



Does Internet use reflect your personality? Relationship between Eysenck's personality dimensions and Internet use

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ABSTRACT

The aim of this study was to investigate the relationship between three Eysenckian personality dimensions – psychoticism, extroversion and neuroticism – and the Internet use. A sample of 427 Turkish university students completed the Eysenck's Personality Questionnaire, an Internet survey which contained questions about interpersonal motives for Internet use and a scale for measuring the tendency for expressing one's "true" self on the Internet. The results indicated that psychoticism was the only personality dimension related to establishing new relationships and having "Internet only" friends; and extroversion was the only personality dimension that is related to maintaining long-distance relationships, and supporting daily face-to-face relationships. The results supported the idea that for some individuals, Internet can be used as social substitute for face-to-face social interactions while for some others it can be used as a tool of social extension, depending on the user's personality characteristics. Also, psychoticism and neuroticism were found to be positively associated with the expressing "true self" on the Internet, and it was shown that the relationship between psychoticism and Internet uses as social substitute is mediated by the tendency to express one's true self on the Internet.

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1. Introduction

Internet is a communication medium that has being used by millions of people to provide social contacts and intimate interactions. It attracts the attention of both Internet designers and psychologists. At the one hand, Internet designers are interested in different ways of Internet usage, but they usually ignore the personality differences of Internet users. On the other hand, psychologists are aware of the variety in personal characteristics of Internet users, but they usually ignore the variety of Internet usages. (Amichai-Hamburger, 2007). Our study aims to enhance the understanding of Internet use for interpersonal communication with attention to variety in both the Internet usages and the Internet users.

In our study, we investigated personality differences in two different areas of Internet communication. Firstly, we examined to what extent Internet users' personality is associated with using Internet as an *extension* of face-to-face interpersonal communication, and to what extent it is related with using Internet as a *substitute* for face-to-face interpersonal communication. Secondly, we searched for the personality differences on preference for expressing one's "true self" on the Internet rather than expressing it face-to-face. Lastly, we tried to investigate the possibility that

the concept of expressing "true self" on the Internet is the underlying mechanism that links personality and social uses of the Internet.

1.1. Personality and the uses of Internet

Personality refers to the all aspects of a person's individuality. In order to clarify the structure of personality, different taxonomies have been developed throughout the history of personality research (for a review, see Pervin & John, 2001). The basic personality dimensions have emphasized between three to seven fundamental dimensions in those taxonomies. There is strong agreement about the importance of two dimensions: Introversion/Extroversion and Emotional Stability (Neuroticism). Extroversion involves attributes like enjoying human interactions, talkativeness, assertiveness and enjoying risk-taking; Neuroticism involves attributes like shyness, guiltiness, being tense, and being moody. Eysenck's taxonomy includes also Psychoticism in addition to those two. Psychoticism involves attributes like being solitary, being insensitive to others, aggressiveness and disregarding social conventions. In some other personality models, psychoticism is decomposed into the parts, such as Agreeableness and Conscientiousness in the Five Factor Model (John & Srivastava, 1999). In the present study, however, Eysenck's classification system is used. It is one of the oldest and most widely used classification systems, and much of the work on personality theories can be organized around the three dimen-

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sions offered in this system (Eysenck & Eysenck, 1991). Previously, Hamburger and Ben-Artzi (2000) examined the interaction of Eysenck's personality dimensions and the Internet use. With regard to social use of the Internet, they found that for women, extroversion was negatively related, and neuroticism was positively related with the use of social services of Internet. In that study, social Internet services involved three elements: Chat, discussion groups and people-address seeking. Later, Amiel and Sargent (2004) found that neuroticism was positively related to and, extroversion was negatively related to Internet use for social-communal purposes. Additionally, they found that people high on psychoticism have an interest in sophisticated and deviant use of Internet, but not in social-communal use. In that study, social-communal purposes of Internet use involved some statements like "to belong to a group" and "because feeling more comfortable talking to people online".

The two studies mentioned above gave information about who uses social Internet communication, but they did not answer whom the Internet users communicate with. Sometimes, people use Internet to supplement their communication with people whom they have an on-going relationship in the existing life: They may communicate with friends and relatives living across distance; or they may support daily face-to-face interaction with people in their existing social circle. Such forms of the Internet uses are called as "Internet uses as social extension". There is an alternative form of social Internet use. People may look for new friends on the Internet rather than maintaining their existing relationships through the Internet. Internet users sometimes initiate relationships on the Internet and then transmit it to real life. Sometimes, individuals establish "Internet only" friendships whom they have no aim of having face-to-face contact. The Internet use for communicating with new acquaintances can be called as "the Internet uses as social substitution".

One of the aims of our study was to examine the impact of personality differences on those two different social uses of Internet. We expected that extroversion to be related to "Internet use as a social extension". This expectation is based on the Uses and Gratification Theory, which suggest that people are goal-oriented in their preferences for communication channels. In other words, people use certain communication channels to the extent that those channels serve to their needs better than the other channels. According to Papacharissi and Rubin (2000), those who felt valued in interpersonal communication did not turn to the Internet as a substitute for face-to-face communication. Extroverted people are outward oriented, and are likely to find social interactions in face-to-face environments as rewarding. For that reason, we did not expect extroversion to be related to Internet use for establishing alternative relationships, but we expected it to be positively related to Internet use for supplementing the relationships that have been established face-to-face. Our research expectations with regard to psychoticism and neuroticism, however, are that they will be both related to "Internet use as a social substitution". At one hand, we have evidence for that people less satisfied with face-to-face interactions used the Internet for fulfilling their interpersonal needs (Papacharissi & Rubin, 2000). At the other hand, we have some evidences for that psychoticism and neuroticism are related to communication difficulties in face-to-face settings. For instance, it has shown that many people who are high in psychoticism tend to engage with antisocial behavior that are likely to alienate others, reduce their social circle and make social life less rewarding (Powell & Stewart, 1983); and "neurotic introverts" experience communication apprehension (McCroskey, Heisel, & Richmond, 2001). Because psychotics and neurotics are not as good at establishing satisfactory interpersonal relationships in face-to-face settings as compared to non-neurotics and non-psychotics, we expected that as individuals' degree of psychoticism

and neuroticism increase, their Internet use as an alternative to face-to-face communication would also increase. Previous research demonstrated that shyness and social anxiety (which are main descriptors of neuroticism dimension of personality) can be overcome during computer-mediated social interactions (Stritzke, Nguyen, & Durkin, 2004). However, the link between psychoticism and social Internet use has not been established.

1.2. Personality and the "true self" on the Internet

Everyone needs to express some aspects of who they are. This is not always easy through face-to-face communication. People may tend to hide some aspects of their real self; especially if those aspects conflict with social norms and expectations. Some aspects of the Internet communication – such as relative anonymity and absence of physical presence of the other person – may help people to safely express those "real" aspects of self (Bargh, McKenna, & Fitzsimons, 2002). Previous research shows that people enable to reveal some aspects of their identity that previously had to be hidden because of societal disapprovals on the Internet who have difficulty to express their "true self" in their face-to-face environment. For instance, McKenna and Bargh (1998) demonstrated that people with marginalized identities may use Internet to express their personality and needs.

A previous study shows a link between the tendency of expressing one's "true self" on the Internet and Eysenck's personality dimensions (Amichai-Hamburger, Wainapel, & Fox, 2002). The "real me" on the Internet was found to be negatively correlated with extroversion and positively correlated with neuroticism. However, the study was conducted on a very small sample and the impact of psychoticism on the online expression of the "true self" was not examined. In the current study, we aimed to re-examine the associations between Eysenck's personality dimension and expressing "true self" on the Internet.

To what extent a person prefers to express his/her true self on the Internet may not only depend on that person's own characteristics, but also to the characteristics of the individuals whom they try to communicate with. An experimental study compared the activation of true self in an online vs. offline interactions with the existing friends vs. with the strangers. (Bargh et al., 2002). It was found that activation was higher while interacting online rather than offline if the conversation partner was a stranger. However, no difference in the activation of the true self in online vs. offline condition was found if the conversation partner was a friend. Similarly, a survey conducted on approximately 500 participants revealed that people express their "true" self to existing friends online no more than they did with those friends face-to-face. The only exception was that people who are socially anxious in face-to-face interactions reported to be able to express their true self better when interacting online both with their online-initiated relationships and with their friends and family members (McKenna, 2007).

Based on the literature, in the current study, we expected that expressing "true" self on the Internet will be positively related to Internet uses as social substitution (such as for building new relationships on the Internet), but it will not be related to Internet uses as social extension (such as for supporting face-to-face interactions and maintaining long-distant relationships).

The last question that we investigated in the current study was whether tendency of expressing "true self" on the Internet has a mediating role between personality dimensions and social Internet use. We have previously stated our expectations about the association of personality and Internet use: Neuroticism and psychoticism will be positively related to Internet use as social substitute, extroversion will be positively related to Internet use as social extension. If the expectations with regard to neuroticism and psychoticism are confirmed, we aimed to further investigate the

possibility that “true self” on the Internet concept provides an explanation for why those two personality dimensions are related to Internet use as a social substitute. In other words, if neuroticism and psychoticism are associated with Internet use as social substitute, it might be because individuals high on those two dimensions are better able to express their “true self” on the Internet rather than in face-to-face interactions. However, we did not expect a similar mediation link of “true self” on the Internet concept between extroversion and Internet use as social extension.

The rationale underlying the consideration of the “true self” on the Internet concept as a mediator comes from the Uses and Gratification Theory: People use the Internet for gratification of their needs which they have difficulty to gratify through other communication methods, including face-to-face interaction. People with different personality characteristics may differ in their needs which they attempt to gratify through the Internet. We claim that for the neurotics and the psychotics, the need to be gratified through the Internet communication might be expressing one’s “true self”.

2. Method

2.1. Participants

Participants were 427 university students (280 females and 147 males) between the ages of 17–30 ($M = 21.73$, $SD = 2.23$). Three hundred and twenty three of participants (75% of all participants) reported that they use Internet every day. On the average, participants have been using Internet for six years ($SD = 2.75$) (Table 1).

2.2. Measures

2.2.1. Social motives for Internet use

Participants were asked to report to what extent they use the Internet for establishing new relationships with strangers, for having “Internet only” friends, for maintaining their long-distant relationships, and for supporting their daily face-to-face relationships. The former two of those statements were considered to be representing Internet use “as a social substitute”, and the latter two were considered to be representing Internet use as “social extension”. Each of those four social motives of Internet use was taken a separate variable during the analysis. Participants evaluated those statements by using a 5-point scale ranging from 1 “not at all” to 5 “completely”.

2.2.2. “Real-me” questionnaire

“Real-me” questionnaire developed by Amichai-Hamburger et al. (2002) includes four questions focusing on the ease with which participants revealed their inner world to their friends in

the Internet environment rather than in face-to-face environments. While the response scale originally was based on two yes–no items and two 7-point scale items, the response scale of all items was changed in the present study to a 5-point scale ranging from 1 (*does not agree at all*) to 5 (*agrees completely*). Higher scores imply higher levels of revealing oneself on the Internet. Reliability coefficient (Cronbach alpha) for the “real-me” questionnaire was 0.87.

2.2.3. Demographics and the information about the Internet usage patterns

Participants were asked to state the amount of hours they spend for their Internet use during a normal week, how many years they had been using an Internet, their age and gender.

2.2.4. Eysenck’s Personality Questionnaire – revised (EPQ-R)

EPQ-R is a questionnaire with 100 yes/no questions. It consists of four subscales: Extroversion (23 items), Neuroticism (24 items), Psychoticism (32 items) and Lie scale (21 items). Lie scale does not reflect a personality dimension, but it measures dissimulation/conformity, which is an extraneous and undesirable factor to be eliminated. Cronbach alpha coefficients for extroversion, neuroticism and psychoticism were acceptable (.79, .81 and .72, respectively). The example items are “Do you like going a lot?” for extroversion, “Do things often seems hopeless to you?” for neuroticism, and “Do you like scenes of violence and torture in the movies?” for psychoticism. Total scores for those three subscales were calculated to be used as study variables.

3. Results

First, we examined the correlations of personality dimensions with social motives for the Internet uses and with “real me” on the Internet score (Table 2). We found that the two of the social motives – “establishing new relationships” and “having ‘Internet only’ friends” – were significantly correlated with psychoticism ($r = .23$ and $r = .18$, respectively), but not with neuroticism or extroversion. The other two social motives – “maintaining the long-distant relationships” and “supporting daily face-to-face relationships” – were significantly correlated with extroversion ($r = .13$ and $r = .18$, respectively), but not with neuroticism or psychoticism. The results confirmed our expectations that as psychoticism increases, the Internet use as social substitute increases, and as extroversion increases, the Internet use as social extension increases. Neuroticism was not found to be correlated with any of the social motives for the Internet uses. With regard to the “real me” on the Internet score, it was found that it was positively correlated with psychoticism ($r = .27$) and neuroticism ($r = .15$).

Table 1
Descriptive statistics.

	Females (N = 280)			Males (N = 147)		Total (N = 427)	
	α	Mean	SD	Mean	SD	Mean	SD
Age	–	21.73	2.23	22.50	2.63	21.73	2.73
The years of Internet experience	–	5.68	2.39	6.45	2.70	5.94	2.52
“Real me” on the Internet	.87	1.70	.86	1.86	1.02	1.76	.92
Social motives for Internet use							
Establishing new relationships	–	1.76	1.15	1.99	1.17	1.84	1.16
Having “Internet only” friends	–	1.80	1.26	2.20	1.40	1.93	1.32
Maintaining the existing long-distance relationships	–	3.81	1.05	3.44	1.15	3.69	1.10
Supporting daily face-to-face relationships	–	3.53	1.23	3.30	1.26	3.46	1.24
Personality variables							
Psychoticism	.72	8.71	3.90	10.43	4.62	9.29	4.23
Extraversion	.79	14.98	4.20	15.20	4.54	15.05	4.31
Neuroticism	.81	12.70	4.80	10.85	5.01	12.08	4.94

Table 2

Correlations of Eysenck's personality dimensions with social motives for Internet use and "real me" on the Internet.

	Psychoticism	Extroversion	Neuroticism
Social motives for Internet use			
Establishing new relationships	.23***	.07	.04
Having "Internet only" friends	.18***	.05	.04
Maintaining the long-distance relationships with friends and relatives	-.07	.13**	.02
Supporting daily F2F relationships	.06	.18***	.04
"Real me" on the Internet	.27***	-.01	.15**

** $p < .01$.*** $p < .001$.**Table 3**

Correlations of "Real me" on the Internet with social motives for Internet use.

	"Real me" on the Internet
Social motives for Internet use	
1. Establishing new relationships	.66***
2. Having "Internet only" friends	.65***
3. Maintaining the long-distance relationships with friends and relatives	.10*
4. Supporting daily F2F relationships	.29**

Note. Dependent (single sample) differences: $r_1 - r_3 = .56$, $t = 11.20$, $p < .001$; $r_1 - r_4 = .37$, $t = 8.28$, $p < .001$; $r_2 - r_3 = .55$, $t = 11.18$, $p < .001$; $r_2 - r_4 = .36$, $t = 7.93$, $p < .001$.

* $p < .05$.** $p < .01$.*** $p < .001$.

Secondly, we examined the correlations between "real me" on the Internet score with social motives for the Internet use (Table 3). All correlations were significant and in positive direction. However, the correlations of "real me" on the Internet with the statements of "the Internet use as social substitute" were stronger ($r = .66$ for "establishing new friendships" and $r = .65$ for "having 'Internet only' friends") than its correlations with the statements of "the Internet use as social extension" ($r = .10$ for "maintaining long-distant relationships" and $r = .29$ for "supporting daily face-to-face relationships"). The t -values of the differences between the strengths of correlations were given in the Table 3.

Lastly, we did series of regression analyses following the steps outlined earlier by Baron and Kenny (1986) in order to test our mediation hypotheses. In the first and the second steps, direct associations are shown between predictor and outcome, and between mediator and the predictor. In the third step, both predictor and mediator are regressed on the outcome. A mediation is claimed to be established if it was seen that the association between mediator and the outcome is significant while the association of predictor becomes insignificant.

The upper part of the Fig. 1 contains the analyses necessary to examine the hypothesis that the relationship between psychoticism and establishing new relationships is mediated by "real me" on the Internet. We first established that predictor was related to the outcome by regressing psychoticism on Internet use for establishing new relationships (Step 1). The unstandardized regression coefficient ($B = .06$) associated with the effect of Internet use for establishing new relationships was significant ($p < .001$). Thus, the requirement for mediation in Step 1 is met. We regressed psychoticism on the "real me" on the Internet

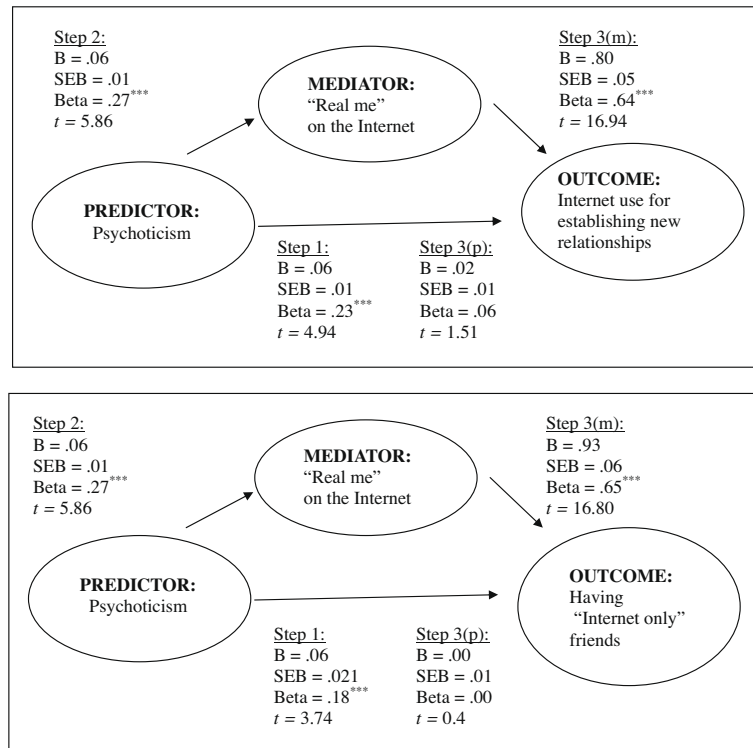
in order to establish that predictor was related to the hypothesized mediator, (Step 2). The unstandardized regression coefficient ($B = .06$) associated with this relation also was significant at the $p = .001$ level, and thus the condition for Step 2 was met. Lastly, we regressed Internet use for establishing new relationships simultaneously on both the "real me" on the Internet and psychoticism (Step 3). The coefficient associated with the relation between the "real me" on the Internet and Internet use for establishing new relationships (controlling for psychoticism) also was significant ($B = .80$, $p = .001$). Thus, the condition for Step 3 was met. This third regression equation also showed the relation between psychoticism and Internet use for establishing new relationships, controlling for the "real me" on the Internet. The coefficient was not significant.

The lower part of the Fig. 1 contains the analyses necessary to examine the hypothesis that the relationship between psychoticism and having "Internet only" friends is mediated by "real me" on the Internet. First, we regressed psychoticism on Internet use for having "Internet only" friends (Step 1). The unstandardized regression coefficient ($B = .06$) associated with the effect of having "Internet only" friends was significant ($p < .001$). Thus, the requirement for mediation in Step 1 is met. Secondly, we regressed psychoticism on the "real me" on the Internet as described in the paragraph above, the result was significant. Thus, the condition for Step 2 was met. Lastly, we regressed having "Internet only" friends simultaneously on both the "real me" on the Internet and psychoticism (Step 3). The coefficient associated with the relation between the "real me" on the Internet and having "Internet only" friends (controlling for psychoticism) also was significant ($B = .93$, $p = .001$). Thus, the condition for Step 3 was met. This third regression equation also showed the relation between psychoticism and having "Internet only" friends, controlling for the "real me" on the Internet. The coefficient was zero, indicating full mediation.

4. Discussion and conclusions

All over the world, people use social Internet communication in different ways, depending on their own personal preferences. With this study, we tried to examine who uses Internet to communicate with whom for what purposes. In accordance with research expectations, people high on extroversion were found to use Internet for social extension, and people high on psychoticism use it for social substitution. The finding with regard to the link between psychoticism and social Internet communication is a new contribution to the literature whereas the finding with regard to the positive association of extroversion with Internet use is in accordance with previous research findings (Amiel & Sargent, 2004; Hamburger & Ben-Artzi, 2000). Different from the previous research on personality and Internet use, in which the social Internet use as taken as a general concept, we took the distinction between Internet use as social extension vs. as social substitute into the consideration in the current study, and demonstrated that extroversion was related only with one of those two forms of Internet use: Internet use as social extension.

Our findings may be interpreted from the Uses and Gratification Perspective. According to this perspective, people with different needs and desires may use different communication channels for different purposes (Rayburn, 1996). The findings demonstrated that for extrovert people, Internet communication carries a similar function with face-to-face communication: Interacting with members of a social circle that is established in the "real" life. If Internet communication has no different function than face-to-face communication for extroverts, it is very possible that extroverted peo-



Note. B, SEB, Beta and *t* values in the step1 is associated with the direct path between the predictor and outcome; B, SEB, Beta and *t* values in step2 is associated with the direct path between the predictor and the mediator; B, SEB, Beta and *t* values in step3(p) and step3(m) are associated with the path between the predictor and outcome after the mediator was introduced into the equation.

** $p < .01$, *** $p < .001$.

Fig. 1. The results of mediation analyses.

ple's behaviors are same in face-to-face and Internet communication environments. The finding that whether people are better at expressing their true self on the Internet or in face-to-face settings has no relationship with extroversion supports this idea. For people high on psychoticism, however, Internet functions as a tool to meet with people other than the ones in the "real" life. Given that they prefer to have different friend circles in face-to-face and Internet environment, it is acceptable to assume that people high on psychoticism behave differently in online and offline environments. Our finding that the magnitude of revealing one's true self on the Internet is positively associated with psychoticism supports this idea.

The direct relationships between personality and Internet use, and between personality and expressing true self on the Internet have been examined in some previous studies (Amichai-Hamburger et al., 2002; Hamburger & Ben-Artzi, 2000; Amiel & Sargent, 2004). Yet, the current study contributes to the literature by showing the mediator role of "real me" on the Internet concept between psychoticism and Internet use as a social substitute.

Eysenck's personality dimension of neuroticism was found to be associated with none of the social motives for Internet use although some previous research showed that it was positively related to social communication motive (Hamburger & Ben-Artzi, 2000; Amiel & Sargent, 2004). Neuroticism may be related to a social motive which was not investigated in the current study. One of the limitations of the study is the weakness of the measure of so-

cial motives for the Internet communication. Only three social motives were measured, and one-item measures were used for each motives. In the future studies, a more detailed index of social motives can be used to better understand the relationship between personality and Internet use.

In overall, our data suggested that global personality traits may explain social Internet use to some extent. However, an Internet-specific variable – "real me" on the Internet – is more strongly related with Internet use as a social substitute, and it mediates the link between psychoticism and Internet use as a social substitute. Those findings had contributed to the literature by demonstrating two points. The first point is that paying attention to the differentiation of social Internet activities as the activities of "social substitution" and of "social extension" may be important to gain a better insight into the associations between internet users' characteristics and their Internet uses. The second point is that the expression of one's true self might be an intended, or sought-after gratification for using the Internet, and the person's psychoticism level might be one of the determinants of to what extent the individual will tend to gratify the need for expressing himself/herself through the Internet.

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