This is to certify that the

dissertation entitled

The relationship between communication apprehension, depression, and internet usage.

presented by

Erika M.J. Butler

has been accepted towards fulfillment
of the requirements for

Doctor in ~~Phylosophy~~ degree in Telecommunication

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Date 10 July 2000

THE RELATION BETWEEN COMMUNICATION APPREHENSION, DEPRESSION AND INTERNET USAGE

By

Erika M. J. Butler

A DISSERTATION

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Telecommunication

2000

ABSTRACT

EXPLORING THE RELATIONSHIP BETWEEN COMMUNICATION APPREHENSION, DEPRESSION AND INTERNET USAGE

By

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This study explores the relationship between communication apprehension (CA), depression (DEP), and Internet usage (USAGE). A survey was administered to 218 undergraduate students at Michigan State University. The survey consisted of three components. Two components measured the subject's level of communication apprehension and depression with well-established measures. The third component included a variety of questions regarding on-line habits. Confirmatory factor analysis was performed on each of these three components to determine the internal consistency and parallelism of the items. Additional analyses were performed on the three constructs to determine whether the correlations among CA, DEP, and USAGE were as predicted by three models. Model 1 posits that DEP mediates the relationship between CA and USAGE, model 2 posits that both CA and DEP exert a direct effect on USAGE, and model 3 suggests that CA exerts a direct effect on both DEP and USAGE. Correlations among the indices were low. It was concluded that DEP is not a strong predictor of USAGE. CA was correlated modestly with USAGE. Further investigation of the relationships among the variables reveals a substantial amount of heterogeneity in USAGE when CA is high, suggesting the presence of a moderator variable. It was found

that gender moderates the relationship of CA and USAGE. Females who have high CA tend to spend more time interacting on-line than males who are high in CA.

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DEDICATION

To my husband Kirt, my daughter, Rosemarie, and my son, Vincent, for all of their unfailing support and love in this effort. And to my parents, Rosemaria and Edmund, for getting me ready for such a test of perseverance.

ACKNOWLEDGMENTS

I would like to thank:

- Franklin J. Boster, Ph.D., the chair of my dissertation committee, and his adorable wife, Linda Boster. Both of these unique individuals have given me a great deal of support and guidance while I have worked on this project. Frank, thank you for all the unfailing direction and patience you offered during my ups and downs. Linda, thanks for all your encouragement, which was always laced with a healthy dose of humor.
- Thomas Muth, Ph.D., for always believing in me.
- Sandi Smith, Ph.D., for providing me with support and a role model of someone I would like to be when I grow up in academe.
- Johannes Bauer, Ph.D., for helping me throughout the Mass Media program.
- My friends, Marian Reiter, Becky McAlpine, and Barbara Beckmeyer, for always offering me their support.
- Rebecca McKee, for her assistance in the final formatting of this document.
- Sally Blomstrom, for all her encouragement.

And thanks to Linda Thallman and all of the secretaries in the Michigan State University Department of Telecommunication Office, who have helped me get through many high-anxiety moments.

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CHAPTER 1

Introduction

New technologies stimulate research (O'Toole, 2000). Recent studies of the Internet have focused on the negative psychological and sociological effects of using the Internet (Brenner, 1997; Buckman, 1999; Egger, 1996; Kraut, 1998; Morahn-Martin, 1997; Suler, 1996; Young 1996; Young & Rodgers 1998). Implied in these studies is the notion that Internet usage in some way displaces or replaces meaningful "real-life" activities, such as face-to-face communication, or that Internet usage is the cause of a series of negative behaviors or states of being, such as depression. Many of these studies have inherent problems because they collect data via the Web (Brenner, 1997; Brenner, 1997; Egger & Rauterberg 1996; Garrison & Long 1995; King 1996; Suler, 1996; Young 1996; Young & Rodgers 1998) or involve subjects who have never been online before (Kraut, Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., Scherlis, W., 1998). Thus, these studies do not employ representative samples. This study develops an exploratory survey of users and their on-line habits, while investigating whether these Internet habits are related to depression and the avoidance or displacement of face-to-face communication.

Literature Review

When seeking companionship, individuals may prefer Internet-based interaction to face-to-face (FtF) interaction for a variety of reasons. First, the repercussions of on-

line communication with others are minimal (King, 1996) because it is relatively easy to disengage from the interaction. Second, computer-mediated communication (CMC) has a distinct disinhibiting effect, due to the individual's relative anonymity and physical safety (Reid, 1994). Third, CMC offers opportunities for increased control during interaction without having to deal with ". . . heightened levels of psychic, sensory, and emotional involvement and arousal, and increased cognitive load . . ." of (FtF) interactions (Burgoon & Walther, 1990, p. 258). This heightened control over the interaction allows users to create impressions and manage relationships in ways that may be more rewarding than in FtF interaction. Walther refers to this ability as "hyperpersonal communication" (Walther, 1996). Finally, the Internet offers a convenient and relatively safe way to increase one's social range, while allowing users to add versatility to the interaction. (Wellman, 1996).

The attractiveness of seeking companionship on-line, however, is unlikely to be the same for everyone. This manuscript addresses the relations among communication apprehension (CA), depression (DEP), and Internet usage (USAGE) as a choice of communication medium for seeking companionship with others. It is proposed that persons with relatively high CA and relatively high DEP will be more likely to avoid communicating with others in person, and instead, will choose to interact with others asynchronously via email or synchronously via chat rooms and other real time on-line games to a greater extent than those relatively low in CA and relatively low in DEP.

CA is the fear or anxiety associated with communication. It is defined as ". . . an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey, 1977; McCroskey, 1978; McCroskey, 1982). Those with high CA have a desire to communicate with others, and understand the importance of doing so, but are restrained by fear or anxiety. Consequently, they tend to avoid situations in which they would like to communicate with others (Allen & Bourhis, 1996). On the other hand, they do not necessarily lack communication skills, nor do they tend to be culturally or socially divergent from the general population. It is estimated that 20 percent of the population is composed of high apprehensives (Richmond & McCroskey, 1998).

Homo sapiens are social. But, for those characterized by high CA, being social by communicating FtF with others ranges from very difficult to almost impossible. McCroskey and Sheahan (1978) found that those with high CA interact less with strangers, have fewer faculty-student relationships, and date fewer people. It has also been found that high apprehensives deliberately choose social settings and occupations that require little social interaction (Daly, 1987). The subsequent reluctance to communicate results in those high in CA being less successful at establishing and maintaining social relationships than those low in CA, resulting in them having significantly fewer friends (Goering & Breidenstein-Cutspec, 1989; Jones, 1982). In educational settings it has been found that peers do not consider those with high CA to be desirable communication partners (Hurt & Preiss, 1978). Students with high CA are not

considered desirable communication partners, because they receive less pleasure themselves in communication situations than those with low CA (Falcione, McCroskey, et al., 1977). Thus, due to their lack of FtF success, those with high CA are more likely to experience social isolation. This social isolation may result in depression and an increased desire to seek companionship with others on-line.

Evidence consistent with this proposition was found in a study investigating whether FtF interactions and Internet interactions are functional alternatives for each other (Flaherty, Pearce et al., 1998). Flaherty et al. found that high apprehensives have a greater need for affiliation and inclusion, the need to be included or to include others in a group (Schutz, 1966). Thus, high apprehensives are motivated to interact with others to fulfill their needs for inclusion (Rubin, Perse et al., 1988). To meet this need for inclusion, high apprehensives tend to use the Internet more than low apprehensives (Rubin & Rubin, 1992).

Depression and Internet Usage

DEP has been a psychological construct since the early history of psychiatry (Kendell, 1968). DEP is characterized by a variety of symptoms, ranging from feelings of sadness, dejection, or melancholy to sleep disorders and a diminished ability to concentrate (Association, 1987). Severe DEP is distinguished from temporary negative moods by the diagnostic criterion that the symptoms of negativity must have been present for at least two weeks. Experts estimate that 5 percent of the population experience severe DEP warranting treatment, and many more experience milder forms that may not

warrant treatment, despite the fact that mild DEP may have a noticeable impact on everyday life (Boyd & Weissman, 1982). In this study DEP is considered an enduring negative state of mind that persists for a period of at least two weeks. It is expected that it influences interest in spending time on-line.

A recent study reports a substantial correspondence between Internet use and DEP. A two-year longitudinal study by Kraut, Patterson, et al. (1998) suggests that increased Internet use causes increased DEP, or at least is highly associated with DEP. Their explanation for this finding is that Internet use decreases interaction with members of one's immediate family, producing a substantial decline in social involvement. Notably, Kraut et al. (1998b) do not measure DEP, but rather infer it from measures of loneliness and social involvement.

Studies of addiction have shown that psychiatric illnesses, such as DEP, are often associated with alcoholism and drug addiction, as well as Internet addiction (Young & Rodgers, 1998). In a Web-based survey, Young found that 259 of 312 subjects met the criteria for addicted users who suffered from mild to moderate levels of DEP, as measured by Beck's Depression Inventory. She suggests that the "low self-esteem, poor motivation, fear of rejection, and the need for approval associated with depressives contribute to increased Internet use" (Young & Rodgers, 1998, p. 3). She also indicates that the anonymity offered by the Internet helps depressives overcome interpersonal difficulties and, because of the increase in personal control over the communication process, helps depressives feel more comfortable when sharing ideas with others. Depressives are thus better able to plan, contemplate, and edit interpersonal messages.

The position taken in this document is not that using a particular communication medium has a direct causal effect on an individual's state of mind. Instead, it is expected that, because of feelings of depression and the need to affiliate, for some the Internet creates an avenue for increased social interaction by providing pleasurable on-line experiences. For those who are depressed and who do not have high CA, on-line interactions may serve to enhance mood. Multi-user domain (MUD) environments in particular provide an avenue for working out personal issues in a productive way (Turkle, 1996)[1]. Case studies describe examples of students using role-playing in MUDs to work through a variety of personal issues such as anxiety, anger, parental conflict, and depression (Turkle, 1998).

Motives for Using the Internet

The most useful coping strategy reported by depressives is increasing their pleasurable experiences (Beckham & Adams, 1984). Television viewing has been reported to be such a coping behavior (Kleinke, 1988). Others have found that various forms of computer-based communication, e.g., MUDing, interacting with computer psychotherapy programs, and chatting on-line have provided therapeutic benefits (Turkle, 1998). Motives for watching television include passing time, gathering information, entertainment, companionship, and escape (Rubin, 1983). It is not unreasonable to expect persons to use their computers and the Internet for the same reasons that they view

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[1] MUDs (multi-user interface domains) are network accessible open-ended role-playing environments in which players construct their own rules, characters, rooms, and objects used in the narratives, and shared meanings developed in the course of the game.

television, namely to increase their pleasurable experiences. Finn and Gorr (1988) investigated the relationship between television watching and psychological attributes. They report shyness, self-esteem, and loneliness to be correlated positively with a set of television-viewing motives termed "social compensation." This study indicates that a sense of social isolation due to these characteristics may lead people to compensate for their isolation by viewing television.

The Internet has become a much more social medium than television. Research has shown that interpersonal communication is the dominant purpose for which the Internet is used at home (Kraut, Mukhopadhyay, et al,. 1998). This function may be the same for those seeking social companionship by allowing them to interact in the relatively risk-free environment of the Internet. If television viewing is a coping strategy for depressives, then Internet use may present depressives with an even more effective avenue for coping with social isolation and depression. Therefore, it is expected that persons suffering from depression seek companionship on-line in order to increase their pleasurable experiences.

Alternative Models

CA and DEP could be related to Internet use in a variety of ways. For example, CA could exert a direct causal impact on DEP, such that DEP increases proportionally as CA increases, and DEP, in turn, could have a direct causal effect on the frequency of Internet use, the relationship being linear with a positive slope. Alternatively, both CA and DEP could contribute to increased Internet usage in separate and additive ways.

Finally, CA could exert a direct causal effect both on DEP and Internet use, so that the observed positive correlation between DEP and Internet use is spurious with respect to CA. The following figures depict these models.

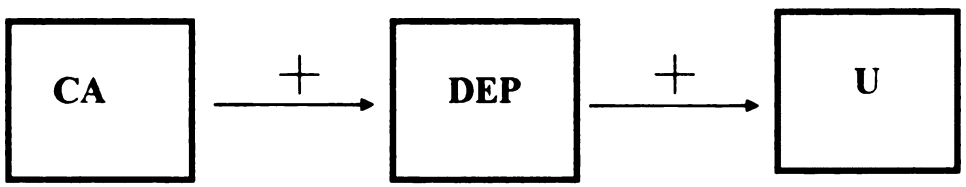

Figure 1. The DEP mediation model.

The model presented in Figure 1 posits that DEP mediates the CA-Internet use relationship. In this model, those with high CA are expected to be more depressed than those low in CA. High apprehensives are expected to be more depressed because interacting with others is not only very stressful, it also is highly correlated with low self-acceptance (Watson, 1985) and difficulty in maintaining relationships (McCroskey, 1978; McCrosky, Richmond, et al. 1975). This difficulty in maintaining relationships leads to social isolation. Due to their lack of FtF success, those with high CA may experience a sense of social isolation. This social isolation may result in feelings of depression, and a subsequently increased desire to seek companionship with others on-line.

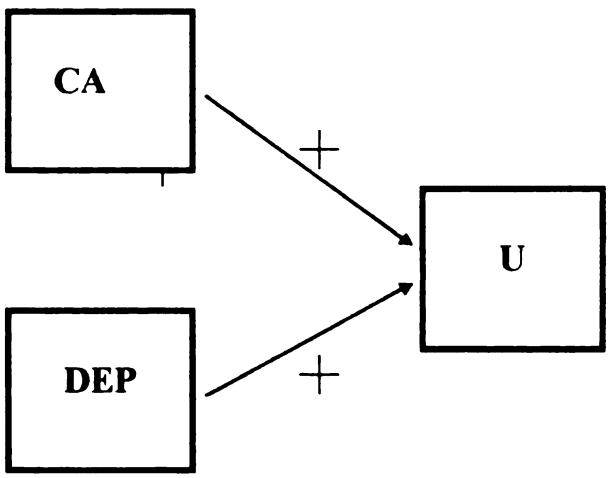

Figure 2. The additive effects model.

The model presented in Figure 2 posits that both CA and DEP exert a direct effect on Internet use. A high CA person finds it very stressful to interact with others, which leads to avoiding communication, and thus, to a relatively high level of social isolation. To compensate, those with high CA are more likely to seek social companionship on-line. Because they do not experience social isolation to a high degree, low CAs, on the other hand, are less likely to seek social companionship on the Internet. Those with a substantial amount of depression also avoid interpersonal communication with others, a condition that leads to social isolation. They seek relief from their depression by spending more time on-line interacting than do those with low DEP, the latter group being likely to engage in FtF communication with other intimates.

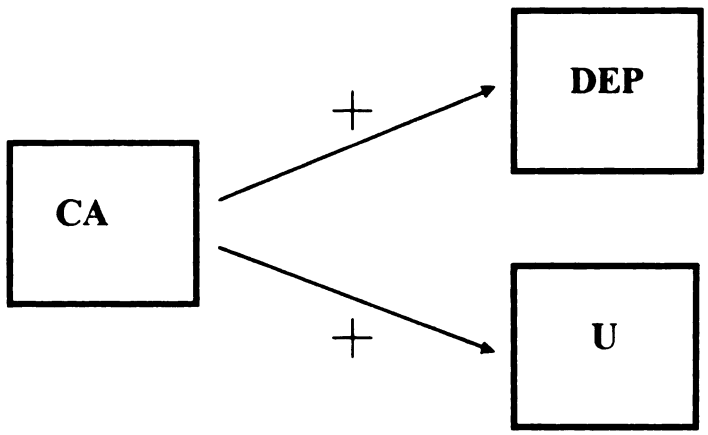

Figure 3. The spurious model.

The model depicted in Figure 3 suggests that CA exerts a direct effect both on DEP and Internet use, so that the correlation between DEP and USAGE is spurious. These links have already been explained. The CA-DEP link is posited to occur for the reasons given in the discussion of the first model, and the CA-U link is posited to occur for reasons given in the second model.

To examine the relational merit of these models a study was conducted. CA, DEP, and USAGE were measured, along with demographic characteristics of the participants. These data were then used to examine the relationships among CA, DEP, and USAGE.

CHAPTER 2

Methodology

Subjects

This study employed a sample of Michigan State University students. A convenience sample was drawn from large lecture classes in the MSU Department of Telecommunication. Participating students were given extra credit for completing the survey.

Instrumentation

A survey was administered that included measures of CA, DEP, and Internet use. The measures of CA and DEP are well established and are listed in Appendices A and B, respectively. The CA measure is a 10-item short form taken from McCroskey's PRCA-24 (McCroskey, Richmond, et al., 1975). Five-point Likert response scales accompany each of these items. Beck's 21-item Depression Inventory is used to measure DEP (Beck, et al., 1961).

Internal consistency reliability estimates for the PRCA-24 forms have ranged from 0.92 to 0.96 (McCroskey, Richmond, et al., 1975). Test-retest reliability over a 7-week period was 0.82. The PRCA-24 short form "is suggested for use with college students, adults, and older (11th, 12th grade) high school students as the best form presently available" to derive a measure of CA (McCroskey, 1978).

Beck's Depression Inventory is a widely used inventory of depression. When developed, this inventory was tested in a variety of ways to determine its reliability. Most notably, test scores (n = 100) were compared to the diagnoses made by experienced psychiatrists. No reliability figures were generated; however, ". . . comparisons between the scores of the inventory and the clinical judgments by the diagnosticians indicate a high degree of reliability" (Beck & Beamesderfer, 1974).

Internet use is measured by a variety of questions that focus on time spent on the Internet, time spent chatting on-line, time spent surfing the Web, and time spent role-playing in MUDs. Questions about on-line usage are listed in Appendix C and focus on identifying how much time is spent on-line socializing versus in other activities, the types of Internet usage, and how much time is spent on e-mail, in chat rooms, and MUDs, among other activities. Respondents were asked how they spend their time when not on-line, in activities such as watching television or going out with their friends.

Procedures

Many recent studies of Internet behavior have been conducted via the Internet using Web-based surveys. It is often argued that this type of sampling is not representative, particularly that it is skewed toward the heavy or experienced Internet user. To overcome this limitation, in this study a paper and pencil survey was used to collect the data. The survey was administered to undergraduate students enrolled in regularly scheduled classes at Michigan State University.

The survey first tested individual levels of CA and DEP. Then it included a variety of demographic questions, which were followed by a series of USAGE questions. The end of the survey included several questions on how people spend their time and which communication medium they chose to communicate with their friends.

The week prior to collecting data students had been asked to keep an informal log of their computer time to increase their ability to report their computer usage time accurately on the survey A final open-ended question gave the participants a chance to provide comments on their individual Internet habits. A total of 81 questions were asked. On average it took the students 30 to 45 minutes to fill out the questionnaire.

CHAPTER 3

Results

Subjects

Surveys were collected in undergraduate classes at Michigan State University. Students were given extra credit for participating in the survey. There were a total of 220 useable surveys out of 223 collected. Of the three surveys excluded; two students answered less than one-half of the questions and one student completed the survey twice. The sample was predominantly male (67%) and Caucasian (72%). Figure 4 is a breakdown of the racial composition of the surveyed population (n = 218).

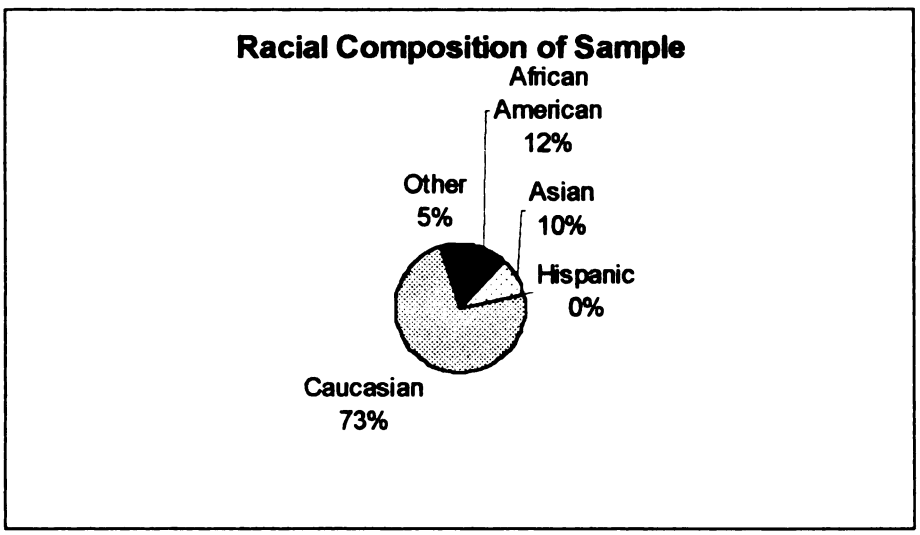

Figure 4. Racial Composition of Sample.

Students were fairly evenly distributed among freshman, sophomore, and junior standing, with slightly fewer seniors participating in the survey (n = 219). Two graduate students completed the survey. Table 1 indicates the breakdown of classes.

Table 1

Student College Standing

Student	Frequency	Percentage
Freshman	59	27.1
Sophomore	56	25.7
Junior	60	27.5
Senior	42	18.8
Graduate	2	0.9
Total	219	100

The sample was predominantly (97.2%) unmarried (n = 219). Reported age was 20.27 years old on average with a standard deviation of 2.45 (n = 215). The youngest participant was 17 years old and the oldest participant was 38 years old.

Computer Experience of Subjects

Subjects reported having used a computer on average 140.47 months (or 11.17 years) with a standard deviation of 145.45 months, or 12.15 years (n = 216). The range of experience in using computers varied from zero to 240 months, or 20 years.

Eighty-two percent of the sample (n = 182) owned a computer, and had owned one for an average of 7.10 years, with a standard deviation 10.24 as shown in Table 2. The range of ownership was from 0 to 20 years.

Table 2

Length of Computer Usage and Ownership

	N	Mean	Standard Deviation
Length of Computer Usage	216	11.71	12.15
Length of Computer Ownership	182	7.10	10.24

Most subjects (60.6%) reported having received some formal computer training in high school, with a mean proportion of 0.61, and a standard deviation of 0.49, as shown in Table 3.

Table 3

Computer Training

Training	Frequency	Percentage
No Training	85	39.0
Training	132	60.6
Total	218	100

Despite having used computers for an average of nearly 12 years (mean 11.71, standard deviation 12.15) and mostly having had some formal training, very few subjects reported that they considered themselves highly experienced users. Most reported considering themselves moderately experienced to experienced users. The breakdown of responses on computer experience (n = 218) appears in Table 4.

Table 4

Reported Computer Experience

Experience Level	Frequency	Percentage
Highly Experienced	36	16.5
Experienced	85	39.0
Moderately Experienced	80	36.7
Novice	16	7.3
Nonuser	1	0.5
Total	218	100

Students were asked how they spent their leisure and personal time on the computer on a weekly basis. Computer application usage was identified as: word processing, spreadsheet, sending and receiving e-mail, chatting on-line, playing computer-based or Web-based games, navigating the Web, interacting with newsgroups, creating and editing Web pages, computer graphics or CAD/CAM, and bulletin board interaction. Table 5 shows that students spend a fair amount of time in interactive Internet-based activities when using their computers. They navigate the Web 14.94 hours

per week. In addition, they spend an average of 4.08 hours per week designing and creating their own Web pages to further enhance their on-line activities.

Fifty-five percent of the surveyed population reported spending more than 7 hours a week on-line for leisure and recreational activities. The time spent playing on the Internet ranged from 7 to 112 hours a week. Within this group of heavy Internet users, they reported in the free form responses that they participate in sports leagues, search the Web randomly for information, shop, download music, and play and view movies. Some students reported that the bulk of their on-line time consisted of researching Web sites in order to improve their own Web sites.

Students also reported spending a substantial amount of time, 7 to 8 hours a week, sending and receiving e-mail. This figure is relatively high, considering that many of the students reported not e-mailing their closest friends very often, because they live with their best friends and see them on a regular basis. On average, they reported spending very little time playing games, developing graphics, entering newsgroups, or using spreadsheets and bulletin boards.

Table 5

Computer Usage Among College Students

Application	Mean	Minimum	Maximum	Standard Deviation	N
Bulletin Boards	0.21 Hours	0	5 Hours	0.76	217
Spreadsheets	0.36 Hours	0	12 Hours	1.15	217
Newsgroups	0.59 Hours	0	25 Hrs	2.24	217
CAD/CAM	1.02 Hours	0	30 Hrs	3.92	217
Web Games	1.34 Hours	0	35 Hrs	3.89	219
PC-Based Games	1.86 Hours	0	30 Hrs	3.39	219
Chatting On-line	2.70 Hours	0	50 Hrs	6.31	219
Web Page Design*	4.08 Hours	0	30 Hrs	37.69	218
Word Processing	4.10 Hours	0	15 Hrs	37.48	219
Responding to E-mail	7.68 Hours	0	50 Hrs	67.47	219
Sending E-mail	7.73 Hours	0	30 Hrs	67.40	219
Navigating the Web*	14.94 Hours	0	60 Hrs	95.02	219

*Several students in these categories failed to report in exact hours; instead they reported spending "hours" or "forever" navigating the Web or editing Web pages. These data were coded as missing. The averages in these categories would be higher had the students given more precise data in response to the survey questions.

The majority of the students surveyed reported using their university e-mail account for personal purposes. Some reported using free Internet accounts such as Hotmail or paid America Online (AOL) accounts. Table 6 reports these findings.

Table 6

Type of E-mail Accounts Used for Personal Purposes

Type of E-mail Account	Frequency	Percentage
University	127	57.50
AOL Account	36	16.30
Free Internet Account	46	20.80
Employer Account	4	1.80
Other	1	0.50
Total	215	97.30

Communication Apprehension

Confirmatory factor analysis was performed on the ten communication apprehension items to determine the internal consistency and parallelism of the measures (Hunter & Gerbing, 1982). This analysis resulted in the retention of seven out of the ten

items. Item means, standard deviations, and factor loadings for these items appear in Table 7.

Table 7

Descriptive Statistics of Communication Apprehension Items

Communication Apprehension Item	Mean	Standard Deviation	Factor Loading
Expressing Oneself at Meetings	2.46	0.97	0.64
Expressing Oneself in a Group	2.18	1.00	0.68
Speaking in Public	2.93	1.17	0.81
At a Loss Speaking on a Platform	2.58	1.16	0.70
Avoidance of Public Speaking	2.48	1.14	0.69
More Fluent Than Others When Talking to People	2.68	1.05	0.57
Enjoyment of Group Discussion	2.33	0.96	0.66

Responses to these items were averaged to create an index. The index had a mean of 2.21 and a standard deviation of 0.93. Reliability was estimated by standard score coefficient alpha, which was found to be 0.86.

Depression

Confirmatory factor analysis was also performed on the 21 depression items to determine the internal consistency and parallelism of the measures. Confirmatory factor analysis resulted in the retention of nine depression items. Item means, standard deviations, and factor loadings for these items can be found in Table 8.

Table 8

Descriptive Statistics of Depression Items

Depression Item	Mean	Standard Deviation	Factor Loading
Sadness	1.30	0.72	0.71
Satisfaction	1.50	0.86	0.64
Feelings of Guilt	1.20	0.56	0.75
Need for Punishment	1.24	0.62	0.58
Self Image	1.29	0.56	0.68
Criticism of Self	1.38	0.61	0.58
Willingness to Harm Oneself	1.16	0.40	0.65
Decision Making Ability	1.21	0.48	0.54
Appearance of Self	1.33	0.70	0.38
Self Absorption	1.32	0.50	0.10

Individual items were averaged to create a depression index. The index had a mean of 1.18 and an average standard deviation of 0.55. Reliability was estimated by standard score coefficient alpha, which was 0.82 for this construct.

Usage

Confirmatory factor analysis was performed on a variety of usage items to determine the internal consistency and parallelism of the items. The items investigated in this cluster were: sending and receiving email, chatting on-line, playing computer-based games, playing Web-based games, Web navigating, chat room activity, and e-mailing friends. The survey asked students to report how much of their leisure time they spent weekly on each of these activities. Sending and receiving e-mail were summed to create one indicator, namely e-mail. Confirmatory factor analysis resulted in the retention of four usage items, e-mail, chatting interactively, navigating the Web, and playing Web-based games. Individual means, standard deviations, and factor loadings for these items appear in Table 9.

Table 9

Descriptive Statistics of Usage Items

Depression Item	Mean	Standard Deviation	Factor Loading
E-mail	6.29 Hours per Week	7.99	0.84
Chat	2.72 Hours per Week	6.32	0.70
Navigating Web	1.34 Hours per Week	3.90	0.54
Web Games	5.89 Hours per Week	7.97	0.61

Items were standardized and then averaged to create a usage index. The z-scores of the index had a mean of 0.00 and a standard deviation of 0.99. Reliability was estimated by standard score coefficient alpha, which was 0.76.

Testing the Measurement Model

The parallelism and internal consistency theorems were employed to assess the content validity of the constructs CA, DEP, and USAGE. The internal consistency theorem generates predicted correlations among the indicators of each construct. These predicted correlations were then compared with the obtained correlations to generate an estimate of residuals or errors in the model. The parallelism theorem predicts that the correlation between indicator of two different constructs is the product of their factor loadings and the correlation between the constructs. Both theorems were used to assess

whether the correlations among CA, DEP, and USAGE were as predicted by the three-factor model. The residuals for this model were generally small, as shown in Table 10, and as a result a three-factor model was not rejected.

Table 10

Residuals for CA, DEP, AND USAGE Correlations

	1	2	3	4	5	6	7	13	14	15	16	17	18	19	23	24	30	EM	CH	NG	WG
CA1																					
CA2	.02																				
CA3	.05	.02																			
CA4	.03	.04	.01																		
CA5	.05	.04	.06	.12																	
CA6	.03	.06	.00	.06	.07																
CA7	.02	.06	.08	.07	.03	.14															
D13	.05	.05	.03	.05	.06	.01	.08														
D14	.13	.08	.05	.03	.02	.07	.11	.06													
D15	.04	.09	.04	.07	.02	.18	.00	.04	.00												
D16	.04	.06	.11	.03	.01	.10	.04	.00	.03	.01											
D17	.03	.02	.00	.02	.04	.04	.02	.02	.03	.06	.02										
D18	.04	.02	.05	.02	.03	.00	.04	.01	.06	.03	.01	.04									
D19	.04	.07	.06	.03	.07	.04	.04	.03	.02	.01	.02	.03	.02								
D23	.05	.05	.03	.04	.07	.04	.08	.05	.05	.02	.05	.03	.06	.04							
D24	.01	.00	.06	.12	.01	.07	.00	.11	.06	.14	.06	.03	.01	.02	.07						
D30	.03	.08	.03	.01	.03	.03	.01	.06	.01	.13	.07	.03	.08	.12	.04	.00					
EM	.06	.07	.15	.05	.09	.10	.00	.04	.07	.08	.00	.09	.07	.05	.04	.04	.03				

CH	.07	.06	.01	.06	.04	.08	.05	.02	.01	.06	.02	.06	.06	.01	.06	.01	.05	.08			
NG	.01	.02	.02	.00	.02	.01	.10	.04	.11	.03	.06	.11	.08	.03	.04	.05	.08	.04	.04		
WG	.00	.01	.01	.05	.06	.06	.15	.03	.09	.05	.06	.15	.00	.02	.00	.06	.09	.04	.05	.08	

Examining the Theoretical Models

An examination of scatter plots showed no indication of nonliniarity among the three focal constructs. Inconsistent with each of the proposed theoretical models, the correlations among the three indices were low. The correlations between the CA, DEP, and USAGE constructs are displayed in Table 11.

Table 11

Correlations Among the Indexes

	CA	DEP	USAGE
CA	1.00	0.11	0.19
DEP	0.09	1.00	0.08
	*(0.09)		
USAGE	0.15	0.06	1.00
	*(0.01)	*(0.19)	

*P values in parenthesis based on a two-tailed test.

The data collected from this survey result in reasonably high coefficient alphas for each index. Each of the models fit well, nevertheless, it must be concluded that DEP is not strongly associated with Internet usage ($r = 0.06$, with a 95-percent confidence interval of [-0.04, 0.22]). Communication apprehension on the other hand, is correlated modestly with usage ($r = 0.15$, with a 95% confidence interval of [0.02, 0.28]). Thus, the theoretical models proposed in the introduction were inconsistent with the data. Models 1 and 2 fail, because there is no correlation ($r = 0.09$) between DEP and USAGE. Thus, DEP cannot mediate the relationship between CA and USAGE in Model 1, nor does it exert a direct effect on USAGE as proposed by Model 2. Model 3 fails, because the relationship between CA and DEP is nonexistent, $r = 0.09$.

Several findings worth noting were uncovered after further investigation of the relationships among variables. Consider the correlation of 0.15 between the variables CA and USAGE. A scatter plot of the relationship between these two variables reveals a substantial amount of heteroskedasticity in computer usage when communication apprehension is high (see Figure 5). This heteroskedasticity suggests the presence of a moderator variable.

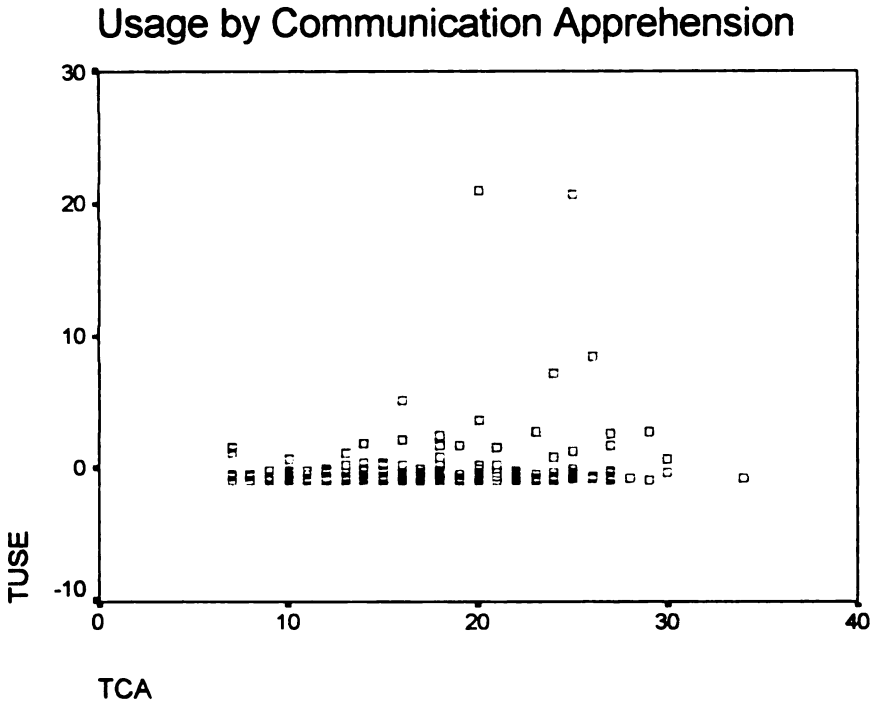

Figure 5. Usage by Communication Apprehension

Recoding CA as high (HIGH), medium (MED), and low (LOW), a variety of exploratory analyses were done to search for the moderator. Findings suggest that gender moderates the relation of CA and USAGE. In particular, females who have high CA tend to spend more time on-line than males who are high in CA.

Breaking down USAGE by gender and CA, a pattern in the means can be observed. Males show little difference in their Internet usage habits whether they are characterized by LOW, MED, or HIGH CA. Females, however, show a sharp increase in their Internet usage when they are characterized by HIGH CA (see Table 12). A two-way

ANOVA shows this interaction to be statistically significant: [$F(2, 211) = 4.19, p = 0.016$], with variances exhibiting substantial heterogeneity [$F(5,11) = 7.80, p$ 0.01].

Table 12

Male/Females – Internet Usage

	CA		
	LOW	MEDIUM	HIGH
MALE	-0.46	0.04	0.02
FEMALE	-.056	-.050	1.99

In addition, gender differences in depression were investigated. The means for depression, presented in Table 13, showed that on average more males expressed having feelings of depression than females in the HIGH CA condition but not in the LOW or MED conditions. This finding is interesting when considering that females in the high CA condition spend more time on-line than males in the high CA condition. It raises the question of whether high CA females are able to lower their feelings of depression by interacting more with others on-line. The limited number of CA females precluded more sophisticated probing of this possibility, and consequently, the issue requires examination in subsequent studies.

Table 13

Male/Females – Depression

	CA		
	LOW	MED	HIGH
MALE	13.11	12.46	14.42
FEMALE	12.54	13.23	11.87

CHAPTER 4

Discussion

The finding that depression is not correlated with Internet usage is inconsistent with a number of studies that focus on the negative effects of Internet usage (Brenner, 1997; Buckman, 1996; Egger, 1996; Kraut, 1998; Morahn-Martin, 1997; Suler, 1996; Young, 1996; Young & Rodgers, 1998). In particular, the data in this study do not support the finding made by Kraut et al. (1998), that Internet usage increases depression. This can be explained in several ways. First, the samples used in both studies vary tremendously in terms of age and computer experience. The sample used in this study averaged 20 years old. They were primarily telecommunication students who are interested in computers, networks and the Internet. The sample used in the Internet Paradox study (Kraut et al., 1998) consisted of 93 families from diverse neighborhoods in Pittsburgh. In this study, each family received the necessary equipment and training needed to get started on the Internet.

Thus, the most striking difference between the two samples is their level of computer experience. The sample in this study rated themselves as being moderately experienced to experienced computer users. They had had an average of 12 years of computer experience behind them, whereas the other sample consisted of first-time Internet users. This difference in computer experience may have a very pronounced effect on an individual's feelings of depression.

Consider the notion of computer competency. If you have a lot of experience using computers you will be able to set reasonable expectations regarding the level of

satisfaction you may receive from using the Internet. In addition, you will also have a good understanding of what needs may not be met by using the Internet. And, you may have a pretty good self-image about yourself vis-à-vis the computer in general. All of these factors may lead to a more satisfactory experience in general when using the Internet. First-time users will invariably stumble into problems that they will not be able to solve as fast as experienced users. This may lead to feelings of inadequacy or failure on the part of the first-time user. Such feelings of insecurity about how to use the Internet and a computer in general could contribute towards an individual's feelings of depression.

A second factor is ownership of computer equipment. Eighty-two percent of the people in this study owned a computer. This large percentage of ownership indicates that for the most part, this group already used a computer for some particular reason, such as doing school work. The first-time users in the Internet Paradox study still had to figure out why and how to use their new equipment, even though the samples were drawn such that "the participants would have some preexisting communications and information interest in common" (p. 1020). Clearly, the authors of this study knew the importance of the need to have a real reason to interact with others on-line. Not having a purpose for using the Internet may also contribute to an individual's feelings of depression. The first-time users may have felt that they where expected to interact with others on-line, but that they failed at this because they really did not have a true motivation or reason to be on-line and involved with others.

One could also reason that first-time users do not have a large on-line social group established. Thus, when they would go on-line they would become acutely aware of the

fact that they really had no one to talk to about anything of importance. Being popular or having a lot of friends is often associated with being a success. Not having a meaningful group of friends and acquaintances to talk to on-line may also contribute to a person's feelings of depression.

A third difference is the times at which depression measures where taken. In the Internet Paradox study, depression questionnaires were collected in March. March in Pittsburgh may be a more depressing time of year than any other time. As winter comes to an end, one may suffer from a lack of natural daytime exposure, a condition that is often referred to as SAD (seasonal affective disorder). The depression measures for this study were taken in November. November in Michigan is a time when the number of daylight hours are just beginning to shorten0. So, Michiganians have not been as deprived from sunlight as they would be in March.

Thus, the relationship between Internet usage and depression may be moderated by computer experience, computer ownership, time of year, and a variety of group issues not fully examined in these studies.

Although the correlations among the variables investigated in this study were low and the proposed theoretical models failed, some interesting findings emerged. The fact that men report being more depressed when they are high communication apprehensives suggests that they are less able to overcome the problems of social isolation associated with communication apprehension. This outcome is consistent with the finding that females in the high communication apprehension condition do tend to spend more time interacting on-line than their male counterparts. One could posit that females cope better with high CA by interacting more with others on-line, and that males do not. Interacting

on-line allows females to satisfy their need to interact with little of the anxiety often associated with face-to-face interaction. This ability to satisfy one's social needs may contribute to a lower degree of depression found in females with high communication apprehension. In other words, HIGH CA females are able to decrease their feelings of depression by spending more time interacting with others on-line, whereas men who are characterized by HIGH CA are finding no outlet for interacting with others either in person or on-line. Without the ability to express themselves and interact with others either face-to-face or on-line, these men may be feeling more depressed and more socially isolated.

More generally, the data suggest that the Internet is not something new and different in the lives of the subjects sampled. Neither should Internet usage be seen as an activity that suddenly is replacing other activities previously pursued by these individuals. In fact, the individuals investigated in this study clearly have grown up with computers. Computer usage is considered a natural part of their lives, and they blend computer time into a variety of other activities. In the free-form responses found at the end of the survey, subjects elaborated on their Internet activities by explaining what it means to them. Their Internet activities include finding music and software to download, doing research on characters used for short stories, interacting in sports leagues, and experimenting with oneself in a variety of ways without real-life repercussions. They note in their free-form responses at the end of the survey, for example, "I watch TV and surf/work the computer at the same time, and usually late at night. . . . I only do either alone, and quickly lose interest in either when people are present." Or, "I get almost all of my news from the Internet – CNN and local TV stations, papers" and "I like searching

for topics that I am curious about, just for the sake of knowing. I have learned a lot from the Internet and it has helped me make some life-changing decisions." Or, "It's my life. It's how I make my money, it's how I buy my Christmas presents. It's how I interact. It's how I make plans." These comments all indicate that Internet usage is not necessarily a substitute for other behaviors or that its main purpose is not necessarily to provide an escape for individuals from real life. In fact, these comments are indicative of how the Internet has become an integral part of the lives of these students. And for some, it may have become a convenient tool to relieve themselves from anxiety associated with interacting with others in face-to-face situations, thus providing them with a means to manage their feelings of depression or social isolation.

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APPENDICES

APPENDIX A

Communication Apprehension

PR-24 – Short form.

1. I look forward to expressing myself at meetings.

2. I am afraid to express myself in a group.

3. I look forward to an opportunity to speak in public.

4. Although I talk fluently with friends, I am at a loss for words on the platform.

5. I always avoid speaking in public if possible.

6. I feel that I am more fluent when talking to people than most other people are.

7. I like to get involved in group discussion.

8. I dislike using my body and voice.

9. I'm afraid to speak in conversations.

10. I would enjoy presenting a speech on a local television show.

APPENDIX B

Beck's Depression Inventory

A. (Mood)

0 I do not feel sad

1 I feel blue or sad

2a I am blue or sad all the time and I can't snap out of it

2b I am so sad or unhappy that it is very painful

3. I am so sad or unhappy that I can't stand it

B. (Pessimism)

0. I am not particularly pessimistic or discouraged about the future

1a I feel discouraged about the future

2a I feel I have nothing to look forward to

2b I feel I won't ever get over my troubles

3 I feel that the future is hopeless and that things cannot improve

C. (Sense of Failure)

0 I do not feel like a failure

1 I feel I have failed more than the average person

2a I feel I have accomplished very little that is worthwhile or that means anything

2b As I look back on my life all I can see is a lot of failures

3 I feel I am a complete failure

D. (Lack of Satisfaction)

0 I am not particularly dissatisfied

1a I feel bored most of the time

1b I don't enjoy things the way I used to

2 I don't get satisfaction out of anything any more

3 I am dissatisfied with everything

E. (Guilty Feeling)

0 I don't feel particularly guilty

1 I feel bad or unworthy a good part of the time

2a I feel quite guilty

2a I feel bad or unworthy practically all the time now

3 I feel as though I am very bad or worthless

F. (Sense of Punishment)

0 I don't feel I am being punished

1 I have a feeling that something bad may happen to me

2 I feel I am being punished or will be punished

3a I feel I deserve to be punished

3b I want to be punished

G. (Self-Hate)

0 I don't feel disappointed in myself

1a I am disappointed in myself

1b I don't like myself

2 I am disgusted with myself

3 I hate myself

H. (Self-Accusations)

0 I don't feel I am any worse than anybody else

1 I am very critical of myself for my weaknesses or mistakes

2a I blame myself for everything that goes wrong

2b I feel I have many bad faults

I. (Self-Punitive Wished)

0 I don't have any thoughts of harming myself

1 I have thoughts of harming myself but I would not carry them out

2a I feel I would be better off dead

2b I have definite plans about committing suicide

3 I would kill myself if I could

J. (Crying Spells)

0 I don't cry any more than usual

1 I cry more now than I used to

2 I cry all the time now, I can't stop it

3 I used to be able to cry but now I can't cry at all even though I want to

K. (Irritability)

0 I am no more irritated now than I ever am

1 I get annoyed or irritated more easily than I used to

2 I feel irritated all the time

3 I don't get irritated at all at the things that used to irritate me

L. (Social Withdrawal)

0 I have not lost interest in other people

1 I am less interested in other people now than I used to be

2 I have lost most of my interest in other people and have little feeling for them

3 I have lost all my interest in other people and don't care about them at all

M. (Indecisiveness)

0 I make decisions about as well as ever

1 I am less sure of myself now and try to put off making decisions

2 I can't make decisions any more without help

3 I can't make any decisions at all any more

N. (Body Image)

0 I don't feel I look any worse than I used to

1 I am worried that I am looking old or unattractive

2 I feel that there are permanent changes in my appearance and they make me look unattractive

3 I feel that I am ugly or repulsive looking

O. (Work Inhibition)

0 I can work about as well as before

1a It takes extra effort to get started at doing something

1b I don't work as well as I used to

2 I have to push myself very hard to do anything

3 I can't do any work at all

P. (Sleep Disturbance)

0 I can sleep as well as usual

1 I wake up more tired in the morning than I used to

2 I wake up 1 to 2 hours earlier than usual and find it hard to get back to sleep

3 I wake up early every day and can't get more than 5 hours of sleep

Q. (Fatigability)

0 I don't get any more tired than usual

1 I get tired more easily than I used to

2 I get tired from doing anything

3 I get too tired to do anything

R. (Loss of Appetite)

0 My appetite is no worse than usual

1 My appetite is not as good as it used to be

2 My appetite is much worse now

3 I have no appetite at all any more

S. (Weight Loss)

0 I haven't lost much weight, if any, lately

1 I have lost more than 5 pounds

2 I have lost more than 10 pounds

3 I have lost more than 15 pounds

T. (Somatic Preoccupation)

0 I am no more concerned about my health than usual

1 I am concerned about aches and pains *or* upset stomach *or* constipation *or* other unpleasant feelings in my body

2 I am so concerned with how I feel or what I feel that it's hard to think of much else

3 I am completely absorbed in what I feel

U. (Loss of Libido)

0 I have not noticed any recent change in my interest in sex

1 I am less interested in sex than I used to be

2 I am much less interested in sex now

3 I have lost interest in sex completely

APPENDIX C

Study Questionnaire

Major: _____ Student number: _____

Consent Form

This research project will be conducted to meet the requirements for a doctorate in philosophy. Your identities will be known to the principal investigator only by a tracking number assigned to each completed survey. Thus, your identity will be kept confidential. All reports of research findings will be aggregated. Your participation is voluntary; you may refuse to answer any question and may terminate your participation at any time. Responses will be kept confidential to the extent allowed by the law. You indicate your voluntary agreement to participate by completing and returning this questionnaire.

Instructions: circle to what degree the following statements best describes yourself, where:

1 = to highly disagree and where 5 = to highly agree.

1. I look forward to expressing myself at meetings.

   (highly disagree) 1 2 3 4 5 (highly agree)

2. I am afraid to express myself in a group.

   (highly disagree) 1 2 3 4 5 (highly agree)

3. I look forward to an opportunity to speak in public.

(highly disagree) 1 2 3 4 5 (highly agree)

4. Although I talk fluently with friends, I am at a loss for words on the platform.

(highly disagree) 1 2 3 4 5 (highly agree)

5. I always avoid speaking in public if possible.

(highly disagree) 1 2 3 4 5 (highly agree)

6. I feel that I am more fluent when talking to people than most other people are.

(highly disagree) 1 2 3 4 5 (highly agree)

7. I like to get involved in group discussion.

(highly disagree) 1 2 3 4 5 (highly agree)

8. I dislike using my body and voice.

(highly disagree) 1 2 3 4 5 (highly agree)

9. I'm afraid to speak in conversations.

(highly disagree) 1 2 3 4 5 (highly agree)

10. I would enjoy presenting a speech on a local television show.

(highly disagree) 1 2 3 4 5 (highly agree)

Indicate with a check mark which statement best describes you on any given day; please mark only one.

11. a) ___ I do not feel sad

b) ___ I feel blue or sad

c) ___ I am blue or sad all the time and I can't snap out of it

d) ___ I am so sad or unhappy that it is very painful

e) ___ I am so sad or unhappy that I can't stand it

12. a) ___ I am not particularly pessimistic or discouraged about the future

b) ___ I feel discouraged about the future

c) ___ I feel I have nothing to look forward to

d) ___ I feel I won't ever get over my troubles

e) ___ I feel that the future is hopeless and that things cannot improve

13. a) ___ I do not feel like a failure

b) ___ I feel I have failed more than the average person

c) ___ I feel I have accomplished very little that is worthwhile or that means anything

d) ___ As I look back on my life all I can see is a lot of failures

e) ___ I feel I am a complete failure

14. a) ___ I am not particularly dissatisfied

b) ___ I feel bored most of the time

c) ___ I don't enjoy things the way I used to

d) ___ I don't get satisfaction out of anything anymore

e) ___ I am dissatisfied with everything

15. a) ___ I don't feel particularly guilty

b) ___ I feel bad or unworthy a good part of the time

c) ___ I feel quite guilty

d) ___ I feel bad or unworthy practically all the time now

e) ___ I feel as though I am very bad or worthless

16. a) ___ I don't feel I am being punished

b) ___ I have a feeling that something bad may happen to me

c) ___ I feel I am being punished or will be punished

d) ___ I feel I deserve to be punished

e) ___ I want to be punished

17. a) ___ I don't feel disappointed in myself

b) ___ I am disappointed in myself

c) ___ I don't like myself

d) ___ I am disgusted with myself

e) ___ I hate myself

18. a) ___ I don't feel I am any worse than anybody else

b) ___ I am very critical of myself for my weaknesses or mistakes

c) ___ I blame myself for everything that goes wrong

d) ___ I feel I have many bad faults

19. a) ___ I don't have any thoughts of harming myself

b) ___ I have thoughts of harming myself but I would not carry them out

c) ___ I feel I would be better off dead

d) ___ I have definite plans about committing suicide

e) ___ I would kill myself if I could

20. a) ___ I don't cry any more than usual

b) ___ I cry more now than I used to

c) ___ I cry all the time now, I can't stop it

d) ___ I used to be able to cry but now I can't cry at all even though I want to

21. a) ___ I am no more irritated now than I ever am

b) ___ I get annoyed or irritated more easily than I used to

c) ___ I feel irritated all the time

d) ___ I don't get irritated at all the things that used to irritate me

22. a) ___ I have not lost interest in other people

b) ___ I am less interested in other people now than I used to be

c) ___ I have lost most of my interest in other people and have little feeling for them

d) ___ I have lost all my interest in other people and don't care about them at all

23. a) ___ I make decisions about as well as ever

b) ___ I am less sure of myself now and try to put off making decisions

c) ___ I can't make decisions any more without help

d) ___ I can't make any decisions at all any more

24. a) ___ I don't feel I look any worse than I used to

b) ___ I am worried that I am looking old or unattractive

c) ___ I feel that there are permanent changes in my appearance and they make me look unattractive

d) ___ I feel that I am ugly or repulsive looking

25. a) ___ I can work about as well as before

b) ___ It takes extra effort to get started at doing something

c) ___ I don't work as well as I used to

d) ___ I have to push myself very hard to do anything

e) ___ I can't do any work at all

26. a) ___ I can sleep as well as usual

b) ___ I wake up more tired in the morning than I used to

c) ___ I wake up 1 to 2 hours earlier than usual and find it hard to get back to sleep

d) ___ I wake up early every day and can't get more than 5 hours of sleep

27. a) ___ I don't get any more tired than usual

b) ___ I get tired more easily than I used to

c) ___ I get tired from doing anything

d) ___ I get too tired to do anything

28. a) ___ My appetite is no worse than usual

b) ___ My appetite is not as good as it used to be

c) ___ My appetite is much worse now

d) ___ I have no appetite at all any more

29. a) ___ I haven't lost much weight, if any, lately

b) ___ I have lost more than 5 pounds

c) ___ I have lost more than 10 pounds

d) ___ I have lost more than 15 pounds

30. a) ___ I am no more concerned about my health than usual

b) ___ I am concerned about aches and pains *or* upset stomach *or* constipation *or* other unpleasant feelings in my body

c) ___ I am so concerned with how I feel or what I feel that it's hard to think of much else

d) ___ I am completely absorbed in what I feel

31. a) ___ I have not noticed any recent change in my interest in sex

b) ___ I am less interested in sex than I used to be

c) ___ I am much less interested in sex now

d) ___ I have lost interest in sex completely

32. Are you MALE _____ or FEMALE _____

33. How old are you? _____

34. College standing: Freshman ___ Sophomore ___ Junior ___ Senior ___ Grad Student ___ Other ___

35. Marital status: Single ___ Married ___

36. Children YES ___ NO ___ If yes, how many _____

37. Which of the following best describes you?

a) ___ African American d) ___ Hispanic g) ___ Indian Asian

b) ___ Asian e) ___ Caucasian h) ___ Other

c) ___ Indian American f) ___ Asian Indian

38. How long have you used computers in general? _____ months _____ years

39. Do you own a computer? YES ___ NO ___ (If NO, please go to question 41)

40. If so, how long have you owned a computer? _____ months _____ years

41. Do you have any formal computer training? YES ___ NO ___

If yes, please specify _____

42. How would you rate yourself in terms of computing skills?

a) ___ Highly experienced

b) ___ Experienced

c) ___ Moderately experienced

d) ___ Novice

e) ___ Non-user

43. On average I use my computer for leisure activities _____ hour(s) a week.

44. For what purpose(s) do you use a computer for leisure and/or recreation activities **frequently**? Check all that apply.

a) ___ word-processing

b) ___ spreadsheet applications

c) ___ on-line interactions with others

d) ___ computer-based games

e) ___ on-line games

f) ___ Web surfing

g) ___ PowerPoint presentations

h) ___ shopping

i) ___ newsgroup interactions

j) ___ bulletin board interactions

k) ___ creating Web pages

l) ___ other(s) _____

When answering the following set of questions, please refer to your leisure and/or personal activities, NOT TO SCHOOL OR WORK related activities.

45. How much time do you spend word processing on a weekly basis? ____ hr(s).

46. How much time do you spend working with spreadsheet applications? ____ hr(s).

47. How much time do you spend sending e-mail on a weekly basis? ____ hr(s).

48. How much time do you spend responding to e-mail on a weekly basis? _____ hr(s).

49. How much time do you spend chatting on-line on a weekly basis? _____ hr(s).

50. How much time do you spend playing computer-based games on a weekly basis? _____ hr(s).

51. How much time do you spend playing on-line games on a weekly basis? _____ hr(s).

52. How much time do you spend navigating the Web on a weekly basis _____ hr(s)

53. How much time do you spend interacting newsgroups on a weekly basis? _____ hr(s).

54. How much time do you spend creating and editing Web pages on a weekly basis? _____ hr(s).

55. How much time do you spend on graphic design or CAD/CAM applications on a weekly basis? _____ hr(s).

56. How much time do you spend interacting with bulletin boards per week? ____ hr(s).

57. How many e-mail accounts do you own? _____ If you have only one account , please continue with question 59.

58. Do you access all of these at the same rate?

YES ___NO ___

59. Which account do you use the most for recreational purposes?

a) University account

b) AOL account or other provider

c) free Internet account (Example: Hotmail)

d) Account provided by employer (exclude your university account from this category)

e) other _____

60. How often do you access your primary e-mail for personal purposes? (Check one only).

a) ___ Constantly

b) ___ Hourly

c) ___ Daily

d) ___ More than once a day

e) ___ Every other day

f) ___ Weekly

g) ___ Monthly

h) ___ Rarely

61. On average how many recreational e-mail messages do you get on a daily basis?

_____ messages

62. In general, do you respond immediately to each message as it arrives?

YES ___ NO ___

63. If yes, what percentage of the messages are you able to deal with immediately?

____

64. If no, what is the main reason for not responding immediately?

a) ___ lack of time

b) ___ lack of interest in the message

c) ___ must research the answer

d) ___ do not know the sender

e) ___ other _____

65. What percentage of your nonwork-related messages must you save and respond to later? _____ %

66. Do you enter chatrooms? YES ___ NO ___ If you answered NO to this question, please continue with question 75.

67. Estimate how many unique chatrooms you have participated in: _____

68. List your favorite chatrooms: _____

_____ _____

69. How often per week do you participate in a chatroom? _____ times per week

70. On average, how long are you on- line chatting on any given day? _____ min.

____ hr(s).

71. At what time of the day do you mostly enter in to a chatroom?

I enter a chatroom mostly at _____

72. Do you always go into a chatroom as your self? YES ___ NO ___

73. If no, then what persona do you take on? _____

_____

74. Do you go into chatrooms and simply read what's going on without actively participating? YES ___ NO ___

75. How often do you watch TV? I watch TV _____ hours per week.

76. How many best friends do you have in the local area? _____

Please think about the best friend you interact with most locally when answering the following questions.

77. How often do you talk to this best friend via e-mail?

a) ___ daily

b) ___ once per week

c) ___ several times per week

d) ___ on weekends only

e) ___ couple times a month

f) ___ rarely

g) ___ other, please specify _____

78. How often do you talk to this best friend on the telephone?

a) ___ daily

b) ___ once per week

c) ___ several times per week

d) ___ on weekends only

e) ___ couple times a month

f) ___ rarely

g) ___ other, please specify _____

79. How often do you meet this best friend in person for coffee, lunch, or any other reason?

a) ___ daily

b) ___ once per week

c) ___ several times per week

d) ___ on weekends only

e) ___ couple times a month

f) ___ rarely

g) ___ other, please specify _____

80. Do you often make plans to do something together with your best friend on the weekends? YES ___ NO ___

81. Is there anything else about your on-line habits you would like to share with me ? Please elaborate below.

_____