Comparing Internet affinity and the Big Five personality factors between Hungarian and Israeli medical students

A Gombor, L Vas

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Abstract

Objective: The Big Five personality factors are giving a general description of people's personality while Internet affinity is a term to describe how much people are emotionally attached to the Internet while using it. Since almost everyone today is using the Internet and people are using it for different reasons, it can be said that personality is influencing Internet use. With this study we wanted to investigate the relationship between Internet affinity and the Big Five personality factors.
Method: 300 medical students filled out questionnaires connected to Internet affinity and the brief 44-items Big Five Inventory (John, 1990). The sample consisted of 150 Hungarian (75 males and 75 females) and 150 Israeli (75 males and 75 females) medical students.
Results: Only Extraversion and Neuroticism was significantly related to Internet affinity in the Israeli sample but not in the Hungarian sample. Our results suggest that personality factors have an effect on Internet use.

I. GENERAL INTERNET USE

If one looks at the history of the Internet, it can be seen that it started to develop in the middle of the 1960s. In the beginning of 1990, the Internet developed quickly and the different web browsers were released to the general public in 1993-1994. Since this important step in the history of the Internet, it has been expanding quickly and it has attracted a number of different sectors in society, from commercial sectors to private ones. Even today it keeps growing at a rapid speed (Joinson, 2002).

A majority of people, who are using the Internet, have a positive attitude towards it as a tool for carrying out everyday tasks and to use if for entertainment reasons (Boase, Horrigan, Wellman & Rainie, 2006). 49 % of the people who are considered being high users of the Internet (i.e., use it several times per day) are college graduates and better educated (Fallows, 2004).

In 2007 it was shown that the Israeli population is high users of the Internet. According to this study, they surf more on the Internet than any other nationality by spending an average 57.5 hours every month on the Internet (comScore, 2007). This data can be compared to American users, who spend half of this amount on the Internet per month. In a study conducted in 2006, the nations ranking after Israel in Internet use were Finland, South Korea, Holland and Taiwan. When it comes to America, they ranked below the top 15 high users of the Internet. 51 % of Israelis above the age of 18 is using the Internet on a daily basis. The Internet in Israel is being accessed at an almost equal rate from school, home or the office. Most of the Israeli Internet users (96%) are using the Internet for information seeking purposes (Globes, 2003). Another popular Internet activity is to e-mail, with 73% of the population doing this Internet activity (Nua Internet Surveys, 2001). Using the Internet for information-seeking purposes and e-mailing were still the highest ranked online activities in 2006. When it comes to gender differences, 45% of the Israeli women use the Internet compared to 55% of the Israeli men (Ynet, 2006).

In Hungary a different trend can be discovered than in Israel. In 2001, 17% of the Hungarian population had access to the Internet. In 2004, the Internet use was higher, with 40% Hungarians using the Internet fairly frequently. The same year, 14% had access to the Internet at home (TÀRKI Research Institute, 2004). In 2005 more and more people had Internet access at home. When it comes to the most popular online activities, it has been shown that 96% are using e-mailing every week and 91% are using the Internet for information seeking purposes during one week. Other popular motives for using the Internet are entertainment

motives (TÁRKI Research Institute, 2001). There are no significant gender differences in Internet use, which can be seen by the fact that women access and use the Internet almost as much as men (Mediainfo, 2005). It has been shown that 35% of the women and 39% of the men are Internet users. The most popular online activity for women is to look for information related to health and for men it is to download games, music and pictures (TÀRKI Research Institute, 2005).

In general it has been shown that students are using the Internet more and more increasingly (Matthew & Varagoor, 2001), which is why we chose to do this study with students. Since the Israeli students are studying outside their home country and do not have frequent face-to-face contact with their family and friends at home, we were interested in seeing if they have a higher affinity for the Internet. We were also interested in seeing if Internet affinity is connected differently to the Big 5 factors (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to experience) for the Hungarian and Israeli students. It has been shown for example that people higher on Neuroticism have a higher affinity for the Internet, whereas people scoring high on Extraversion have lower affinity for the Internet (Hamburger and Ben-Artzi, 2000). The reason why we chose Israeli students to be part of this study was that we wanted to use a group of foreign students who have a high student percentage at the Semmelweis Medical University in Budapest, to have as many foreign students available as possible. The Semmelweis University is a very well-known university in many countries outside Hungary and it has a very prestigious reputation. The university has a medical educational program for foreign students in German and English, which makes it possible for students from other countries to come and study at this university. Literature has shown that people's attitude towards the Internet (i.e., Internet affinity) is determined by personality (Amichai-Hamburger, 2005) and with this study we would like to confirm this association.

II. BRIEF REVIEW OF THE BIG 5

Professionals have always been interested in finding a taxonomy showing explicit areas of personality. After several decades of research within this field, researchers are starting to reach a consensus on a universal classification of personality in the form of the “Big 5” personality factors. These factors have emerged by analyzing the natural vocabulary people are using to describe others and themselves. The Big 5 classification embodies a collection of diverse personality dimensions collected in a common framework and, importantly, it is not trying to replace prior classifications (John, Donahue, & Kentle, 1991). A main aspect of the Big 5 taxonomy is that it does not say that differences in personality can be explained by only five traits. The five factors are showing different personality characteristics at a very broad level and each of the five factors stand for a variety of distinctive personality traits (Goldberg, 1981).

The history of the Big 5 dates back to the 1940's, however it was in the beginning of 1980 the Big 5, as we know it today, started to take its form. It was at this time Costa and McCrae created the NEO Personality Inventory, which was published in 1985. The NEO Personality Inventory measures three general personality factors, namely Extraversion, Neuroticism and Openness to experience. However, in 1992 a shorter version of the measure was created by Costa and McCrae entailing 60 items and was called the NEO Five Factor Inventory (NEO-FFI), from the original 240-items NEO Personality Inventory (NEO-PI-R) (Costa and McCrae, 1992).

In the end of the 1990's, John and Srivastava (1999) wanted to create a brief version of the NEO-FFI. Their wish was to create a brief inventory which could evaluate personality according to the five factors efficiently. The inventory which they created was the 44-item Big Five Inventory (BFI) and it has five general personality factors: Extraversion (characterized by being talkative, energetic and assertive), Neuroticism (characterized by tension, moodiness and anxiousness), Agreeableness (characterized by being sympathetic, kind and affectionate), Conscientiousness (characterized by being organized, thorough and plan life), and finally Openness to experience (characterized by having wide interests, being imaginative and insightful) (John & Srivastava, 1999). If one looks at the two strongest factors, Extraversion and Neuroticism, it can be seen that there is a big difference between these two personality factors. Extraverted people are seen as more sociable, outgoing, and less reserved, while neurotic people are insecure and worry more easily (John, 1990). Also, people high on Extraversion are more prone to experiencing positive feelings and people high on Neuroticism are more prone to experiencing negative feelings (Costa & McCrae, 1980).

If one looks at the literature it can be seen that the Big Five factors also exists in other languages. However, across

languages there is the least evidence for the fifth factor, Openness to experience (John & Srivastava, 1999) and this factor is also said to be the factor most difficult to replicate (John et al., 1991).

Altogether it can be said that the Big Five dimensions provide an efficient and accessible way to measure the complexity of people's personality however, some professionals say that the Big Five does not give an inclusive background of people's personality (e.g., Eysenck, 1992, 1997; McAdams, 1992; Pervin, 1994; Block, 1995).

III. BIG FIVE FACTORS AND INTERNET AFFINITY

There is an exponential growth of Internet use among college students (Matthew & Varagoor, 2001). Similar trends were observed by Mitra, Willyard, Platt & Parsons (2005) where college students stated to have a growing affinity to use the Internet for research. The choices that students make and the way they are behaving when using the Internet is very much determined by their personality. However, research in the field of personality and the Internet is still in its kindergarten shoes (Amichai-Hamburger, 2005).

The uses and gratifications model can be applied to predict a relationship between Internet use and Big Five personality factors. According to this model, needs may be gratified by different media types (Blumler & Katz, 1974; Weiser, 2002). These needs and the potential gratification for using the Internet must first be identified in order to determine the effect of a medium on a person. The needs most evidently connected to Internet use are entertainment, information, escape and communication, (Jansen, Spink, Bateman & Saracevic, 1998; Katz & Aspden, 1997; Kraut, Kiesler, Boneva, Cummings, Helgeson & Crawford, 2002; UCLA Internet Report, 2000, 2001). According to Angleman (2000), the use of the same media by different people frequently derives from completely different needs. Therefore, one way to predict a relationship between Internet use or Internet affinity and personality is the connection between personality and these needs.

Internet affinity has been related to different patterns of Internet use (Papacharissi & Rubin, 2000). The theory of Internet affinity is explained as the amount of how much people feel that they are emotionally involved with the Internet. Furthermore, Internet affinity is a measure to assess a person's dependency on the Internet because it specifies the level of significance that the Internet as a technological tool symbolizes for the user (Papacharissi & Rubin, 2000).

Internet affinity influences how much an individual is using the Internet and it also has an impact on the media type preference of an individual. Attitudes toward computers are connected to different Internet uses (Anderson, 2005). According to Valkenburg & Soeters (2001), children are using the Internet mainly because of their affinity for computers, followed by information-seeking, entertainment and online or offline social interaction purposes. The Internet opens new ways for us to interact and to communicate with other people and the old indicator of social resources must be abandoned (Kraut, Mukhopadhyay, Szczypula, Kiesler, & Scherlis, 1999. As a result of this new way to communicate and the followed-on Internet affinity, researchers must reconsider what social resources truly are and new ways must be established to measure it (Wellman, 2002). These new ways to communicate through the Internet together with its Internet affinity has changed the way how family members are handling each other and how each family member feels about the way they are communicating with each other. The Internet is definitely a part of people's daily life and we are using the Internet as a way to stay in touch with already existing social relationships by adding Internet contacts to phone and mobile contacts. People can also pursue their hobbies and political activities online (Wellman, 2002).

Extroversion and Neuroticism are the two personality traits, which are significantly influencing the social aspect of the Internet (Eysenck & Eysenck, 1975). These two traits highlight first the social aspects and second the loneliness aspect (Hamburger & Ben–Artzi, 2000). An extroverted person can be described as friendly and who is looking for companionship, excitement, risk-taking, and impulsiveness. Extraverted people have stronger communication needs and they should be more likely to use the Internet as a communication tool (Levin & Stokes, 1986; Stokes, 1985). Further on, extraverted people are more likely to initiate social interaction and are better skilled to have successful social interactions. Extraverted people are more sociable and more externally oriented and because of this, they experience the Internet as an extension and not as a substitute for social or interpersonal communication (Flaherty, Pearce & Rubin, 1998; Hall, 2005). This idea suggests that Extraversion would be negatively associated with Internet affinity and that no replacement for interpersonal interaction is needed. Reasons for extraverted

people to use the Internet are that it may offer more communication possibilities with other people and exchanging information with other people can increase personal relationships. Hall (2005) found that extraverted people and those with more social support benefited the most from Internet use.

On the other hand, neurotic people tend to be more anxious, overly emotional, and overly reactive to social stimuli and due to this they are more likely to have unsuccessful social interactions (Eysenck & Eysenck, 1975; Hojat, 1982). Therefore, a second way to predict a relationship between Internet affinity and personality is the connection between personality and the quality of social interactions (Jackson, von Eye, Biocca, Barbatsis, Fitzgerald & Zhao, 2003). Neurotic people tend to be tenser, more worried and to have more guilt feelings. Due to this it can be assumed that neurotic people may be especially prone to use the Internet in order to find relief from tension and anxiety. Thus, Neuroticism may be positively associated with Internet affinity. Weaver (2000) discovered that neurotic people are more likely to use certain media types in order to pass time and to relax. Tuten and Bosnjak (2001) found that Openness to experience was positively related to Internet use in college students while Neuroticism was negatively related to Internet use among college students. Landers & Lounsbury (2006) found that Internet use among undergraduate college students was negatively related to three of the Big Five Inventory (John, 1990) traits such as Agreeableness, Conscientiousness and Extraversion. Other researchers such as Engelberg & Sjöberg (2004) did not find a link between the Big Five personality dimensions, Internet use or Internet affinity.

If we look at the literature, it can clearly be seen that there are different Internet uses for different personality types (Amiel, 2006). Although research is limited in the field of Internet use and personality, there have been encouraging results of previous traditional and new media studies as mentioned above. An interesting study was conducted by Hamburger and Ben-Artzi (2000) who investigated the relationship between Extraversion, Neuroticism and different Internet uses among Israeli college students. Hamburger & Ben-Artzi (2000) proposed that neurotic people are anxious and tend to experience more rejection in social interactions. These people may have a need to use the Internet for social activities such as e-mailing and other interpersonal communication activities. Furthermore, neurotic Israeli people tend to use the Internet for information-seeking purposes (Hamburger & Ben-Artzi, 2000). The above mentioned authors found that extraverted Israeli men use the Internet for different leisure time activities such as visiting online sex sites and casual surfing while neurotic Israeli men use the Internet for information-seeking purposes such as looking for information related to work or studies. Hamburger and Ben-Artzi (2000) found that in extraverted Israeli women, there was a negative association between the Big Five personality dimensions and Internet use while in neurotic Israeli women there was a positive association between the Big Five factors and Internet use for social reasons such as chatting and participating in discussion groups. These results are interesting because they confirm previous studies according to which women have higher self-awareness and are more likely to obtain support by using social network systems (Leana & Feldman, 1991; Ptacek, Smith & Dodge, 1994). However, neurotic males also begin to understand that their social needs can be satisfied by the social networks of the Internet because they can freely express themselves while being surrounded by the protected setting of the Internet. This Internet preference together with its Internet affinity as a social device is not likely to be found among extraverted people nor among non-neurotic Internet users since they do not have difficulties in their social relations (Hamburger & Ben-Artzi, 2000). These results of Hamburger and Ben-Artzi (2000) are limited in terms of the sample size consisting of only 73 participants and their study included only Eysenck's personality factors of Extraversion and Neuroticism as measured by an old version of Eysenck Personality Questionnaire.

HYPOTHESES

The purpose of this study is to find out what the relationship is between Internet affinity and the Big Five factors as measured by the Big Five Inventory (John, 1990), including Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience. Thus, the hypothesis is that:

1. There will be a nation-based difference between the Big Five and Internet affinity.

METHOD

STUDY POPULATION AND PROCEDURE

This study is a comparison between Hungarian and Israeli medical students, living and studying in Budapest. The students were approached to fill out the questionnaires in the

different sites of the Semmelweis University of Medicine (SOTE) in Budapest, and thus the data collection was made there on site. We used Hungarian and Israeli medical students from their first, second and third year of medical studies in order to have two identical samples and to be able to compare the two samples more accurately.

HUNGARIAN POPULATION

75 females and 75 males, all total 150 Hungarian medical students filled out the questionnaires. The students were between 18 and 36 years old, the mean age was 20.89 years (SD = 2.97). The female mean age was 20.89 (SD = 3.24) and the male mean age was 20.88 (SD = 2.70).

ISRAELI POPULATION

75 females and 75 males, all total 150 Israeli medical students filled out the questionnaires. The students were between 19 and 34 years old, the mean age was 24.98 years (SD = 3.10). The female mean age was 24.33 (SD = 2.56) and the male mean age was 25.63 (SD = 3.46).

INSTRUMENTS

Both the Hungarian and the Israeli medical students received the same questionnaires to fill out. The original language of the questionnaires was English and they had to be translated into Hungarian for the Hungarian sample. A translator at the University of Eötvös Lórand (ELTE) in Budapest, who is specializing in psychological terminology, translated all the questionnaires for us and before distribution two impartial Hungarian English teachers looked through them. After minor corrections by the two teachers and after agreeing about the changes, we distributed the questionnaires to a small sample of Hungarian students. Some minor adjustments had to be done in the questionnaires based upon the small Hungarian student sample's comments. After these adjustments the questionnaires were blindly back translated to English and then distributed to the whole Hungarian student sample.

On the first page of our questionnaires, the students filled out demographical background about themselves such as gender and age.

1) The Internet Affinity Scale (Papacharissi & Rubin, 2000):

This questionnaire was used to measure the students' opinion about how important the Internet is in their lives. It is a 5-item instrument with a number scale from 1 to 5, where number 1 stands for a strong disagreement with a specific item and number 5 stands for a strong agreement with a specific item. The Internet Affinity Scale has a reported 0.84 Cronbach Alpha reliability (Papacharissi & Rubin, op.cit.). A Cronbach Alpha reliability ranging from 0.79 to 0.93 has been reported in other studies (Ferguson & Perse, 2000).

2) The Big Five Inventory (John, 1990):

This questionnaire was used to measure the students' personality traits related to the Big 5 personality factors Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to experience. The Big 5 Inventory is a 44-item questionnaire with a number scale from 1 to 5, where number 1 stands for strongly disagree with a specific personality item and number 5 stands for strongly agree with a specific personality item. The Cronbach Alpha reliability is reported to range from 0.75 to 0.90 (John, op.cit).

RESULTS

1. There will be a nation-based difference between the Big Five and Internet affinity.

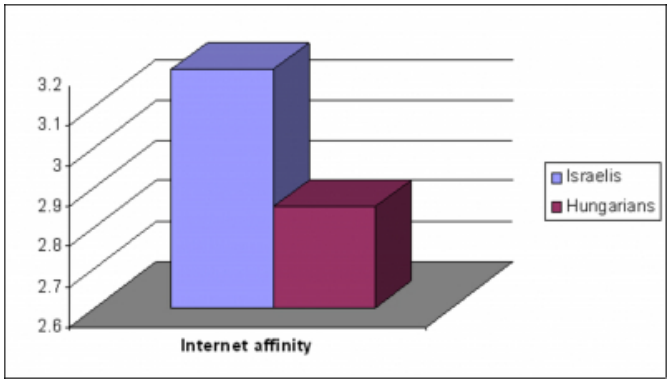
Statistical analysis was conducted using SPSS 10.0 for Windows. The Cronbach alpha coefficients ranged between 0.72 and 0.76 for the Big Five Inventory and with this demonstrating adequate internal consistency.

There was a nation-based difference between the Big Five factors and Internet affinity. The Israeli students scored higher on Internet affinity (Mean = 3.19; SD = 0.598) than the Hungarian students (Mean = 2.85; SD = 0.662) as it can be seen in Graph 1.

The Independent Samples T-test showed that the Israeli students scored significantly higher on Internet affinity ($t(298) = 4.54$; $p < 0.001$).

Figure 1

Graph 1: Internet affinity among the Hungarian and Israeli medical students



The Analysis of Variance (ANOVA) showed significant differences between nationality, Extraversion and Internet affinity ($F = 2.110$; $p < 0.01$) as well as for nationality, Neuroticism and Internet affinity ($F = 1.957$; $p < 0.05$).

Multivariate statistics was applied to find out whether nationality and the personality factors are related to Internet affinity. Linear regression was carried out and adjustment was made for age and gender. Among the Israeli medical students ($ß = -0.169$, $p < 0.05$), there was a positive relationship between Internet affinity and Neuroticism ($ß = 0.224$; $p < 0.001$), indicating that a higher Neuroticism score predicts a higher Internet affinity (see Table 1).

Figure 2

Table 1: Relationship between Internet affinity and Neuroticism among the Israeli medical students

Internet affinity (dependent variable)	**ß coefficients**	**p values**
Israeli medical students	-0.169	0.014
Neuroticism	0.224	0.000

DISCUSSION

1. There will be a nation-based difference between the Big Five and Internet affinity.

The hypothesis was partly confirmed because Extraversion and Neuroticism were significantly related to Internet affinity in the Israeli sample but not in the Hungarian sample. This means that the Israeli medical students living in Hungary who scored higher on Extraversion or Neuroticism may be more open and may have a more overall positive and emotional attitude towards the Internet (Anderson, 2005). No former research about Internet affinity was found that particularly was in connection to the Israeli or Hungarian sample. A lot of research about the Internet has been done in the United States (Boase et al, 2006; Fallows, 2004; Katz & Aspden, 1997; Kraut et al., 1999). Hence, we applied the existing researches on our sample in order to look at potential relations between personality characteristics and Internet affinity among the Hungarian and Israeli medical students living in Hungary. Since the Israeli medical students scored higher on Internet affinity it may suggest that the Internet is more blended into their everyday lives and they may use the Internet for more social interactions, especially to frequently stay in touch with their families and friends at home. According to Barlow, Birkets, Kelly & Slouka (1995) and Wellman (2001), people are using the Internet in order to enhance their communication with families and friends, especially those living far away.

The definition of Internet affinity also takes into account that it is a dependency measure and thus it explains how much an individual may take pleasure and benefit from the media use (Papacharissi & Rubin, 2000). Since there is an association between Internet affinity and Extraversion among the Israeli sample, this may suggest that the extraverted Israeli medical students perceive the Internet as a highly useful tool for a wide spectrum of uses. There was also an association between Neuroticism and Internet affinity for the Israeli sample. This is to some extent conflicting with the first result since Neuroticism is opposed to the Extraversion trait. However, Internet affinity or Internet dependency has been related to Neuroticism and those Israeli medical students scoring high on Neuroticism are most likely using the Internet as a dependency tool. People with certain personality characteristics such as Neuroticism who are displaying a high Internet affinity may be at greater risk to develop an Internet addiction (Papacharissi & Rubin, 2000).

It would be interesting to see in a future research what the relationship may be between Internet affinity and personality factors in the fast growing fields of chatting and Internet dating. Another prospective study may investigate whether people who are excessive Internet gamers may have a higher Neuroticism score because this would confirm once again that personality traits may certainly have an impact on Internet use. Since Internet is playing a big part in most people's lives today it would be interesting to read more about this fascinating topic of personality and affinity for the Internet.

LIMITATIONS

First, limitations may be found concerning the sample size ($N = 300$) and as a consequence, generalization cannot be made upon the entire Hungarian and Israeli medical student

populations. Second, this study relied on a convenience sampling of University students and this exploratory research about Internet use was chosen since University students take pleasure as well as benefit from accessing the Internet with its countless resources. However, the study should be replicated with another sample because Internet affinity may be different in younger or older participants or non-student sample.

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Author Information

Anita Gombor
Doctoral Candidate in Health and Personality Psychology, University of Eötvös Lorand

Liliana Vas
Doctoral Candidate in Health and Personality Psychology, University of Eötvös Lorand