Thus, the bifactor S-1 model arose as the best solution that prevents an anomalous result. Within this model, based on the domain's distinctiveness from other domains, we choose the Compulsion subscale as the reference domain. Thus, the general factor represented the level of compulsion in cyberchondria, and the remaining three specific factors were deviations of each factor's scores from the expected values, which were based on compulsion intensity. Although some authors have suggested that the bifactor S-1 model facilitates the interpretation of the results by suggesting a clear interpretation of the general factor and its relation to the s-factors (e.g., Burns et al., 2019), the model has also been criticized. For example, Willoughby (2020) raised concern about the application of bifactor S-1 models, pointing out that they cannot be used to determine the 'overall propensity' of the construct, since both the general factor and specific factors have different meanings than they have in a traditional bifactor model (Willoughby, 2020). Apart from differences between the bifactor models, the results showed

that subscales as specific factors contained substantial true score variance, independent of the general reference factor. Likewise, the general factor contained substantial true score variance, independent of specific factors. This further supports the use of both total and subscale scores on the CSS-12. As for the hierarchical model, modification indices suggest that the second-order factor could not explain a certain amount of variance shared by the first-order factor pairs (Excessiveness – Reassurance and Distress – Compulsion).

Scores on all items and the subscales of Excessiveness, Distress, Reassurance, and Compulsion showed good alpha (and omega) reliability, which is in line with previous studies (McElroy et al., 2019; Zheng et al., 2020, 2021). According to McElroy, the domains of Excessiveness and Compulsion capture excessive behavior related to cyberchondria, while Distress and Reassurance are more related to worrying and the need to be reassured about medical concerns (McElroy et al., 2019). In this study however, Distress and Compulsion showed high mutual correlations, followed by correlations between Excessiveness and Reassurance, while Compulsion showed moderate correlations with Reassurance and Excessiveness. Correlations between factors in the four-factor model in our research were much higher than correlations between the same factors in the 33-item version of the scale (McElroy et al., 2019).

Both scales showed the expected relations with convergent validity measures, which is consistent with previous findings (e.g., Jokić-Begić et al., 2019; McElroy et al., 2019). Health anxiety was the dominant correlate of cyberchondria. However, in light of previous findings (Starcevic et al., 2019), it is important to note that the correlation between them is not sufficiently high to conclude that cyberchondria is the same construct as health anxiety. As previously suggested, the affective aspect (i.e., health worry) was the only aspect of health

anxiety related to both overall cyberchondria and each of its subdomains. This is not surprising, since individuals engage in online health information search in order to alleviate worry about health (Fergus & Russell, 2016).

Furthermore, the SCS scale showed an excellent model fit and reliability, based on internal consistency. Both scales showed the expected relations with convergent validity measures, which is consistent with previous findings (e.g., Jokić-Begić et al., 2019; McElroy et al., 2019). The SCS also correlated most strongly with health anxiety. Profile similarity between the CSS-12 and the SCS showed that these scales had very similar patterns of correlation with the used validity measures and that they assessed the same construct.

Second, the results of mediation analyses showed that cyberchondria had both direct effects and indirect effects (through conspiracy mentality) on pseudoscientific practices related to COVID-19 and the use of complementary/alternative medicine treatments in general. One explanation could be that people with high cyberchondria can turn to PSP and/or CAM to lower their anxiety about the disease and regain a sense of control, especially in regard to getting infected with coronavirus. As mentioned before, in cyberchondria, searching for health information online often results in a level of distress that is higher than before the search (Starcevic & Berle, 2013). Therefore, at some point, one could turn to activities other than online searching and visiting various (conventional medicine) clinics. That is, the person could resort to unconventional and unproven prevention methods and treatments. The often contradictory and scarce information provided by official medical sources additionally intensifies the uncertainty, which is already increased in individuals prone to cyberchondria (Wu et al., 2021). This leads them to choose PSP and/or CAM as practical solutions, i.e., straightforward pro-

tective behaviors that provide a sense of control and have an 'anxiolytic' effect.

Our results revealed conspiracy mentality as one of the possible mechanisms through which cyberchondria is related to the use of PSP/CAM. In previous studies, COVID-19 conspiracy beliefs strongly correlated with pseudoscientific beliefs and the main predictor of both types of beliefs was not anxiety but a lack of control. This suggests that a lack of control can be seen as a more central factor in adopting conspiracy theories, as it may increase anxiety. Anxiety generates the need to give meaning to a threatening situation and may finally result in adopting conspiracy beliefs (Šrol et al., 2021). Therefore, it could be assumed that the distress associated with cyberchondria makes people more prone to developing a conspiracy mentality and adopting conspiracy beliefs, which are linked to more positive attitudes toward CAM (Lamberty & Imhoff, 2018) and PSP (Teovanović et al., 2020) as tools for maintaining a sense of control over an uncertain situation (see Sadeghiyeh et al., 2020).

The results may indicate a certain generalization since we demonstrated a relation between a general tendency towards conspirative thinking (not only about COVID-19) and COVID-19-related PSP. Additionally, we asked participants about their actual use of CAM, not only about their attitude towards CAM. In our sample, conspiracy mentality had the highest correlation with PSP, and the third highest with CAM. Still, we should note that the correlations of PSP and CAM with conspiracy mentality were relatively low, leaving the possibility that other factors also contribute to health-risk practices.

There are several limitations to this study. First, cyberchondria's indirect effect on CAM through conspiracy mentality was very small. Thus, one might question the actual meaningfulness of this effect. Second, it is possible that self-selection bias was present, since a convenience sam-

ple was used, with responses collected online. Third, the cross-sectional nature of the study prevents us from drawing conclusions about the causal relationships between the phenomena. Fourth, almost three quarters of the participants were women, leaving males underrepresented in the sample. Additionally, participants on average reported good physical health, leaving the possibility that they did not have an express need for searching for health-related information. Finally, compared to some previous research, the participants in our sample reported somewhat lower total scores in the CSS-12 (Wu et al., 2021; Zheng et al., 2021) and the SCS (Jokić-Begić et al., 2019).

Since the unidimensionality in the Serbian adaptation of the CSS-12 is not completely clear, future research should further examine this problem, using a more representative sample. Further, starting with the full 33-item version of the scale adapted into Serbian might give a different result. Different items from the original instrument might constitute a shorter version of the CSS in Serbian. Regarding the second part of this research, more complex models could be utilized to additionally investigate the paths through which cyberchondria might be connected to PSP/CAM, by adding other important variables such as a lack of control or coronavirus-related anxiety if the problem is examined in the COVID-19 pandemic context.

In sum, the results of our study support the reliability and convergent validity of the Serbian adaptation of both the CSS-12 and the SCS. The CSS-12 could be used as a measure of the four domains of cyberchondria and probably as the total score, but this is to be further examined in the Serbian population. The SCS scale could be used as a general cyberchondria scale, since its four items refer to the core cyberchondria features. Since both total scores showed high profile similarity, the SCS could be used when there is a need for a brief screening of the tendency toward cy-berchondria, while the four subscales of the CSS-12 could be used when there is a need to assess cyberchondria as a multidimensional construct. The results further enhance our understanding of health-risk outcomes of cyberchondria and the potential mechanism through which cyberchondria can affect health-risk behaviors. These two brief measures of cyberchondria could be of great importance for practitioners working to improve Serbian public health in the ongoing COVID-19 pandemic. This study can facilitate research of cyberchondria on the Serbian population.

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