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Computers in Human Behavior 20 (2004) 711–726

Computers in
Human Behavior

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Individual differences in Internet usage motives

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Available online 8 October 2004

Abstract

The relationship between the psychobiological model of personality types (psychoticism, extraversion, and neuroticism) devised by Eysenck and Eysenck [Personality and individual differences: A natural science approach, Plenum Press, New York, 1985] and Internet use and usage motives was examined. A sample of 210 undergraduate students were asked to report on their motives for using the Internet and how often they engaged in a variety of Internet and web-based activities. The findings demonstrate distinctive patterns of Internet use and usage motives for those of different personality types. Specifically, those scoring high in neuroticism reported using the Internet to feel a sense of “belonging” and to be informed. Extraverts rejected the communal aspects of the Internet, and made more instrumental and goal-oriented use of Internet services. Finally, those scoring high in psychoticism demonstrated an interest in more deviant, defiant, and sophisticated Internet applications. Implications of the findings as well as suggestions for future research are included.

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Keywords: Personality types; Eysenck; Internet usage motives; Individual differences

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1. Individual differences in Internet usage motives

In the past decade, the growth of the Internet has been undeniable, affecting the way people communicate, interact, and gather information. According to 2002 estimates, more than 400 million people use the Internet (Nielsen//NetRatings, 2002), testifying to the swiftness with which this network of computers has changed the way we live and will continue to live. During the past two decades the Internet has risen from a governmental and educational system to a medium supporting high-speed video, audio, and text communication between ordinary people around the world, changing our social life and the way we communicate (cf. Kraut et al., 1998).

Communication researchers have recognized the importance of studying the Internet as a communication medium (Newhagen & Rafaeli, 1996), but the study of motivations and behaviors associated with Internet use is limited (Bourdeau, Chebat, & Couturier, 2002). As a communication medium, the Internet is particularly complex and intricate, allowing both mass and mediated interpersonal communication (Morris & Ogan, 1996). It can function as a mass medium much like television and radio, streaming endless quantities and qualities of audio and video to an individual user or a larger audience. It allows users to converse with others within a group, or individually, using any combination of text, audio, and video channels.

As with any other medium, such as over-the-air television, radio, and new media (particularly, those involving the Internet, multi-media, and interactive environments; see Vorderer, 2000; Webster & Phalen, 1997), researchers and marketing groups have a vested interest in understanding and categorizing users and their interactions with the medium and its content. As Webster (1989) described: “it seems likely that the assessment of exposure will be pivotal in determining their (new media) economic survival and gauging their social significance” (p. 3).

Traditional audience measurements such as demographic and psychographic segmentation can be applied to new media, but “such transplanted methods are not always successful” (Webster, 1989, p. 3; see also, Webster & Phalen, 1997). Psychographics and demographics have also been criticized for their often poor predictive qualities and seeming difficulty in interpreting results (Beville, 1988; Eastman, 1989).

1.1. Personality and individual differences

The use of personality types has been seen as a more functional and efficient approach to looking at the audience. A significant part of the study in the psychology of media use has been focused on the role of personality and individual differences. Rosengren (1974) identified individual differences as a principal component of any paradigm for media uses and gratifications research, concluding that incorporating personality variables into such research seemed almost “self-evident” (p. 273). Indeed, individual differences and their psychological characteristics have been consistently placed within an integrated media gratifications model (Palmgreen, Wenner, & Rosengren, 1985; Rosengren, 1974). Early ventures into the study of personality as a

factor affecting media exposure suffered from the lack of reliable operationalizations of personality variables (see Weaver, 2000), leading to inconsistent results (see Wo-ber, 1986). In order to serve as useful predictors of media selection and perception, personality traits, much like demographic characteristics, must be organized into a finite number of categories; therefore, a reliable operationalization of personality traits is needed.

Of the many trait taxonomies used in personality research, the psychobiological model developed by Eysenck and Eysenck (1985) has been most prominently used in mass media personality research, and has shown consistent results across a variety of cultures and samples (Barrett, Petrides, Eysenck, & Eysenck, 1998; Eysenck & Eysenck, 1985). Eysenck's model is based on the hierarchical organization of *traits* (such as sociability, anxiety, and creativity), which point to "more-or-less consistent and recurrent patterns of acting and reacting that simultaneously characterize individuals and differentiate them from others" (McCrae & Costa, 1999). Different individuals are better represented by some traits than others, which is not to say that every individual action or reaction can be predicted based on personal traits. In other words: "traits are essentially dispositional factors that regularly and persistently determine our conduct in many different types and situations" (Eysenck & Eysenck, 1985, p. 17), as opposed to *states* which define temporary or "singular occurrences" (p. 17). For example, an individual described as cheerful will not be cheerful all the time; the descriptor points to the *predisposition* to be cheerful and the likelihood to act in a cheerful manner.

The correlation or clustering of traits leads to a personality type. Eysenck identified three personality types labeled neuroticism (N) as opposed to stability, extraversion (E) as opposed to introversion, and psychoticism (P) in opposition to impulse control (Eysenck & Eysenck, 1985). Extraversion relates to an individuals' "ability to engage the environment" (Clark & Watson, 1999, p. 403). Extraverts display high levels of sociability, participation, and positive self-esteem (Weaver, 1998) and are characterized as sociable, lively, active, assertive, carefree, dominant, surgent, venturesome and sensation-seeking (Eysenck & Eysenck, 1985, p. 15). The extrovert is preoccupied with external appearance and how others perceive their actions.

Neuroticism identifies the degree to which an individual "perceives the world as threatening, problematic, and distressing" (Clark & Watson, 1999, p. 403). Those scoring high in the neuroticism dimension tend to display high anxiety and a negative self-image (Weaver, 1998). The neurotic type is composed of the first-order traits: anxious, depressed, guilt feelings, low self-esteem, tense, irrational, shy, moody, and emotional (Eysenck & Eysenck, 1985, p. 15). The neurotic values the comfort of their environment and dislikes the prospect of engaging in a setting beyond his or her control.

Both neuroticism and extraversion types are present within a variety of other trait taxonomies, and have shown a remarkable level of consistency with other personality measures, including those originating from a lexical rather than pathological or questionnaire-based construction, suggesting the validity and reliability of their measures (Avia et al., 1995; Draycott & Kline, 1995; Saggino, 2000; Zuckerman, Kuhlman, & Camac, 1988).

Particular to Eysenck's model is the psychoticism factor, a third dimension to the trait taxonomy. Psychoticism points to an individual's level of egocentricity, autonomy, social deviance, and impulsivity (Weaver, 1998), and is characterized as aggressive, cold, egocentric, impersonal, impulsive, antisocial, unempathetic, creative, and tough-minded (Eysenck & Eysenck, 1985, p. 14). Individuals scoring high on the psychoticism scale show a disregard for authority and society's rules and regulations, exhibiting a need to be on the edge. Psychotics are unlikely to feel guilt, empathy, or sensitivity to the feelings of others (Eysenck & Eysenck, 1985; Richendoller & Weaver, 1994). In disagreement with Freud, Eysenck postulates the psychotic disorders are not merely quantitatively superior to neurotic conditions. Instead, psychoticism measures a completely different set of conditions, such as manic-depressive and schizoid disorders (Eysenck & Eysenck, 1985; Eysenck, 1998). Though present only on Eysenck's typology, Zuckerman et al. (1988) has demonstrated support for the anti-social and impulsive nature of the psychotic, showing high correlations between psychoticism and boredom susceptibility, autonomy, and risk taking (see also Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993).

Other research has identified the role of individual differences in a variety of media contexts. Psychoticism has been linked with preferences for graphically violent horror movies (Weaver, 1991) as well as sexual-comedy (Weaver, Brosius, & Mundorf, 1993), and defiant rock music (Robinson, Weaver, & Zillmann, 1996). Other studies have found that those high in psychoticism reject the idea that they use television to pass time, for companionship, or to relax (Weaver, 2001), and use the remote control to control, annoy, and tease co-viewers (Weaver, Walker, McCord, & Bellamy, 1996). In contrast, those scoring high on neuroticism express stronger preferences for information/news television and "downbeat" music (Weaver, 1991), use the television for more traditional motives (i.e., pass time, companionship, relax, find information, stimulation; Weaver, 2001), and use the remote control to avoid objectionable content (Weaver et al., 1996). Those scoring high on the extraversion scale expressed strong interest in not controlling others through remote control use, not using the television for traditional motives, and consuming sexual-comedy content.

Though research in the area of personality and media preferences has been limited, studies such as these have pointed to the relationship between personality and content preference in traditional media from the framework of Eysenck's personality trait taxonomy. These encouraging results in the study of traditional media prompt the overarching question to be addressed in this study: Do individual differences effectively discriminate users according to content and media preferences within the Internet?

1.2. Personality and the Internet

As Weaver (2000) highlighted, the desirability of new communication tools and media, such as those available through the Internet can present substantially different appeal to those of different personality types. Recently, it has been revealed that those who are more satisfied with their outward, social life preferred to use

the Internet for more instrumental purposes (i.e., information seeking) whereas those less satisfied with life and felt less valued in face-to-face interactions used the Internet as a substitute for social interactions and to pass time (Papacharissi & Rubin, 2000). Similar interactions were found when externally oriented people (who believe their environment controls them, feel powerless) used the Internet for inclusion more than internally oriented people (Flaherty, Pearce, & Rubin, 1998). Several studies have demonstrated negative correlations between a leisure services factor (instant messaging and games) and neuroticism (Swickert, Hittner, Harris, & Herring, 2002) and neuroticism and “gathering product and brand information” and “learning, reference, and education” (Tuten & Bosnjak, 2001).

Of particular interest to the current study is Hamburger and Ben-Artzi’s (2000) research into the relationship between personality types and Internet motives. The researchers found that those scoring high on extraversion tended to prefer leisure services (sex websites, random surfing), and that those scoring high on neuroticism had a negative association with information services (work-related information, studies-related information). More specifically, for male subjects, extraversion was positively associated with leisure services, and neuroticism was negatively associated with information services. For female subjects, extraversion was positively associated and neuroticism negatively associated with social services (chat, discussion groups, people-address seeking). Weaver (2001) found similar sex-motives interactions in his study of television use: males were motivated to watch television for information and stimulation, while females rather watch television for companionship and to pass time.

The results provided by the Hamburger and Ben-Artzi (2000) study are an important first step, but suffer many shortcomings. First, it is limited to the inspection of two of Eysenck’s personality types (E and N) using the EPI (an older version of the Eysenck Personality Questionnaire), even though psychoticism has been shown to be an important predictor in other media studies (cf. Robinson et al., 1996; Zillmann & Weaver, 1997). Secondly, the number and distribution of subjects is rather limited ($n = 73$). Finally, categories of Internet use were originated from a survey of the subjects, which limits responses to a small number of Internet use motives.

1.3. Research expectations

Considering the encouraging results of previous traditional and new media studies reported here, and the limitations of previous research into personality and Internet use, the current study addresses the following question: Do Eysenck’s personality types serve as useful discriminators of Internet use?

Because of their high sociability and external orientation, it is expected that extraverts will be more likely to view the Internet as an extension rather than substitute for social interaction (Flaherty et al., 1998).

Neuroticism, characterized by anxiety and rejection of social interaction is expected to be associated with a need to use the Internet for social activities, such as chat, e-mail, and other interpersonal communication tools.

It is also expected that neurotics would have less interest in using the Internet as a service tool, and as an informational service (Hamburger & Ben-Artzi, 2000).

Psychotics, who are characterized by breaking societies' mores and rules, are expected to reject traditional media use motives (Weaver, 2001) and use the Internet for anonymity/identity control and stimulation. The stimulation factor here can differ considerably from its traditional conception, in that the Internet allows for significantly more defiant, provocative, and rebellious action than traditional media (i.e. hacking, posting to non-mainstream newsgroups, developing defiant websites).

2. Method

2.1. Project participants

Participants were college students enrolled in two introductory-level communication studies courses at a large Southeastern university, where approximately 60% of undergraduates are male, and roughly 75% are Caucasian. One class is a requirement for all communication majors, while the other is composed mainly of engineering and business students. Respondents received extra credit in their respective classes for assisting with this project. A total of 211 subjects participated in this study, resulting in 210 usable questionnaires (101 females and 109 males), since a participant failed to identify his or her sex.

2.2. Questionnaire

Participants were greeted by a male investigator and instructed to read and sign an informed consent form. Once all assigned subjects arrived, the investigator announced that they would be participating in three different studies. Subjects were then given three questionnaires and one opscan sheet to mark their answers. In order to give participants plenty of time, each session was allotted one hour, but participants rarely took longer than thirty minutes to complete all questionnaires.

2.3. Computer and Internet sophistication

Since all participants were required to own a computer, and the university provided free and easy access to the Internet, participants were asked four questions aimed at measuring overall experience with the Internet and computers.

When asked how they would rate their computer expertise, 1.9% of the students identified themselves as having "none", 1.0% as "novices", 27.6% as "somewhat familiar", 45.7% as "familiar", and 23.8% as "very familiar".

Most participants had been using the Internet for a considerable amount of time. Specifically, 0.5% had been using the Internet for less than one year, 2.9% for more than one year but less than two, 22.4% for more than two but less than three, 24.8% for more than three but no more than four, 12.9% for more than four but not more than five, and 36.7% for more than five years.

The university computer requirement and the ease with which anyone can access the Internet might help account for the high level of computer and Internet experience. Moreover, these factors might attenuate gender differences in engaging with computer technology, particularly the Internet (Teo & Lim, 2000).

Considering that e-mail is one of the most popular Internet applications, a measure of participant's use of this application was needed. Other studies (cf. Swickert et al., 2002) measured e-mail use by asking *how many minutes* a participant spent using e-mail, which is a troublesome measure: would a respondent be able to accurately report the amount of time spent on e-mail? A better measure of dependency on e-mail can be calculated by asking how many times a day a person typically checks her or his e-mail. While this might not be as specific as a time measure, participants might be able to more accurately report their level of e-mail use.

Again, reported usage was high, demonstrating a level of dependency on e-mail: 0.5% reported checking e-mail less than once a day, 2.9% once a day, 22.4% two to three times a day, 24.8% four to five times a day, 12.9% six to seven times a day, and 36.2% more than seven times a day.

Since the university provides free hosting for student web pages, respondents were asked for how long they had a personal web page (if at all), as a final measure of Internet sophistication. A majority of respondents (64.8%) reported not having a personal web page, 12.9% reported having one for less than one year, 7.1% for more than one but less than two years, 4.3% for more than two but less than three years, 6.7% for more than three but less than four years, 0.5% for more than four but less than five years, and 3.8% for more than five years.

2.4. Internet use

Participants were also asked to identify specific Internet and World Wide Web applications that they used most. Answers were recorded on a nine point Likert-type scale ranging from "never" (1), to "sometimes" (5), to "very often" (9).

Students reported making frequent use of e-mail ($M = 8.59$, $SD = 1.10$), music sharing services ($M = 7.44$, $SD = 2.13$), web browsers ($M = 7.92$, $SD = 1.81$), and stand-alone (non-web-based) text messaging programs such as ICQ and Instant Messenger ($M = 8.13$, $SD = 1.96$). Among applications and services that can be accessed using a web browser (web applications), search engines were reported as the most popular ($M = 7.98$, $SD = 1.40$).

2.5. Personality measures

In order to assess personality type, subjects were asked to complete a short version of the Eysenck Personality Questionnaire (EPQ-R) containing slight changes

in language, adapted to an American sample, using a likert-type response scale. The EPQ-R consists of 36 self-report items, with 12 measures for each personality type (P, E, N). Subjects were asked to report how well each item described themselves on a nine point scale ranging from “strongly disagree” (1), to “neutral (5), to “strongly agree” (9).

Consistent with Eysenck, Eysenck, and Barrett (1985), responses were grouped and added to form interval level scales, identified as Extraversion (E; $\alpha = 0.90$), Neuroticism (N; $\alpha = 0.83$), and Psychoticism (P; $\alpha = 0.66$). Pearson correlation coefficients computed between the three variables revealed a significant, but weak correlation between extraversion and neuroticism ($r = -0.20$, $p < 0.005$).

2.6. Internet motives questionnaire

An Internet Motives Questionnaire (IMQ) was designed to examine motivations for Internet use. The IMQ consisted of 45 questions compiled and adapted from previous studies (Bourdeau et al., 2002; D’Ambra & Rice, 2001; Papacharissi & Rubin, 2000; Weaver, 2001), designed to measure a wide variety of motivations associated with interpersonal and mass media use. Questions were conceptually divided into four categories: interpersonal/communication utility, entertainment utility, information utility, and convenience. Participants were asked to report which items motivated them to use the Internet based on a nine point Likert-type scale ranging from “strongly disagree” (1), to “neutral” (5), to “strongly agree” (9).

3. Results

3.1. Personality and Internet use

In order to explore the links between personality and Internet usage motives, step-wise regression analyses were conducted between each personality type and the 45-items in the IMQ, the 14 measures of Internet use, the 16 categories of World Wide Web use, and the four aforementioned measures of Internet sophistication. Sex was forced into the regression model to investigate the possibility of sex differences among each personality type. A dummy variable was created to measure the sex of participants. A negative value indicates females, and a positive value indicates males.

The regression analysis was stopped once any of the included variables (other than sex, which was forced into the model), failed to meet the set level of significance ($p < 0.05$). The results of these analyses, presented on Tables 1–3, demonstrate differing Internet usage motives for each personality type. Negative parameter estimates convey a reversal of the questionnaire item. For example, a negative value for the “belong to a group” item indicates that respondents rejected this item as a reason to use the Internet. Similarly, a negative value for “text messaging” suggests that participants made less use of programs such as ICQ (I Seek You) and Instant Messenger.

Table 1
Extraversion and Internet usage motives: linear equation following stepwise regression

Item	Parameter estimate	Standard error	Model R^2	F
SEX	-1.21	1.01	0.05	1.45
Because I feel more comfortable talking to people online	-1.28	0.42	0.09	9.41*
Music-sharing services	1.29	0.46	0.13	8.01*
Research	1.06	0.41	0.15	6.80*
Mainstream news	-0.84	0.38	0.17	4.79*
To let people know what I think	1.31	0.50	0.18	6.81*
To belong to a group	-1.21	0.58	0.20	4.39*
Intercept	61.95	5.60		112.32**

Note. Sex was coded as a dummy variable (-1 female, and +1 male).

* $p < 0.05$.

** $p < 0.001$.

3.2. Extraversion

Seven variables loaded into the regression model for extraversion (Table 1), explaining approximately 20% of the variance ($F(7,210) = 7.14$; $p < 0.0001$; $R^2 = 0.20$). The results indicate that sex was not a significant discriminator among extraverts, failing to reach the set level of significance ($p < 0.05$). The model draws attention to the negative association between extraversion, and “to belong to a group” ($\beta = -1.21$) and “because I feel more comfortable talking to people online” ($\beta = -1.28$) demonstrating the extraverts’ rejection of the Internet as a substitute for personal interaction. Instead, those scoring high on extraversion prefer to voice their opinion (“to let people know what I think”, $\beta = 1.31$). Moreover, extraverts tend to use the Internet to do research ($\beta = 1.06$) and to share music with others ($\beta = 1.29$).

3.3. Neuroticism

The regression model for neuroticism (Table 2) resulted in eight regressor variables, accounting for approximately 24% of the variance ($R^2 = 0.24$, $F(8,210) = 7.88$, $p < 0.0001$). The negative sex value demonstrates a larger number of female neurotic participants ($\beta = -3.12$).

In contrast with the extravert, those scoring high on neuroticism show particular interest in communal activities on the Internet. This is indicated by their desire to escape loneliness ($\beta = 0.98$), and to “belong to a group” ($\beta = 1.55$). Paradoxically, neurotics reject “text messaging” ($\beta = -1.40$), a popular one-on-one and group communication tool, and show little interest in engaging in online discussions (“to participate in discussions”, $\beta = -1.24$). Finally, those scoring high on N demonstrate an interest in alternative news ($\beta = 1.55$) and a need to learn about potential threats (“so that I can learn about what could happen to me”, $\beta = 1.16$).

Table 2

Neuroticism and Internet usage motives: linear equation following stepwise regression

Item	Parameter estimate	Standard error	Model R^2	F
SEX	-3.12	0.93	0.01	11.19**
To belong to a group	1.55	0.52	0.08	8.81*
Alternative news	1.55	0.45	0.13	11.89**
Text messaging	-1.40	0.46	0.16	9.25*
To participate in discussions	-1.24	0.40	0.18	9.48*
So that I can learn about what could happen to me	1.16	0.42	0.20	7.54*
Because it is cheaper	-0.79	0.36	0.22	4.83*
Because it makes me feel less lonely	0.98	0.46	0.24	4.66*
Intercept	59.32	4.72		158.18**

Note. Sex was coded as a dummy variable (-1 female, and +1 male).

* $p < 0.05$.

** $p < 0.001$.

Table 3

Psychoticism and Internet usage motives: linear equation following stepwise regression

Item	Parameter estimate	Standard error	Model R^2	F
Sex	1.06	0.71	0.09	2.24
To leave messages	-1.12	0.34	0.16	11.15**
Because it passes time away	1.08	0.28	0.22	14.30**
Because it's fun	-1.83	0.43	0.27	17.92**
To look for information	-1.10	0.46	0.29	5.68*
Nudity/pornography	0.79	0.26	0.32	9.57*
So I can learn about what can happen to me	0.81	0.28	0.34	8.20*
Multi-user domains	-0.83	0.32	0.35	6.96*
File-sharing services	0.50	0.20	0.37	6.39*
So I can learn about what is happening the world	-0.75	0.36	0.38	4.27*
Intercept	62.47	4.43		198.59**

Note. Sex was coded as a dummy variable (-1 female, and +1 male).

* $p < 0.05$.

** $p < 0.001$.

3.4. Psychoticism

Table 3 shows the results of the regression analysis for psychoticism. Nine variables accounted for 38% of the variance ($R^2 = 0.38$, $F(9,210) = 12.43$, $p < 0.0001$). Unlike the extravert and the neurotic, the psychotic showed a general disinterest in interpersonal/communication utility motives for using the Internet. The only interpersonal/communication measure associated with those scoring high on psychoticism was a disregard for Internet as a medium to "leave messages" ($\beta = -1.12$).

Those scoring high on P reported more diverse usage motives, including to pass time away ($\beta = 1.08$), nudity and pornography web sites ($\beta = 0.79$), and file-sharing services ($\beta = 0.50$). Psychotics disregard using the Internet for fun ($\beta = -1.83$), using

it to look for information ($\beta = -1.10$), and to participate in multi-user domains ($\beta = -0.83$).

Finally, the model demonstrates the psychotic's interest in learning about what could happen to him/herself ("so I can learn about what could happen to me", $\beta = 0.81$), but a disinterest as to what could happen to others ("so I can learn about what is happening in the world", $\beta = -0.75$).

Unlike neuroticism, no sex effect was evident for high P scorers.

4. Discussion

In accordance to their outgoing and sociable qualities, and research expectations, extraverts seemed to reject the Internet as a substitute for human contact. High E scorers did not see the Internet as a "comfortable" medium to communicate and socialize with others. When using the Internet as a mediated interpersonal communication medium, the extravert reported a desire to voice an opinion, rather than to seek support or escape loneliness. Moreover, those scoring high on extraversion seem to use the Internet for instrumental purposes, such as research and music downloads, while using more common Internet tools, such as the web browser. Interestingly, extraverts reject using the Internet to view mainstream news (no association between extraverts and interactive or alternative news is evident). This is consistent with Weaver (2001), in that extraverts rejected the most traditional motives associated with television viewing, including *information*.

These findings conflict, in part, with those reported by Hamburger and Ben-Artzi (2000), because extraverts did not report a strong interest in "random surfing" or "sex web sites" in the current study. These characteristics seem to be more closely related to those scoring high on the psychoticism scale. It must be acknowledged that in their exploratory study, Hamburger and Ben-Artzi made use of an older inventory (EPI; Eysenck Personality Inventory) that does not measure the psychoticism scale.

The data shows that those scoring high on the psychoticism scale could be described as using the Internet for more alternative or deviant purposes, rejecting the idea of using it for "fun". High P scorers show a preference for web sites displaying pornography and nudity, while making use of file-sharing, as opposed to music-sharing services. This is an important distinction for a number of reasons. First, music-sharing has become a popular service for college students, who are benefited by large-bandwidth connections, exploring free and fast access to a variety of music files (e.g. MP3). While sharing music has become almost mainstream, file-sharing is most commonly connected with the distribution of pirated software, videos, images, and other illegally-distributed, copyrighted material. Secondly, file-sharing services listed as examples in the questionnaire (e.g. Gnutella network) point to more sophisticated applications than those under the music-sharing label. The preference for defiant, or non-mainstream content

was also evidenced in other media studies (Robinson et al., 1996; Weaver, 1991; Weaver, 2001; Weaver et al., 1993).

Unlike Weaver (2001), who studied television use, the present study finds that those scoring high on psychoticism use the Internet as a medium to pass time. While this finding might seem contradictory at first, psychotics could clearly find in the Internet a much more challenging and satisfying pass time medium than television.

Interactions between psychoticism and interpersonal/communication needs were limited to a rejection of the Internet as a medium to “leave messages”. Though high P scorers reported using the Internet “to learn about what could happen to me”, they also rejected the need to look for information or to learn about what is happening in the world. Though this inherent disinterest in society and rebellious attitude is a characteristic of the psychotic (Eysenck & Eysenck, 1985; Zuckerman et al., 1988), a need to learn about potential threats could be closely related to the deviant, and perhaps, illegal activities the psychotic might engage in. The Internet allows for far more “policing” of activity than other media, such as television. By looking at computer logs and activity reports, one could “trace” a user’s action online. Perhaps the high P scorer, in an attempt to learn about “what could happen”, is performing an act of self-preservation, more than worrying about the consequences of their actions.

Unlike those scoring high on psychoticism, high N scorers demonstrated a need for information and belonging. Neurotics showed a preference for alternative news, as opposed to “mainstream” or “interactive” news, perhaps evidencing the need to seek novel, uncommon information, beyond that to be found in mainstream news. Taken together with their need to be informed “about what could happen to me”, the need for information could be understood as an attempt to balance the anxiety and insecurity that the neurotics experience. These findings partially conflict with those presented by Tuten and Bosnjak (2001). The authors found a weak but significant correlation between neuroticism and “learning, reference, and education” websites. A direct contrast of these findings is troublesome, in that the category measured by the authors concatenate a variety of web site categories (learning, reference, and education) into one measure. In contrast to the current study, Tuten and Bosnjak found no association between “current events and news” websites and neuroticism.

These results are consistent with findings on television research by Weaver (1991), but conflict with those reported by Hamburger and Ben-Artzi (2000). Nevertheless, it must be considered that the “information services” factor utilized by the authors of the latter study was comprised of “work” and “study related information”, rather than “news” which is most likely unrelated to work or study information seeking.

It was hypothesized that neurotics would report using the Internet for communication and interpersonal motives. The results suggest a paradox: neurotics turn to the Internet when they are lonely, and in order to belong to a group, but do not make use of text messaging tools (interpersonal/group communication), or to engage in discussions (the negative association between neuroticism and instant

messaging agrees with findings by Swickert et al. (2002)). While these findings might appear contradictory at first, an examination of the neurotics' perception of the Internet as a communication medium through the lens of social presence theory might prove particularly insightful. Social presence theory stipulates that communication media differ in respect to their ability to convey both verbal and non-verbal cues in a communicative exchange in order to convey the closeness (presence) of individuals engaging in communication (Short, Williams, & Christie, 1976). The theory suggests then, that individuals will choose to communicate through a medium that permits the desired level of social presence, depending on the chosen task (i.e. informational exchange, argumentation). The findings of this study suggest that perhaps, the inconsistent rankings and results offered by research into social presence could be due to the neurotic's avoidance of various media for communicative purposes (not only those with high social presence), particularly because it is not only a safe haven for the receiver, but also for the sender. In other words, because people might feel more comfortable speaking in an online environment, they might also be more prone (feel more at ease) to starting arguments, showing disdain, or openly offending others, without the restraint that would take place in face-to-face contact.

The anxiety and apprehension that characterize high N scorers might translate into an avoidance of all communication. As Weaver (1998) describes, neurotics might perceive themselves as easily falling into a "spiral of miscommunication" (p. 113), because they judge themselves inadequate communicators (cf. Coupland, Giles, & Wiemann, 1991, p. 13) Therefore, neurotics might attempt to avoid discussions or interactions that could lead to confrontation, arguments, or other "negative" outcomes.

Taken together, the results clearly suggest a pattern of differences between each personality type and Internet usage and usage motives. Alas, some caveats must be acknowledged. While an extensive list of web and Internet applications was used, the ever-expanding nature of the Internet allows for an even greater list of items to be included. While other measures could have been included here, only the most salient and prevalent were incorporated, for the sake of questionnaire completion time.

Also, this study relied on self-reported measures of usage and "perceptions" of usage motives, which might not reflect actual behavior and usage patterns. A more reliable measure of Internet program preference might be investigated experimentally, allowing users to select an application from a list of available programs (e.g. Instant messaging, web browser, online games, e-mail), and analyzing patterns of program preference according to different personality types. Another alternative could include diaries, given to pre-selected P, E, and N participants, used to record daily Internet use (for a criticism of this method see Ang, 1991).

Finally, it must be highlighted that participants in this study demonstrate substantial experience with the Internet and computers, partially due to a university-wide requirement for personal computers, and widely available Internet connections. Further studies should investigate a wider Internet user base, such as newcomers and different age groups, in order to verify the replicability of these results.

Acknowledgement

This work was derived from the master's thesis of the first author under the direction of the second author. The authors also thank the valuable contribution of committee members, Jim Dubinsky and Jim Weaver.

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