Working-aged population’s mental symptoms and the use of the Internet

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Abstract

The aim was to study how the working-age population’s mental symptoms had a relation to the use of the Internet. In addition, the aim was to analyze how the mental symptoms had a relation to background information. The study was carried out as a cross-sectional study by posting a questionnaire to 15,000 working-age (18-65) Finns. Mental symptoms of responses (6121) were analysed using the model factors age, gender and use of the Internet. Only 0.06% mentioned that they were somehow addicted to the Internet. Based on statistical analyses, age and marital status had an influence on many mental symptoms. The use of the Internet at leisure had an influence on substance addiction and fear situations. The importance of the Internet only had an influence on the fear situations. In the future it will be essential to take into account that the use of the internet can affect mental symptoms.

Introduction

When the use of the Internet increases, the potential for problematic use of the Internet also increases. It has been suggested that problematic use may lead to significant physical, social, professional, and mental problems including depression, anxiety, repetitive stress injuries, financial difficulties, declining grades and professional performance, social withdrawal, disturbed sleep patterns, and declined health status.5,6 According to Widyanto’s and Griffiths’ review article9 the empirical research into internet addiction can be roughly divided into five areas: a) survey studies that compare excessive Internet users with non-excessive users, b) survey studies that have examined vulnerable groups of excessive Internet use, most notably students, c) studies that examine the psychometric properties of excessive Internet use, d) case studies of excessive Internet users and treatment case studies, and e) correlational studies examining the relationship of excessive Internet use with other behaviour (e.g., psychiatric problems, depression, self-esteem, etc.). Widyanto and Griffiths9 concluded, that if internet addiction does indeed exist, it affects a relatively small percentage of the online population. In addition, what it is on the Internet that they are addicted to still remain unclear.8

Internet addiction is currently not included as a diagnosis in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV)9 However, according to Block (2008),10 internet addiction appears to be a common disorder that would merit inclusion in DSM-V. Based on Block’s article10 the diagnosis internet addiction is a compulsive-impulsive spectrum disorder that involves online and/or offline computer usage11,12 and consists of at least three subtypes: excessive gaming, sexual preoccupations, and email/text messaging.13 Different subtypes can share the following components: excessive use, withdrawal, tolerance, and negative repercussions.13,14

According to earlier studies15-18 the 12-month prevalence of depressive and anxiety disorders in the general populations varies between 4% and 11%, and 4% and 19%, respectively. In the Finnish Health 2000 Study depressive, alcohol use and anxiety disorders were found in 6.5%, 4.5% and 4.1% of the subjects, respectively.16 Men had alcohol use disorders 7.3% and women 1.4%. Women had depressive disorders 8.3% and men 4.6%. Sex, age, marital, and employment status are distributed unevenly for mental disorders and their comorbidities. The study showed no association between educational level and mental disorders. According to Pirkola et al.16 there appears to be no single population subgroup at high risk for all mental disorders, but rather several different subgroups at risk for particular disorders or comorbidity patterns.

The main aim of our work was to study how the working-age population’s mental symptoms had a relation to the use of the Internet with answers from a questionnaire, which included questions about the possible influence of new technical equipment on the ergonomic health aspects, mental symptoms and accidents. In addition, the aim was to analyze how the mental symptoms had a relation to background information such as age, gender, and marital status.

Materials and Methods

Study population and questionnaire

The questionnaire was posted to 15,000 Finns (working ages, 18-65) in October 2002. Names and addresses were obtained as a random sample from the Finnish population according to Griffiths’s review article8 the empirical research into internet addiction can be roughly divided into five areas: a) survey studies that compare excessive Internet users with non-excessive users, b) survey studies that have examined vulnerable groups of excessive Internet use, most notably students, c) studies that examine the psychometric properties of excessive Internet use, d) case studies of excessive Internet users and treatment case studies, and e) correlational studies examining the relationship of excessive Internet use

Statistical analysis

The statistical analyses were done using the SPSS software, and consisted of General Linear Models with the symptoms assigned as
Results

Background information

During the winter 2002-2003 a total of 6121 responses arrived (41%). The mean age ± standard deviation (SD) was 41.3±13.1 years. There were 3496 women and 2625 men. Respondents were relatively well distributed around Finland, so it can be assumed that they correspond to the entire working-age population. At the time of questionnaire 71% of the respondents were employed.

A summary of background information is shown in Table 1. Table 1 also includes answers to questions: b) How often do you use the following equipment or services for leisure? (desktop computer, Internet, electric commerce, portable computer or mini-computer), and 16) Have you suffered a) sleeping disorders/disturbances, b) depression, c) exhaustion at work, d) substance addiction, e) anxiety or f) fear situations during the last 12 months? According the question Q8 (Table 1) 4496 respondents (74.0%) used internet at leisure. In addition 77.3% of women at work, 69.3% of women outside working life, 79.0% of men at work and 57.4% of men outside working life used internet at leisure. For 67.1% of all respondents the internet was importance service and to 26.4% of all respondents the electric commerce was importance (Table 1, question Q9).

From all respondents 3581 (59.0%) of persons had sometimes or more suffered sleeping disorders/disturbances, 2618 (43.3%) had sometimes or more suffered depression, 3767 (62.5%) had sometimes or more suffered exhaustion at work, 582 (9.6%) had sometimes or more suffered substance addiction, 2079 (34.4%) had sometimes or more suffered anxiety and 965 (16.0%) had sometimes or more suffered fear situations during the last 12 months. From the women’s respondents 126 (5.4%) of women at work and 59 (6.0%) of women outside working life had sometimes or more suffered substance addiction. From the men’s respondents 266 (13.9%) of men at work and 113 (19.0%) of men outside working life had sometimes or more suffered substance addiction.

Result from statistical analyses

Table 2 shows the results of statistical analyses for the question #16) Have you suffered a) sleeping disorders/disturbances, b) depression, c) exhaustion at work, d) substance addiction, e) anxiety or f) fear situations during the last 12 months? The significance is shown P<0.05 (**=significant). In all data, age and marital status had an influence on the sleeping disorders/disturbances, depression, substance addiction and anxiety; the use of Internet at leisure (Q8c) had also an influence on the substance addiction; age, gender, marital status, the use of Internet at leisure and importance of Internet (Q9c) had an influence on the fear situations. In addition, some influence can also be seen together with two-way interactions in Table 2.

Other observations concerning mental health and new technology

In total 1300 respondents (about 21%) answered the open-ended question other observations concerning technology and health. There was estimated to be 2368 comments (possibly responses to more than one aspect). On mental loading people have commented with 790 opinions concerning some quite different themes. The answers included comments on following topics: mental loading at leisure and mental symptoms of all persons, women/men at work, women/men outside working life.

Table 1. A summary of background information and the use of the technical devices at leisure, importance of devices or services at leisure and mental symptoms of all persons, women/men at work, women/men outside working life.

<table>
<thead>
<tr>
<th>Topics of questions and choices</th>
<th>All</th>
<th>%</th>
<th>Women at work</th>
<th>%</th>
<th>Women outside working life</th>
<th>%</th>
<th>Men at work</th>
<th>%</th>
<th>Men outside working life</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 Marital status</td>
<td>1343</td>
<td>22.0</td>
<td>432</td>
<td>17.9</td>
<td>302</td>
<td>30.6</td>
<td>335</td>
<td>17.2</td>
<td>244</td>
<td>40.2</td>
</tr>
<tr>
<td>Single</td>
<td>4219</td>
<td>69.0</td>
<td>1715</td>
<td>71.2</td>
<td>582</td>
<td>59.0</td>
<td>1488</td>
<td>77.0</td>
<td>312</td>
<td>51.4</td>
</tr>
<tr>
<td>Married or live-in</td>
<td>449</td>
<td>7.3</td>
<td>223</td>
<td>9.5</td>
<td>65</td>
<td>6.6</td>
<td>105</td>
<td>5.4</td>
<td>42</td>
<td>6.9</td>
</tr>
<tr>
<td>Divorced</td>
<td>101</td>
<td>1.7</td>
<td>39</td>
<td>1.6</td>
<td>37</td>
<td>3.8</td>
<td>8</td>
<td>0.4</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>Widower or widow</td>
<td>1343</td>
<td>22.0</td>
<td>432</td>
<td>17.9</td>
<td>302</td>
<td>30.6</td>
<td>335</td>
<td>17.2</td>
<td>244</td>
<td>40.2</td>
</tr>
<tr>
<td>Q8 Use at leisure</td>
<td>4665</td>
<td>77.0</td>
<td>1901</td>
<td>79.3</td>
<td>704</td>
<td>72.3</td>
<td>1597</td>
<td>82.2</td>
<td>369</td>
<td>61.9</td>
</tr>
<tr>
<td>b) use of desktop computer</td>
<td>4117</td>
<td>67.1</td>
<td>1656</td>
<td>66.8</td>
<td>646</td>
<td>66.5</td>
<td>1398</td>
<td>71.9</td>
<td>341</td>
<td>57.0</td>
</tr>
<tr>
<td>c) use of internet</td>
<td>4071</td>
<td>67.1</td>
<td>1656</td>
<td>66.8</td>
<td>646</td>
<td>66.5</td>
<td>1373</td>
<td>70.6</td>
<td>326</td>
<td>54.5</td>
</tr>
<tr>
<td>d) use of electric commerce</td>
<td>1556</td>
<td>25.8</td>
<td>589</td>
<td>24.5</td>
<td>222</td>
<td>22.8</td>
<td>588</td>
<td>30.4</td>
<td>129</td>
<td>21.6</td>
</tr>
<tr>
<td>e) use of portable computer or mini-computer</td>
<td>1377</td>
<td>22.8</td>
<td>490</td>
<td>20.4</td>
<td>140</td>
<td>14.5</td>
<td>608</td>
<td>33.6</td>
<td>107</td>
<td>17.9</td>
</tr>
<tr>
<td>Q9 Importance of device or service at leisure</td>
<td>3581</td>
<td>59.0</td>
<td>1509</td>
<td>62.8</td>
<td>591</td>
<td>60.6</td>
<td>1060</td>
<td>54.8</td>
<td>329</td>
<td>55.0</td>
</tr>
<tr>
<td>b) desktop computer</td>
<td>2618</td>
<td>43.3</td>
<td>1070</td>
<td>44.8</td>
<td>480</td>
<td>49.5</td>
<td>729</td>
<td>37.6</td>
<td>273</td>
<td>45.8</td>
</tr>
<tr>
<td>c) use of internet</td>
<td>3767</td>
<td>62.5</td>
<td>1735</td>
<td>72.4</td>
<td>438</td>
<td>45.7</td>
<td>1315</td>
<td>67.9</td>
<td>199</td>
<td>33.6</td>
</tr>
<tr>
<td>d) electricity commerce</td>
<td>582</td>
<td>9.6</td>
<td>126</td>
<td>5.4</td>
<td>59</td>
<td>6.0</td>
<td>266</td>
<td>13.9</td>
<td>113</td>
<td>19.0</td>
</tr>
<tr>
<td>e) anxiety</td>
<td>2079</td>
<td>34.4</td>
<td>838</td>
<td>35.0</td>
<td>406</td>
<td>41.9</td>
<td>574</td>
<td>29.7</td>
<td>211</td>
<td>35.5</td>
</tr>
<tr>
<td>f) fear situations</td>
<td>965</td>
<td>16.0</td>
<td>375</td>
<td>15.6</td>
<td>204</td>
<td>21.2</td>
<td>235</td>
<td>12.1</td>
<td>123</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Q8 Use at leisure: the amount of positive answers included answers; less than monthly, monthly, weekly or daily; Q9 Importance of device or service at leisure: the amount of yes included answers little, moderately, pretty important, and very important. Q16 Mental symptoms: the amount of yes included answers sometimes, pretty often, often, and very often.
work (322 comments), mental loading at leisure time (235 comments), social activities (49 comments), addiction (71 comments), technology and the mental development of children and juveniles (42 comments), rest (41 comments) and other topics of mental loading (30 comments). The comments on the addiction included mobile phones (21), internet (13), computer (7) and others (30). Only four persons (0.06%) mentioned that they were somehow addicted to the Internet. Two of them mentioned that if they started discussions in the chat room, it was difficult to end them. Two mentioned that they stayed close to a computer to be able to browse web pages. In addition, one person mentioned that she becomes anxious if she cannot check her e-mails daily.

**Discussion**

**Evaluation of methods**

Our study included a total of 15 000 Finns, and 6121 responses arrived during the winter 2002-2003. The use of the internet has increased every year. According the Finnish statistical office20 in 2003 the percentage of 15 to 74-year-olds using the Internet was 66%, and in 2007 the percentage was 79%.14 Our results are based on a time when the Internet was not as popular as it is nowadays. It is good to consider this when analyzing the results.

In this data, only four persons mentioned that they were somehow addicted to the Internet, which is quite a small amount, only 0.06% of all responses. For example, in all the data 9.6% of respondents had substance addiction symptoms sometimes or often. Certainly the situations are different in the questionnaire we have a question about substance addiction, but no question about internet addiction. In addition, if a person had some symptoms sometimes it is not very often. If we take the sometimes results away, in all the data only 3.1% of respondents had substance addiction. Maybe nowadays a few more Finns have internet addiction, because the use has increased. In addition, now Internet games are quite popular and in some cases a person can have both internet addiction and game addiction. It is difficult to know precisely what kind of addiction a person has. He or she can be addicted to the Internet or a service of the Internet (e.g., games). In our material two people described that they were addicted to discussions in the chat room and two were addicted to browsing web pages. In the statistical analyses the use of the Internet included alternatives less than monthly, monthly, weekly and daily. The choice less than monthly means that a person uses Internet very little. Therefore, many are users of the Internet and new technical equipment.

The use of internet has increased since our data was collected in 2002-2003. In addition, the use of internet differs in countries. However, our results indicate that internet addiction definitely has an influence on some of the internet users. The use of internet is still increasing in many countries with economic opportunities and the easy use of internet. Then, this kind of questionnaire should be repeated in near future in developed country in Europe, Asia or in USA.

In Finland Internet cafes are not as popular as in South Korea, but there is a high level of Internet access at home.14 and if we compare our results to the amount of internet addiction in South Korea, we can note that when the use of the Internet increases the amount of internet addiction cases also increases. According to Kim (2007) the average South Korean high school student spends about 23 hours each week gaming,21 another 1.2 million are involved in gaming. South Korea is one of the most internet addiction countries in the world. When we try to generalize our data for today’s population, it is possible that more than 1% of working-aged population have addiction to Internet.

Different types of biases also occurred in the study. The questionnaire and questions can influence participants and only the active ones sent back the questionnaire. Furthermore, opinions can change quite quickly, as the technology develops. All participants do not understand the questions and symptoms in the same way. For example, we got quite a few comments on addiction (71), but only four people mentioned that they were addicted to the Internet. Maybe it was easier to mention that others had an addiction than that he or she personally had one.

**Evaluation of symptoms**

In our study (Table 1) women at work had more sleeping disorders/disturbances and exhaustion at work than women outside working life. The differences between the women’s groups are quite small, except in exhaustion at work. Certainly only persons at work had the symptom exhaustion at work. In Table 1, men at work had only more exhaustion at work than men outside working life. The differences between the men’s groups are a little higher than the differences between the women’s groups. Men outside working life had 8.2% more depression, 8.5% more fear situations and 5.8% more anxiety than men at work. The differences between the men’s group and women’s group are in some cases higher than between women’s groups or men’s groups. For example, 19.0% of men outside working life had sometimes or more substance addiction and only 6.0% of women outside working life had the same symptom. According to other studies9-12 the prevalence of depressive and anxiety disorders in the general population varies between 4% and 11%, and 4% and 19%, respectively and in the Finnish Health 2000 Study depressive, alcohol use-and anxiety disorders were found in 6.5%, 4.5% and 4.1% of the subjects, respectively.10 Our results are higher than in other studi-
ies. However, our results (Table 1) were based on people’s own answers about their symptoms, and it is not the same as if they had mental diseases and diagnosis.

**Statistical analyses from all data**

In statistical analyses age and marital status had an influence on many mental symptoms (sleeping disorders/disturbances, depression, substance addiction, anxiety and fear situations). The marital status described, e.g., how social the respondent was. In some cases the mental symptoms may decrease the person’s social activity and she or he cannot find a partner as easily as other people. Only in two cases did the use of the Internet at leisure have an influence on the mental symptoms, substance addiction, and fear situations, and the importance of the Internet (Q9c) had an influence on the fear situations. Maybe those who had fear situations use the internet so that they can decrease the normal social contacts. Based on that, it is easy to understand these relations. In addition, maybe some of the respondents, when they had substance addiction, also had internet addiction or they were heavy users, and therefore we found a relation between the use of the internet and substance addiction. However, using the Internet had an influence on the working-age population’s substance addiction and fear situation.

**Conclusions**

In conclusion, it can be stated that in the Finnish working-age population a quite small amount, only 0.06%, stated that they were somehow addicted to the Internet. Based on statistical analyses, age and marital status had an influence on many mental symptoms. The use of the Internet at leisure had an influence on two mental symptoms (substance addiction and fear situation). The importance of the Internet only had an influence on the fear situations. In the future it will be essential to take into account that the use of the Internet can affect a worker’s mental symptoms, and it is important to observe a worker’s mental health.

**References**