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**“Dr. Google, what is going on with my body?”: A study on
the relationship between socioeconomic status and
cyberchondria among Taiwanese University students**

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Research Paper Outline: “Dr. Google, what is going on with my body?”: A study on the relationship between socioeconomic status and cyberchondria among Taiwanese University students

I. Introduction

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 - b. Five psychological factors of cyberchondria: excessiveness, compulsion, reassurance, mistrust of medical professionals, and distress.
2. Related constructs of cyberchondria:

- a. Topic sentence: Examining cyberchondria on a larger scale, cyberchondria can be mapped onto other psychological constructs to investigate the relationship between socioeconomic status and the related constructs.
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- i. Topic sentence: Somatic symptom disorder (SSD) has been found to have mild correlation with cyberchondria due to its central role in health anxiety, and research has demonstrated an inverse relationship between SSD and SES.
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- iv. Some studies have identified an inverse relationship between SDD and SES. These studies claim that lower educational attainment, unemployment, low income, and lower SES are predictors of SDD
- e. Other less related constructs: generalized anxiety disorder (GAD), depression, Intolerance of uncertainty
 - i. Topic sentence: Aside from the abovementioned constructs sharing close relationship with cyberchondria, the less related constructs include generalized anxiety disorder (GAD), depression, and intolerance of uncertainty (IU).
 - ii. These psychiatric disorders are characterized by either worries, anxiety, or depressed mood about the unknown bodily sensations or the possibility of getting certain diseases in the context of cyberchondria.
 - iii. Although much research has confirmed a solid relationship between GAD, depression, and SES; it does not bear much importance to take these evidences into consideration as these findings are not specific to cyberchondria. There is also a lack of research between IU and SES.
- 4. Transition: addressing current research gap
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 - ii. There is a large variance in the reported data, which contributed to the weak correlation.
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- a. Strengths:
 - i. This research was able to identify the relationship between the related constructs of cyberchondria and SES

- ii. This research developed an adapted Chinese version of CSS showing good internal consistency and reliability.

b. Limitations:

- i. This research has a relatively small sample size. Further studies with larger population size are recommended.
- ii. The data used in this research are self-reported and thus is subject to individual recall and interpretation biases. Future research could employ experiments with controlled populations or designs to avoid such bias.
- iii. This study only used CSS as the sole measurement of cyberchondria. Future research can adopt measurements other than CSS to obtain a comprehensive results and interpretation

III. Conclusion

“Dr. Google, What is Going On With My Body?” Examining the Relationship Between Socioeconomic Status and Cyberchondria Among Taiwanese University Students

Nowadays, the advancement of Internet technology has enabled a wide availability of information to the general public, including health-related information. In 2013, of the 81 percent of U.S. adults who use the Internet, 72% of them claimed to have utilized the Internet for health and disease-related information. Unsurprisingly, with the wide availability and diversity of information on the Internet, people are gradually turning to the Internet when having bodily symptoms. Such increasing availability of health information implies increased health literacy, enhanced patient engagement in healthcare, and improved disease awareness in the general public (Levy & Strombeck, 2002). Regardless of its comforting prospect, internet health information can have negative impacts on certain individuals. Counter to the demystifying role internet assumes regarding individuals' concerns about disease, some individuals may be bothered by the information they have obtained from the Internet. This phenomenon is known as "cyberchondria," a term derived from "cyber" (meaning "the Internet") and "chondria" (derived from "hypochondriasis," or anxiety regarding health).

To date, researchers have not reached a consensus regarding the definition of cyberchondria. However, studies have maintained that cyberchondria is a behavioral pattern characterized by the compulsion to search repetitively for reassurance, amplified anxiety after searches, and impairment to normal life activities. Cyberchondria also appears to be transdiagnostic, which implies that cyberchondria can be closely related to other mental illnesses or psychological constructs, such as obsessive-compulsive disorder (OCD), problematic internet use (PIU), health anxiety (HA), and so on (Vismara et al., 2020).

Cyberchondria can cause a significant amount of waste in the healthcare system. As of now, no evidence has shown the direct cost of cyberchondria. Nonetheless, experts have estimated that medically unexplained symptoms, which are primarily attributable to

cyberchondria, facilitate online health information searches and healthcare service utilization that accounts for £3 billion of economic burden and compromised productivity in 2008 in the United Kingdom (Eichenburg & Schott, 2019). Such loss is problematic and needs to be dealt with efficiently. One approach to this goal is to identify the demographic properties of this behavior. Thus, this research aims to examine the relationship between cyberchondria and socioeconomic status (SES), a measurement of social standing that accounts for individuals' educational attainment, income, and occupation (Winters-Miner et al., 2015).

Literature review

Considering the multifactorial and transdiagnostic nature of cyberchondria, it is essential to examine the factors and related constructs of cyberchondria. It consists of five psychological factors: excessiveness, compulsion, reassurance, distress, and mistrust of medical professionals. According to McElroy and Shevlin (2014), excessiveness represents the repetitive, prolonged, and often unnecessary online search for health information. Compulsion factor reflects how searching the Internet for health information can negatively impact one's regular social or work activity. Reassurance seeking factor refers to the need for assurance from a qualified person (e.g., a doctor) to ease the anxiety. The distress factor involves any negative emotional states, including anxiety, stress, and worry, of the participants during or after search. The mistrust of medical professionals implies a conflict within the participant regarding whether to trust medical professionals over their online search. However, some research suggests excluding the mistrust of medical professionals from the related factors, as it appears to be less related to cyberchondria compared to other factors (Starcevic et al., 2019; Fergus, 2014). Thus, the mistrust of medical professionals factor will not be extensively discussed in this research.

From a broader perspective, cyberchondria can be mapped onto other psychological constructs to investigate their relationship with socioeconomic status. As previously

mentioned, cyberchondria is related to OCD, PIU, and HA. This is confirmed by Starcevic and colleagues (2019), who conducted a statistical modeling analysis, delineating a strong relationship between cyberchondria on the one hand, and HA and PIU on the other. The study also found a relatively solid relationship between cyberchondria and OCD. The remaining constructs, including anxiety, depression, somatic symptom disorder, and intolerance of uncertainty, weakly correlate with cyberchondria, and thus will not be discussed in this research.

Inasmuch as the derivative relationship between HA and cyberchondria, HA is the most vital construct to be taken into consideration when discussing cyberchondria and its possible connection to socioeconomic status. Health anxiety, or known as hypochondriasis, is a related disorder of generalized anxiety disorder characterized by one's preoccupation with having a serious illness or tendency for catastrophic misinterpretation of ambiguous symptoms that amplify worries about health (Abramowitz et al., 2007; APA, 2013). By definition, health anxiety can be related to cyberchondria in terms of compulsion to conduct excessive reassurance-seeking behavior and distress about the disease (Fergus, 2014). Taking SES into consideration, most current research has been inconclusive. Of the nine reviewed full-text articles, five studies show a relationship between HA and low SES, while three studies show little to no correlation between HA and SES (Barsky et al., 2016; Hadjistavropoulos et al., 2000; Holló et al., 2010). Among the research demonstrating an inverse relationship between HA and SES, two studies assure a direct relationship between low SES and high HA (Busse et al., 1976; Jackson et al., 2006). Also, traits of low SES, including unemployment, lower educational attainment, lower salary raise, and perceived low income are predictors of higher HA (Sunderland et al., 2013; Bilani et al., 2019; Rask et al., 2011). Researchers have proposed that lack of resources to buffer against severe adverse health events, poor self-rated health conditions, and hazardous working environment among

the low SES population are possible reasons to these findings (Winnersjö et al., 2011; Polvinen et al., 2013). Interestingly, a study using healthcare professionals as targeting samples shows that higher education predicted higher HA tendency, which is attributable to the demanding and stressful nature of the work (Chen et al., 2019). However, there is only one study identifying such trend, and there is a heterogeneity in the sampled population compared to other studies. In short, cyberchondria is related to HA, which has an inverse relationship with SES, as confirmed by most research.

Aside from health anxiety, problematic internet use also plays a major role in cyberchondria and has an inverse relationship with indicators of SES. Problematic internet use is defined as one's inability to control internet usage that impairs normal daily life activities (Spada, 2014). Under the context of cyberchondria, PIU refers to compulsive and repetitive symptom checking behavior that fails to reassure individuals and results in the maintenance or exacerbation of cyberchondria (Fergus & Dolan, 2014; Rao & Skoric, 2011; Starcevic & Berle, 2013; Muse et al., 2012). The repetitive checking behavior can hinder normal cognitive reasoning, which are criteria for information overload, a subtype of PIU (Fernandez et al., 2019; Starcevic & Berle, 2013). Research has also identified a statistically robust relationship between PIU, HA, and cyberchondria by showing that individuals with baseline HA spend more time searching for health information and become less reassured after the search (Fergus & Spada, 2017; te Poel et al., 2016; Starcevic et al., 2019). Henceforth, PIU and cyberchondria are related in terms of reassurance, compulsion, and distress (McElroy & Shevlin, 2014). The relationship between PIU and SES is rarely discussed in existing literature, especially in the context of cyberchondria. However, Doherty-Torstrick and colleagues (2016) contend that people with higher health-related internet use received less health education and also overall education attainment, which makes it possible that such individuals do not critically reflect on the authority and credibility

of the source. This leads to information overload, a subtype of PIU. Ultimately, information overload gives rise to functional impairments regarding one's family, social activities, and work (Doherty-Torstrick et al., 2016). As can be seen, PIU is related to cyberchondria and indicators of lower SES.

Additionally, the compulsive reassurance-seeking behavior present in cyberchondria overlaps with and falls within the spectrum of obsessive-compulsive disorders. Obsessive-compulsive disorder (OCD) is a psychiatric disorder characterized by obsessive and compulsive behaviors. Obsessions refer to intrusive, recurrent thoughts that induce anxiety or distress. Compulsions are repetitive physical behaviors or mental acts that individuals are driven to neutralize the obsession (APA, 2013). According to Abramowitz and colleagues (2009), OCD is a heterogeneous condition with five major dimensions. However, cyberchondria only shares unique relationships with contamination-washing and harm-checking symptoms. Norr and colleagues (2015) contend that searching for health information in the context of cyberchondria is a manifestation of washing behavior in response to contamination, which is the persistent belief of having serious illnesses. Similarly, harm/checking symptoms is a preventative behavior with the goal of reducing the possibility of developing further illnesses. Thus, cyberchondria has a unique and strong relationship with the compulsion, distress, and excessiveness dimension. The reassurance factor shared a mediocre correlation with cyberchondria since it appears less related to the emotional distress factor in OCD and the contamination/washing symptoms (Norr et al., 2015). The link between OCD and SES, according to the ten reviewed studies in this research, is inconsistent. Three studies show a relationship between generalized lower SES and higher OCD occurrence (Voltas et al., 2013; Heyman et al., 2001; Valleni-Basile et al., 1995). Four other studies identify a relationship between low SES indicators and a higher incidence of OCD. It has been observed that unemployment or disengagement in the

workforce is a predictor of OCD occurrence (Steward et al., 2011; Lihua et al., 2014). Lower educational attainment also predicts higher OCD occurrence, but this was not in concordance with the research conducted by Lihua and colleagues, who identified higher educational attainment and higher OCD (Williams et al., 2017; Lihua et al., 2014). Lower income is also associated with higher OCD prevalence (Osland et al., 2018; Lihua et al., 2014). Three studies showed higher generalized SES correlated with higher OCD prevalence or no correlation at all. However, this finding was not explained in the study (Hanna, 1995; Thomsen, 1994; Alvarenga et al., 2015). In brief, OCD shares a unique relationship with cyberchondria, and the inverse relationship between OCD and SES has been confirmed by most studies reviewed in this research.

Methodology

Evidently, cyberchondria is a behavioral pattern that has overlapping traits with multiple psychological constructs that further links inversely with socioeconomic status. This brings forward a research question: given that the related constructs of cyberchondria have mostly inverse relationship with socioeconomic status, is it the same for cyberchondria? This question represents a research gap that needs to be addressed. To fill this gap, this research provides the first primary examination of the relationship between SES and cyberchondria. Taiwanese university students are the targeted population in this study, as they have the highest internet utilization rate and are less likely to be suffering from major medical illnesses. It is hypothesized that there is an inverse relationship between cyberchondria severity and SES.

To investigate the relationship between cyberchondria and SES, the Kuppuswamy socioeconomic status scale and the Cyberchondria Severity Scale (CSS) are used in this study. Kuppuswamy socioeconomic scale is used to measure the respondent's socioeconomic placement by three criteria: education attainment, occupation of the head of the family, and

family monthly income. The scale divides respondents into five socioeconomic placements: Upper, Upper middle, Lower middle, Upper lower, and Lower (Wani, 2019). Although some have doubted the legitimacy of sampling college student's socioeconomic placements, research has shown that SES is inheritable intergenerationally via individuals' growing environment and genetic inheritance. Also, research has shown that socioeconomic status inversely correlated with children's susceptibility for both psychiatric disorders and physical illnesses (Vukojević et al., 2017; Bowles & Gintis, 2001). Thus, socioeconomic status plays an important role in the next generation's overall development, and surveying college students' SES is justified in this research.

CSS is a self-reported 33-item scale with exceptional psychometric properties measuring five factors of cyberchondria: excessiveness, distress, compulsion, reassurance, and mistrust of medical professionals. In this research, the original CSS is adapted into a 17-item CSS scale based on the CSS-15 scale devised by Barke and colleagues (2016). Some questions are added to improve the applicability of the questions to the targeted population. In addition, items with the highest factor loading across three studies were included in the adapted scale (Barke et al., 2016; McElroy & Shevlin, 2014; Selvi et al., 2018). The mistrust of medical professionals in CSS-15 was removed, as research has indicated a relatively weak relationship between the mistrust factor and cyberchondria. The scale was translated into Traditional Chinese. The adapted scale shows excellent internal consistency (Cronbach's $\alpha = .93$) and split-half reliability ($= .92$). A complete copy of the questionnaire and side-note specifying reasons for addition/deletion is presented in Appendix A. A descriptive statistical analysis of the scale is presented in Appendix B.

The survey is designed and administered using Google forms. Participants are verified of legitimacy to be included in the study. Basic demographic and socioeconomic data is then obtained. Afterward, individuals with no experience of searching online for health

information are excluded and score 0 automatically on CSS, while individuals who search the Internet for health information are asked to complete the CSS. Data cleaning, descriptive statistics, and correlation analysis are completed using Microsoft Excel and R v3.6.1.

Results

This study obtained responses from 175 respondents. 6 respondents were excluded from the study as they do not fit the inclusion criteria. The remaining participants consist of 48 males (28.4%), 119 females (70.4%), and two unspecified/choose not to reveal (1.2%). Of the remaining 169 respondents, 156 respondents (92.3%) reported having experience with searching health information online, while 13 (7.7%) does not. The basic demographic and socioeconomic information of the study population can be found in appendix C. Generally, there is a slight discrepancy in the overall SES placement between the group that searches the Internet for health-related information ($M = 15.62$) and the group that does not ($M = 18.46$). The means for the factors of SES varies by 1.2 points for the income factor, 1 point for the occupation factor, and 0.65 points for the education factor.

After excluding the group that does not search the Internet for health-related information, the proposed hypothesis is rejected. There is an overall very weak positive correlation between SES and cyberchondria severity ($r(154) = .03$, $p = .70$). That is, the higher the SES, the higher the cyberchondria severity. Similarly, no robust relationship has been found between factors of SES and total CSS score. A correlation plot between general SES score and CSS score can be seen in Appendix D.

A breakdown analysis is also performed to investigate the relatively prominent relationship between factors of SES and cyberchondria. The excessiveness and reassurance factor positively correlated with overall SES placement ($r(154) = .12$, $p = .13$ and $r(154) = .11$, $p = .16$, respectively). Other relatively prominent correlation has been found between excessiveness and parental education ($r(154) = .08$, $p = .31$), occupation ($r(154) = .07$, p

= .40) and family monthly income ($r(154) = .13, p = .10$). A relatively strong relationship between reassurance factor and parental occupation ($r(154) = .11, p = .17$) and family income ($r(154) = .09, p = .26$) has also been identified. A correlation plot between subfactors of CSS and SES can be found in appendix E.

Discussion

First of all, this study finds that higher SES placement can be observed in the group that does not search for health information. This is inconsistent with the findings from existing scientific literature, which suggests that people with higher SES perform more search than those having lower SES due to better health literacy and access to the Internet (Duta & Bodie, 2008). The disparity in the finding and the literature can be most likely explained by the internet coverage rate and general health education in Taiwan. In 2019, the estimated internet penetration rate was 92.6%, which suggests that most people in Taiwan have access to internet resources ("Asia Internet Stats", 2020). In addition, the Ministry of Education in Taiwan mandated that "Health Education" should be a part of the Twelve-year basic education curriculum in Taiwan to increase general health literacy among the students (Liu et al., 2013). Given the improved health literacy, inexpensive and convenient online health information, it is possible that people in the lower SES placement are gradually going online for health information rather than utilizing healthcare infrastructures, resulting in the trend identified in this study.

For those who use the Internet for health information, however, higher SES may be an indicator of higher cyberchondria severity, as identified in this study. This is in concordance with the study done by Shameem and Praveen (2020), who identify that indicators of high SES, including higher internet usage, higher SES placement, and 24*7 internet access, positively correlated with the development of cyberchondria. Thus, from a holistic viewpoint, it is possible that higher internet usage leads to increased severity of cyberchondria.

Specifically, this study identifies that all SES indicators, especially income, have solid positive relationships with the excessiveness factor. This could be attributed to the convenient and enjoyable web browsing experience enabled by better computational or mobile devices among the higher SES population. The ease of access to the Internet possibly increases the time people with health concerns spend on the Internet searching for health information, which explains higher scores on the excessiveness factor observed in the higher SES population in this study. Furthermore, higher health-related internet usage in individuals concerned about their health exacerbates OCD, HA, and PIU. Research has shown that engaging in information seeking safety behavior can elicit information overload, further worries about health, and contamination ideation in OCD, which are indicators of higher cyberchondria severity (Norr et al., 2015). Thus, it is possible that people in the higher SES have more severe cyberchondria in terms of excessive searching behavior.

A similar trend has also been identified for the reassurance factor, where higher SES population score higher on the reassurance factor. This is consistent with some existing literature, pointing out that higher SES populations have a higher tendency to utilize healthcare infrastructure (Gornick, 2002). Interestingly, studies have also identified that healthcare infrastructures are more accessible to those in the higher SES placement in terms of waiting time and choice of service (Moscelli et al., 2018). In short, it is discernible that better access to healthcare services is a possible reason for higher scores on reassurance factor in the high SES population.

Examining the external factor that possibly leads to this finding, the COVID-19 pandemic can have a significant impact on the populational dynamic of internet searching behavior, especially when SES is taken into consideration. The COVID-19 pandemic has caused numerous negative impacts on the world economy. A widespread job loss in Taiwan was reported, especially those with lower occupational rankings (DGBAS, 2020). During the

pandemic, the lower SES population may have decreased income, which leads to job insecurity and unsustainable internet access. Furthermore, it is possible that lower SES population would prioritize other activities to sustain normal living over internet search, while higher SES populations have less related worries. A viable explanation is that individuals pursuing occupations with higher job security, which is an indicator of higher occupational ranking, income, and thus SES placement, are less likely to suffer from temporary furloughs, payment cuts/layoffs, or job losses (Lund et al., 2020). Reports also show that work from home options are more reserved for jobs with higher pays (U.S. Bureau of Labor Statistics, 2019). The enhanced income stability provides sustainable internet access and thus increases the chance of internet searches for health purposes, and ultimately elevates cyberchondria severity.

The limits of this study need to be addressed. First, this study uses college students in a community sample, and the design of the study is not controlled. Thus, recall bias and subjective interpretation of the scale may possibly interfere with the accuracy of the results. Therefore, a controlled study in a clinical sample is needed. Also, this study has a small sample size. Further research with larger sample size and different targeted population is also required. Last but not least, this study is done during the COVID-19 pandemic, which alters the original demographic dynamics of internet health searches. Thus, future study is recommended after the pandemic to identify the accurate demographic properties of cyberchondria.

Conclusion

In conclusion, although most current research has identified an inverse link between constructs of cyberchondria and SES, the experiment conducted in this study rejected this claim. That is, there is a minimal positive relationship between cyberchondria and SES among the university students recruited in this study. This may be attributable to better

internet and healthcare infrastructure access, fueling cyberchondria severity. Future study in a clinical sample with a larger sample size, controlled design is recommended. Cyberchondria is a problem that may potentially waste healthcare resources. Thus, it is urgent to deal with this problem by identifying the demographic and psychological precursors leading to the problem to formulate a valid coping mechanism.

Appendix A

A Complete Copy of Survey with Side Notes

No.	Question	Notes
Section 1: Sociodemographic information and socioeconomic placement		
SD1	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Prefer not to specify	
SES1	Educational attainment of the head of the family: <input type="checkbox"/> Professional degree (Masters and above) <input type="checkbox"/> Graduate <input type="checkbox"/> University degree <input type="checkbox"/> Senior high school certificate <input type="checkbox"/> Junior high school certificate <input type="checkbox"/> Elementary school/Primary school certificate <input type="checkbox"/> Illiterate	Adjusted according to the 2016 National Survey of Family Growth administered by Health Promotion Administration, Ministry of Health and Welfare
SES2	Occupation of the head of the family: <input type="checkbox"/> Legislator, administration supervisor, employer, and professionals (such as teachers, researcher, medical workers, legal professionals, professional art or cultural worker, computer engineers, building engineers) <input type="checkbox"/> Semi-professional, assistive professional workers (such as teaching assistant, research assistant, social worker, consultant, and other semi-professionals) <input type="checkbox"/> Clerical workers (such as accounting, secretary) <input type="checkbox"/> Skilled worker (such as chef, construction workers, metal workers, military personnel, customer representatives) <input type="checkbox"/> Semi-skilled workers (Waiters, security, salesperson, machine operator, drivers) <input type="checkbox"/> Unskilled workers (such as clerk, janitor, manual labor, farmer, forestry worker, fisher, and animal husbandry) <input type="checkbox"/> Unemployed	Adjusted by localized occupational reputation in Taiwan proposed by Hung (14)
SES3	Family monthly income <input type="checkbox"/> <30,000 NTD <input type="checkbox"/> 30,000 – 50,000 NTD <input type="checkbox"/> 50,000 – 70,000 NTD <input type="checkbox"/> 70,000 – 100,000 NTD <input type="checkbox"/> 100,000 – 150,000 NTD <input type="checkbox"/> 150,000 – 200,000 NTD <input type="checkbox"/> >200,000 NTD	Adjusted according to the 2016 National Survey of Family Growth administered by Health Promotion Administration, Ministry of Health and Welfare
Section 2: Experience of searching the Internet for health information		
1	Have you ever searched online for information related to a disease or perceived medical symptoms? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Section 3: Adapted Cyberchondria Severity Scale (Respond based on 5-point Likert scale)

CSS1	If I notice an unexplained bodily sensation I will search for it on the Internet	
CSS2	I enter the same symptoms into a web search on more than one occasion	
CSS3	Researching symptoms or perceived medical conditions online interrupts my time spent on Facebook/Twitter/other social networks	Added according to college students' internet activity (Chen, 2015)
CSS4	I have trouble relaxing after researching symptoms or perceived medical conditions online	Added due to high factor loading
CSS5	Researching symptoms or perceived medical conditions online interrupts other research (e.g. for my job/college assignment/homework)	
CSS6	Researching symptoms or perceived medical conditions online interrupts my online leisure activities (e.g. streaming movies)	
CSS7	I start to panic when I read online that a symptom I have is found in a rare/serious condition	
CSS8	Researching symptoms or perceived medical conditions online interrupts my work (e.g. writing emails, working on word documents or spreadsheets)	
CSS9	I discuss my online medical findings with my GP/health professional	
CSS10	Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online	Added due to high factor loading
CSS11	I feel more anxious or distressed after researching symptoms or perceived medical conditions online	
CSS12	Researching symptoms or perceived medical conditions online interrupts or slows my online communication (e.g. Instant Messaging, Skype)	Added according to college students; internet activity (Chen, 2015)
CSS13	Researching symptoms or perceived medical conditions online leads me to consult with other medical specialists (e.g. consultants)	
CSS14	Discussing online info about a perceived medical condition with my GP reassures me	
CSS15	I find it hard stop worrying about symptoms or perceived medical conditions that I have researched online	Added due to high factor loading
CSS16	When researching symptoms or medical conditions online I visit both trustworthy websites and user-driven forums	
CSS17	I have trouble getting to sleep after researching symptoms or perceived medical conditions online, as the findings play on my mind	

Appendix B

Descriptive statistical analysis of the adapted CSS scale

Table 1

Validity and reliability statistical analysis of the adapted CSS scale

Item	n	M	SD	Reliability if item is removed	Item-whole correlation	Frequency of each response				
						1	2	3	4	5
CSS_1	156	4.23	0.73	0.93	0.50	0.01	0.02	0.08	0.52	0.37
CSS_2	156	3.83	1.02	0.92	0.59	0.02	0.10	0.19	0.40	0.28
CSS_3	156	3.44	1.18	0.92	0.68	0.06	0.17	0.24	0.32	0.21
CSS_4	156	3.38	1.13	0.92	0.77	0.04	0.21	0.29	0.26	0.20
CSS_5	156	2.96	1.23	0.92	0.80	0.13	0.27	0.24	0.24	0.12
CSS_6	156	2.99	1.24	0.92	0.76	0.13	0.24	0.23	0.28	0.12
CSS_7	156	3.79	1.21	0.92	0.68	0.07	0.11	0.10	0.40	0.32
CSS_8	156	3	1.2	0.92	0.79	0.13	0.21	0.29	0.27	0.10
CSS_9	156	3.12	1.32	0.93	0.60	0.15	0.18	0.23	0.26	0.17
CSS_10	156	2.96	1.13	0.92	0.82	0.10	0.26	0.29	0.26	0.08
CSS_11	156	3.34	1.12	0.92	0.77	0.08	0.15	0.26	0.38	0.13
CSS_12	156	2.83	1.16	0.92	0.75	0.13	0.28	0.29	0.20	0.09
CSS_13	156	3.5	1.2	0.93	0.49	0.08	0.13	0.19	0.39	0.21
CSS_14	156	3.74	1.09	0.92	0.60	0.06	0.04	0.27	0.35	0.28
CSS_15	156	3.61	1.06	0.92	0.75	0.04	0.10	0.29	0.35	0.22
CSS_16	156	4.12	0.78	0.93	0.47	0.01	0.01	0.13	0.53	0.31
CSS_17	156	2.76	1.25	0.92	0.68	0.19	0.26	0.28	0.17	0.11

Table 2

Inter-construct correlation, descriptive statistics, and Cronbach's alpha

	n	M	SD	1	2	3	4
Compulsion	156	18.17	6.15	-			
Distress	156	16.88	4.7	0.71	-		
Excessiveness	156	12.17	2.01	0.47	0.54	-	
Reassurance	156	10.37	3.15	0.37	0.47	0.39	-

Cronbach's alpha = 0.93

Split-half reliability = 0.92

Appendix C

Descriptive statistical analysis of the study population

Table 1

SES and CSS score of the two groups

	Search online for health information (n=156, 92.3%)		Does not search online for health information (n=13, 7.7%)	
	Mean	SD	Mean	SD
SES score	15.62	5.92	18.46	6.50
SES income	4.57	3.04	6	3.47
SES occupation	5.69	3.19	6.69	3.45
SES education	5.35	1.19	5.77	0.91
CSS score	57.59	13.03	-	-
CSS reassurance	10.37	3.15	-	-
CSS excessiveness	12.17	2.01	-	-
CSS compulsion	18.17	6.15	-	-
CSS distress	16.89	4.7	-	-

Table 2

Gender distribution of the two groups

	Search online for health information (n=156, 92.3%)		Does not search online for health information (n=13, 7.7%)	
	N	%	N	%
Gender (Female)	113	72%	6	54%
Gender (Male)	41	26%	7	46%
Gender (Did not specify)	2	2%	-	-

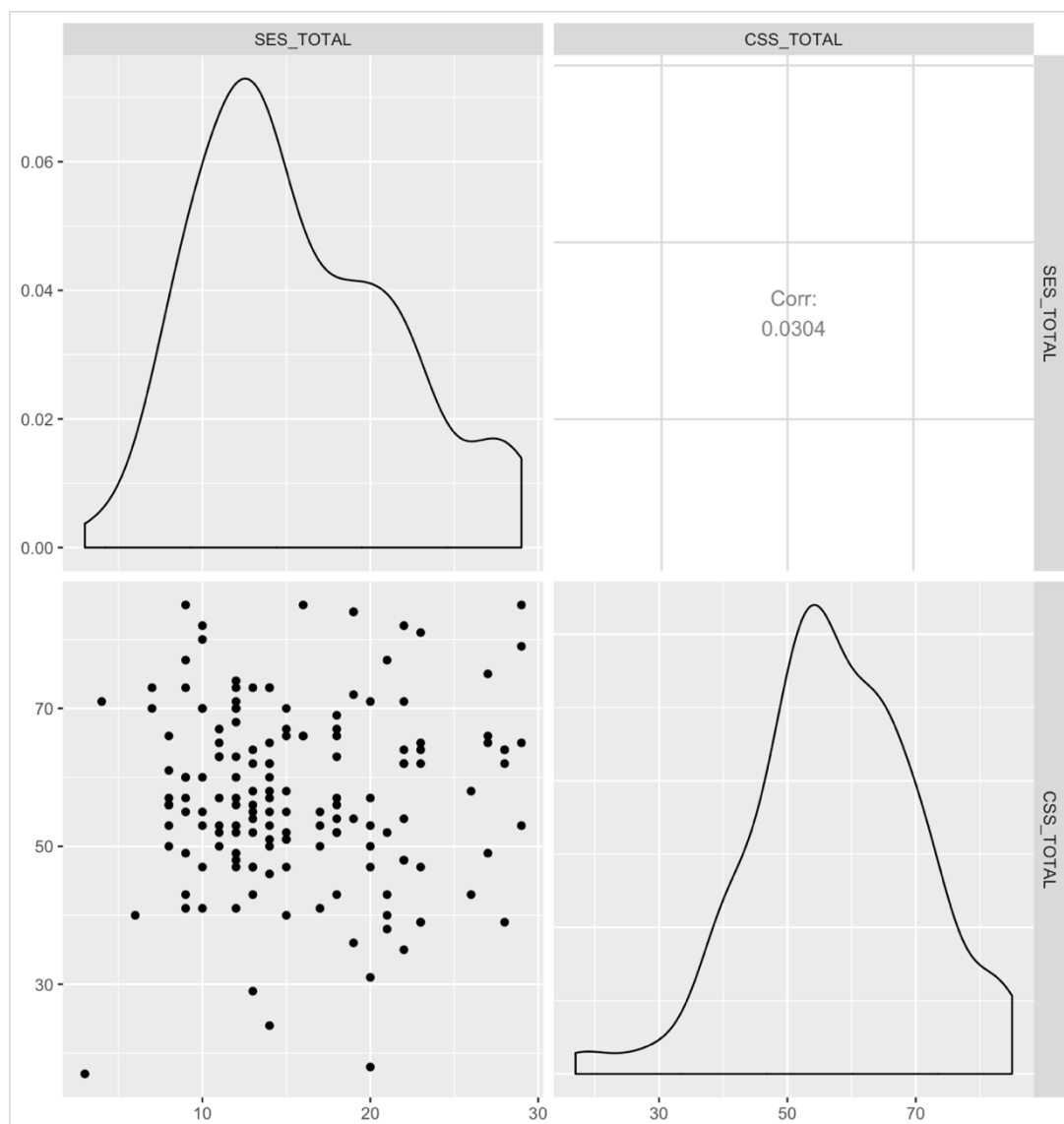
Table 3

SES distribution of the two groups

	Search online for health information (n=156, 92.3%)		Does not search online for health information (n=13, 7.7%)	
	N	%	N	%
Upper	14	9	2	15.4
Upper middle	60	32	6	46.2
Middle	50	39	2	15.4
Lower middle	30	19	3	23
Lower	2	1	0	0

Appendix D:

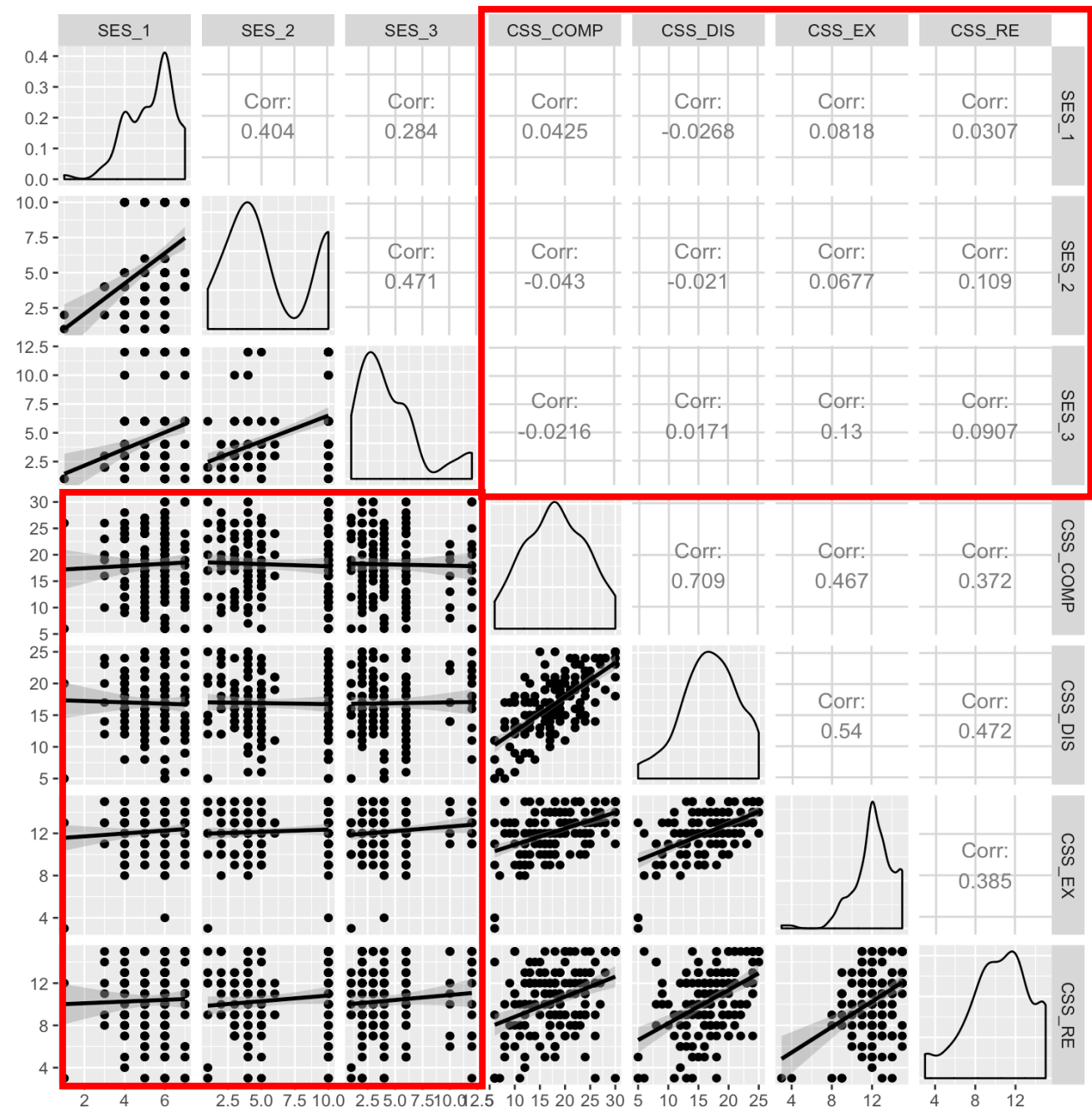
Relationship between general SES score and CSS score



The lower diagonal shows a correlation plot of total CSS score and SES score. The diagonal shows the distribution of population for specific answers, and the upper diagonal shows the correlation coefficient of the two measured variables.

Appendix E

Correlation plot of the relationship between factors of SES and cyberchondria



SES_1, SES_2, SES_3 denotes the educational attainment of the head of the family, occupation of the head of the family and the monthly income of the family. CSS_COMP denotes the compulsion factor. CSS_DIS denotes the distress factor. CSS_EX denotes the excessiveness factor. CSS_RE denotes reassurance factor. The lower diagonal is the correlation between measured factors of cyberchondria and SES. The diagonal shows

distribution of population of each result. The upper diagonal shows the correlation coefficient of the measured factors in socioeconomic scale and CSS.

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