THE CONSEQUENCES OF INTERNET CAFÉ USE ON TURKISH COLLEGE STUDENTS' SOCIAL CAPITAL

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ABSTRACT
This paper draws on a part of the doctoral research study that investigates the potential impacts of Internet café use on Turkish college students' social capital. In this study, Internet café usage was portrayed by the amount of time spent and the frequency of online activities engaged at the cafés. Social capital, on the other hand, was characterized by feelings about loneliness, quality of social network with family, quality of social network with friends, and pro-social attitudes. A quantitative research design with a survey technique was employed. The data were collected from 758 undergraduate students from the College of Education of a major Anatolian university. Multiple linear regression with simple slope analysis were conducted to determine the proportion of variance that Internet café use accounts for in social capital and whether participants' type of accommodation adds anything significant. Results indicated that (a) Internet café usage did not significantly influence on loneliness and pro-social attitudes, (b) spending more time at Internet cafés and frequent entertainment-based online activities led to a decrease in the quality of social networks with both family and friends, (c) frequent online communication activities led to an increase in the quality of social networks with friends, and (d) such effects were the same for participants who stay alone, stay with family, and stay with friends. It was concluded that Internet technology was more than a simple and neutral tool that may constitute complex social dimensions involving profound alterations for youth's social life.

INTRODUCTION

Does the Internet make people socially isolated from the community? Does it undermine family relations or friendships? In the process of negotiating challenges sustained by the global diffusion of Internet technologies, many of the nations around the world have been debating such questions and concerns so far. The proliferation of information and communication technologies (ICT) has influenced many aspects of the lives of young people through creating new social and cultural spaces that have challenged long-established ways of socialization. Regarding interpersonal relations with significant others, for example, Gergen (2002) claims that ICT has expanded the domain of "absent presence", which in turn, leads to an erosion of face-to-face community, centered or privatized sense of self, and a decrease in the "depth" but an increase in the "breadth" of social relationships. This research was an attempt to find empirical evidence in order to shed light on some of these issues.

Recent research about the impacts of Internet use on social traits can be divided into dystopian (negative effects) and utopian (positive effects) perspectives (Katz & Rice, 2002). On one hand, previous research revealed that frequent online interaction leads to a decline in social support, family communication, social network, interactions with community members, or an increase in depression and loneliness (Engelberg & Sjoberg, 2004; Heim, 1993; Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay & Scherlis, 1998; Kroker & Weinstein, 1994; Morgan & Cotton, 2003; Nie & Erbring, 2000; Sanders, Field, Diego & Kaplan, 2000; Shapiro & Leone, 1999; Stoll, 1995; Turkle, 1995). On the other hand, previous studies indicate that online media usage could facilitate more, better, and new social relationships with friends and family, expanding social networks, transferring online relationships to offline ones, reinforcing offline interaction, encouraging normally quiet and shy people in group conversations, and also a decrease in loneliness and depression (Ando, Takahira & Sakamoto, 2005; Hamman, 1999; Katz & Aspden, 1997; Kiesler, Kraut, Mukhopadhyay & Scherlis, 1997; Parks & Floyd, 1996; Pew Research Center, 2000; Shaw & Gant, 2002; Stafford, Kline & Dimmick, 1999; Van Dijk, 1999).

Kraut et al. (1998) conducted a field study that was called HomeNet project to determine whether the Internet is increasing or decreasing levels of social involvement and to examine the impact of the Internet on psychological functioning. They gave computers and free Internet access to 169 people in 73 households residing in the Pittsburgh area of Pennsylvania for a 1-2 year period. Special logging programs recorded their Internet usage during the study, which included the total number of hours they spent on the Internet and the number of e-mail messages sent. Social involvement was measured by four different variables: family communication, size of local social network, size of distant social network, social support. After initially controlling for scores on social

involvement and psychological well-being, the results indicated that increased Internet use was associated with the following: declines in participant's communication with family members, declines in the size of their social network, and elevated levels of depression and loneliness. Participants reported keeping up with fewer friends, spending less time with their families and experiencing more daily life stress. One of the most compelling findings was that these effects were the most pronounced among the teenage participants. More recently, researchers have discovered a significant relationship between self-reported Internet use and psychological variables such as loneliness, depression, and self-esteem (Amstrong, Philips & Saling, 2000; Moody, 2001; Morahan-Martin, 1999; Morahan-Martin & Schumacher, 2000).

Nie and Erbring (2000) were among the most recent researchers to hypothesize that the Internet would transform society into individuals glued to computer screens with impersonal human contact. Drawing from a representative national sample of 2,689 households in the USA, they found that people who spent ten or more hours per week on the Internet substantially cut down on the amount of time spent conserving with friends and family, both in person and by phone. Sanders et al. (2000) further investigated the link between Internet use and depression and social isolation among adolescents. Informants for this study were 89 high school seniors comprised of 37 males and 52 females. Level of Internet use was assessed by asking how many hours per day they spend of the Internet. Those who selected less than one hour a day were classified as low users and others who selected more than two hours a day were categorized as high users. The results showed that low Internet users had significantly better relationships with their mothers and peers than high users.

In contrast to dystopian perspective reviewed above, other studies argued that Internet use has had important positive social impacts on people, communities and society at large by generating improved social interactions, particularly when the individual is constrained by geography, illness or stigma of some sort (Hampton & Wellman, 2001; McKenna & Bargh, 2000; McKenna, Green & Gleason, 2002). Rice (1987) stated that fundamental aspects of social groups and communities could be supported and extended through online communities. The main point related in these arguments is that using the Internet augments involvement in existing communities by offering new social spaces for communication (Katz & Aspden, 1997), which complements and strengthens offline interactions. This indicates that maintaining interpersonal relationships is an important reason that individuals use the Internet. For example, Stafford, Kline and Dimmick (1999) found that people use the Internet to satisfy important social interactions and needs related to communication with family, friends and the world, since it is much less expensive, quicker, simpler and more convenient that other communication devices. Similarly, Pew Research Center (2000) reported that communication via the Internet helped users improve their key social relations and expand their social networks. The study also found that the surveyed users included fewer social isolates, had a greater number of recent social contacts and more access to social support than nonusers.

With the notion of seeing the Internet as a window unto the world, and in the face of low levels of computer ownership and Internet access from home, the emergence of Internet café phenomena was born in the early 1990s when the first Internet café, Cyberia, opened in London. Eventually, the phenomenon has spread out to all over the world from city centers to small villages. In Turkey, they play an important role in Internet usage rate and mostly cater to teenagers especially high school and college students. Approximately forty-two percent of the Internet access in Turkey is provided by independent Internet cafés (Andic, 2003). They have become popular social outlets for Turkish youth to hang out and access to the Internet. On the other hand, the rapid increase in the use of these places in Turkish society has particularly raised concern about social and psychological development of Turkish youth. It has recently been complained that youngsters visit Internet cafés not for educational or informational purposes but rather to access violent-oriented electronic games, pornographic and separatist materials which assumed to undermine their moral values and social inclusion with the community (Andic, 2003; Haberturk, 2005; Yesil, 2003). In fact, the Internet has become a particularly threatening medium for some officials, prompting the government to establish regulations governing Internet cafés.

Much of the existing research on Internet cafés and social consequences of the Internet usage has been conducted in Western societies where ICT has been more widely diffused and reached a deeper level of adoption within the society. Therefore, inspired from concerns and issues mentioned above, this study attempted to investigate such phenomena in a culturally and socially distinct country in which the reactions to technology diffusion may likely be unique to a specific cultural context. The purpose of the study was to examine the potential impacts of Internet café use on Turkish youth's social development. The following research question was formulated to drive the research in accordance to the purpose of the study:

To what extent does Internet café usage impact Turkish youth's social capital with regards to (a) loneliness, (b) social network with family, (c) social network with friends and (d) pro-social attitudes (social involvement with others in the community)? and Does this effect differ across their accommodation type (whether stay alone or with family or with friends)?

RESEARCH METHODOLOGY

A quantitative research design was adopted by employing a survey technique. The study took place in one of the biggest cities in Turkey. By using convenience and purposeful sampling methods, participants were recruited from the population of undergraduate students attending the College of Education of a major Anatolian university. The questionnaire was delivered to 1050 college students whose ages ranged from 17 to 23. A total of 805 surveys were returned for a 76.7% response rate. The number of usable responses was 758 with a 72.2% net response rate. Of these, 45% were male and 55% were female students. There was a balanced distribution in the number of participants from each academic department except for Art Education which has a small proportion of students compared to others in the population as well. Frequency analysis indicated the following percentages: 142 (19%) Science Education; 131 (17%) Mathematics Education; 131 (17%) Social Studies Education; 154 (20%) Elementary Education; 150 (20%) Foreign Language Education and 50 (7%) Art Education. Participants from science, mathematics and social studies education were composed of both elementary and secondary level education. In terms of their status in the college at the time of this study, 289 (38%) were freshman, 126 (17%) were sophomore, 275 (36%) were junior and 68 (9%) were senior students. The demographic summary of the sample is given in Table 1.

Table 1. Frequency and Percentage Distributions for Demographics

Demographic	Frequency	Percentage (%)
Gender		
Female	416	55
Male	342	45
Age[a]		
Under 20	334	44
20 and above	424	56
Major		
Science Education	142	19
Mathematics Education	131	17
Social Studies Education	131	17
Elementary Education	154	20
Foreign Language Education	150	20
Art Education	50	7
Years in the school		
Freshman	289	38
Sophomore	126	17
Junior	275	36
Senior	68	9
Type of accommodation		
Stay alone	18	2
Stay with family	239	32
Stay with friends	501	66

Note. [a]Participants' age ranged from 17 to 23 with a mean age of 19.77.

Data collection was carried out in January and February 2006. A paper-and-pencil type questionnaire was developed as a main data collection tool. The first set of questions was designed to gather demographic/background information of the participants as well as informants' Internet café usage. The remainder of the survey includes questions about social capital. This part of the survey was developed by incorporating several scales that have been widely used in the literature and several items adapted from other surveys with established reliability and construct validity.

Internet café usage was measured by the amount of time spent and the frequency of patterns of activities engaged at the cafes. The former was one of the main independent (exploratory) variables in the study, which referred to the total relative amount of time subjects usually spend in Internet cafés per week. It was operationalized along an open-ended question and coded as minutes. The latter, patterns of activities, referred to a set of four independent variables referring to the frequency of various activities participants engage in while visiting Internet cafés. Types of Internet use have previously been divided into four broad areas in the literature: searching for information, communication, entertainment, and commercial activities (Korgaonkar & Wolin, 1999; Kraut et. al, 1998). Similarly, a total of 13 items related to Internet activities were developed for the purpose of this study and participants were asked to indicate how often they do such activities in Internet cafés on a 5-point ordinal scale ranging from "1" representing "never" to "5" representing "very often". Based on the results of a principal component analysis with varimax rotation, four main patterns of activities were extracted as follows: (a) *educational and informational use* (research for class assignments, read about news and current events, and gathering general information about hobbies, medical, etc.), (b) *communication use* (sending and receiving e-mails, online chat, and participating in forums and discussion boards), (c) *entertainment use* (playing games, surfing for fun, listening to music, watching movies) and (d) *business use* (online shopping, online banking and paying bills). Each of these served as a separate independent variable in the study.

Social capital in this study was characterized and measured by four dependent variables: Participants' feelings about loneliness, quality of social network with family, quality of social network with friends, and pro-social attitudes. The variable of "loneliness" referred to participants' subjective feelings of loneliness or social isolation, and was measured through the short format of the revised UCLA Loneliness Scale Version 3 (Russell, 1996). The scale consists of ten 4-point Likert-type items (never = 1, rarely = 2, sometimes = 3, and always = 4) and asks participants to indicate how often they feel particular feelings that represent a unidimensional measure of social and emotional aspects of loneliness. A composite variable was formed by summing up the scores of ten items for each participant. The variables of "social network with family" and "social network with friends" referred to the quality of participants' social relationships with their family and friends respectively. To measure these variables, the first part of the social development scale was adapted from The Pupils Survey (De Haan & Huysmans, 2004), which was originally developed to assess the relationship of IT/Media use and psychological development among Dutch youth. The scale had several positive and negative statements about relationship with parents and friends on a 5-point Likert-type scale (1 = Strongly Disagree and 5 = Strongly Agree). A composite variable was generated by calculating the mean scores of related statements for each of these variables.

SPSS 10 statistical software package was used for data analysis purposes. Multiple linear regression with simple slope analysis were performed to determine to what extent the dependent variable (e.g. loneliness, social network with family, etc.) could be predicted from the linear combinations of the independent variables (time spent at Internet cafés, and patterns of activities) and whether the magnitude of this prediction was the same for every level of a moderator variable. For the purpose of this study, "type of accommodation" served as a moderator variable. Since it was a categorical variable with three subgroups (stay alone, stay with family and stay with friends), the data were effect coded by creating two vectors. "Stay with friends" group was assigned "1" in the first vector while "stay with family" group was assigned "1" in the second" one. "Stay alone" group was assigned "-1" in both vectors.

RESULTS

Participants' loneliness scores ranged from 10 to 35 with a mean score of 15.91 (SD = 4.43). The higher the score is, the stronger a person feels isolation. Table 2 below demonstrates the regression analysis results for predicting "loneliness" based on internet café usage variables. The results in step 1 showed that the variables taken together explained around 1% of the variance in loneliness. This finding is not statistically significant and the model had a very poor fit {$F(5,752) = 1.85$, $p = .10$}, suggesting that none of the independent variables related to Internet café usage had a significant effect on the dependent variable of loneliness. Therefore, further analysis for testing homogeneity of slopes across type of accommodation was terminated as the result was neither statistically significant nor substantively meaningful.

Table 2. Summary of Regression Analysis of Loneliness on Internet Café Usage

Variable	B	SE B	β
Step 1			
Time spent at Internet cafés	.015	.028	.022
Educational and informational usage	-.433	.185	-.091*
Communicational usage	-.269	.188	-.061
Entertainment usage	.323	.196	.068
Business usage	-.042	.350	-.004

Note. $R^2 = .012$ *for Step 1 (p = .10).*
** p < .05.*

Descriptive statistical analysis for the dependent variable of "social network with family" showed that respondents had a mean score of 4.08 (SD = .73) but the actual score ranged from 1 to 5. Higher scores indicate better relationship with family. In order to examine the association between Internet café usage and the quality of social network with family, the amount of time spent and patterns of activities were entered into the regression analysis predicting the quality of social inclusion with family. As shown in the first step in Table 3, only time spent at the Internet cafés (t = 4.36, p = .00) and the frequency of entertainment usage (t = 3.20, p = .00) had a significant impact on the quality of social network with family. Henceforth, for one unit increase in the amount of time spent and the frequency of entertainment-based usage at Internet cafés, the subjects' quality of social relationship with their family decreased by a .020 and .101 unit respectively. The overall regression accounted for about 5% of the variance in social network with family and this finding was significant {F(5,752) = 8.48, p = .00}.

Two effect coded vectors representing the moderator variable of accommodation was entered into the second step followed by the product vectors by each independent variable in the third step to test the homogeneity of regression coefficients across the condition of whether participants stay alone, with their parents or with friends. The results in the third step in Table 3 revealed that the additional proportion of variance related to product vectors was .017 and was not statistically significant {F(10,740) = 1.39, p = .18}. The increment variance due to type of accommodation in the second step was also not significant {ΔR^2 = .004, F(2,750) = 1.62, p = .20}. Therefore, both slopes (regression coefficients) and intercepts in the linear regression equations are homogenous for each level of the moderator variable. Then, it can be concluded that the effects of time spent at Internet cafés and the frequency of entertainment usage, which were found to be significant in the first step, are the same for participants staying alone, with family, or with friends.

Table 3. Summary of Regression Analysis of Social Network With Family on Internet Café Usage Moderated by Type of Accommodation

Variable	B	SE B	β
Step 1			
Time spent at Internet cafés	-.020	.005	-.179**
Educational/informational usage	.053	.030	.067
Communicational usage	.023	.031	.031
Entertainment usage	-.101	.032	-.130**
Business usage	-.012	.057	-.008
Step 2			
Time spent at Internet cafés	-.021	.005	-.186**
Educational/informational usage	.054	.030	.069
Communicational usage	.021	.030	.029
Entertainment usage	-.101	.032	-.129**
Business usage	-.006	.057	-.004
Accommodation 1	.106	.062	.076
Accommodation 2	.035	.006	.024
Step 3			
Time spent at Internet cafés	-.021	.014	-.188
Educational/informational usage	.162	.088	.205
Communicational usage	.122	.073	.167
Entertainment usage	-.100	.074	-.129
Business usage	-.161	.086	-.104
Accommodation 1	.461	.293	.332
Accommodation 2	.578	.298	.397

Time spent at Internet cafés X Accommodation 1	.001	.014	.012
Time spent at Internet cafés X Accommodation 2	-.002	.015	-.014
Educational/informational usage X Accommodation 1	-.122	.091	-.295
Educational/informational usage X Accommodation 2	-.099	.093	-.211
Communicational usage X Accommodation 1	-.095	.076	-.197
Communicational usage X Accommodation 2	-.136	.079	-.241
Entertainment usage X Accommodation 1	-.021	.077	-.042
Entertainment usage X Accommodation 2	.040	.081	.068
Business usage X Accommodation 1	.262	.096	.266*
Business usage X Accommodation 2	.034	.103	.032

Note. $R^2 = .053$ *for Step 1 (p = .00);* $\Delta R^2 = .004$ *for Step 2 (p = .20);* $\Delta R^2 = .017$ *for Step 3 (p = .18).*
** p < .05. ** p < .01.*

As far as the impact of Internet café usage on the quality of social relations with friends was concerned, a separate regression analysis was conducted and its results were given in Table 4. Participants' scores for this dependent variable ranged from 1.13 to 5 with a mean score of 3.96 (SD = .69). Higher scores indicate better relationship with friends. The overall regression model in the first step accounted for about 11% of the variance in social networks with friends {F(5,752) = 17.42, p = .00}. Further examination of the coefficients in the first step revealed that the amount of time spent (t = 2.84, p = .00), the frequency of communicational (t = 2.32, p = .02), and entertainment based usage (t = 7.78, p = .00) had a significant effect on participants' social relations with their friends. While one unit increase in the amount of time spent and the frequency of entertainment usage at the Internet cafés was associated with a .012 and .228 unit decrease respectively, a one unit increase in the frequency of communicational usage resulted in a .066 unit increase in the quality of social relations with friends.

Regarding slope differences across type of accommodation, the findings in the third and second steps in Table 4 indicated that the additional proportion of variance explained by product vectors in the third step was .019 and was not statistically significant {F(10,740) = 1.64, p = .09}, and neither was the incremented variance due to type of accommodation in the second step {ΔR^2 = .000, F(2,750) = .06, p = .94}. Therefore, neither slopes nor intercepts differ significantly. These results suggest that the effects of time spent at the Internet cafés and the frequency of communicational, and entertainment oriented usage, which were found to be significant in the first step, are the same for the participants staying alone, with their family, or with their friends.

Table 4. Summary of Regression Analysis of Social Network With Friends on Internet Café Usage Moderated by Type of Accommodation

Variable	B	SE B	β
Step 1			
Time spent at Internet cafés	-.012	.004	-.113**
Educational/informational usage	.022	.028	.030
Communicational usage	.066	.028	.094*
Entertainment usage	-.228	.029	-.307**
Business usage	.025	.052	.017
Step2			
Time spent at Internet cafés	-.012	.004	-.113*
Educational/informational usage	.023	.028	.031
Communicational usage	.065	.028	.094*
Entertainment usage	-.228	.029	-.307**
Business usage	.026	.053	.018
Accommodation 1	.018	.058	.014
Accommodation 2	.018	.061	.013
Step 3			
Time spent at Internet cafés	-010	.013	-.091
Educational/informational usage	.108	.082	.145
Communicational usage	.097	.067	.140
Entertainment usage	-.250	.069	-.337**
Business usage	-.096	.080	-.066
Accommodation 1	-.029	.271	.022
Accommodation 2	.578	.276	.418*
Time spent at Internet cafés X Accommodation 1	-.003	.013	-.036

Time spent at Internet cafés X Accommodation 2	-.002	.013	-.016
Educational/informational usage X Accommodation 1	-.066	.084	-.167
Educational/informational usage X Accommodation 2	-.128	.086	-.288
Communicational usage X Accommodation 1	-.030	.070	-.066
Communicational usage X Accommodation 2	-.023	.073	-.044
Entertainment usage X Accommodation 1	.037	.072	.076
Entertainment usage X Accommodation 2	-.003	.075	-.006
Business usage X Accommodation 1	.251	.089	.269**
Business usage X Accommodation 2	-.058	.095	-.057

Note. $R^2 = .105$ *for Step 1 (p = .00);* $\Delta R^2 = .000$ *for Step 2 (p = .94);* $\Delta R^2 = .019$ *for Step 3 (p = .09).*
** p < .05. ** p < .01.*

The final part of the research study sought to investigate the relationship between Internet café usage and pro-social attitudes and whether it differs by type of accommodation. Descriptive statistical analysis for this dependent variable indicated that respondents had a mean score of 13.73 (SD = 1.72) but the actual score ranged from 6 to 15. The higher the score is, the better attitudes a person has regarding involvement or being in touch with others in the community. As shown in Table 5, the R^2 of the model was .010, indicating that approximately 1% of the variation of pro-social attitudes could be explained by the independent variables combined. The insignificant F-ratio {F(5, 752) = 1.46, p = .20} revealed that the overall goodness of fit of the regression model for this data was not satisfactory. This result suggests that Internet café usage does not seem to significantly influence participants' pro-social attitudes. Therefore, the further testing for slope differences across type of accommodation was terminated.

Table 5. Summary of Regression Analysis of Pro-Social Attitudes on Internet Café Usage

Variable	B	SE B	β
Step 1			
Time spent at Internet cafés	.018	.011	.068
Educational/informational usage	.114	.072	.062
Communicational usage	-.031	.073	-.018
Entertainment usage	-.120	.076	-.065
Business usage	-.071	.136	-.019

Note. $R^2 = .010$ *for Step 1 (p = .20).*

DISCUSSION AND CONCLUSION

The present study produced somewhat complex and varied results with regards to the polarized discussion (utopian versus dystopian) about the social consequences of online interaction in previous research mentioned at the beginning of this paper. It revealed mixed evidence and thus supported both sides of the argument. However, the results did not favor either perspective in terms of generating neutral effects. It is important to note that there are a few differences between previous research and the present study. Previous research conceptualized online interaction in two different ways. While some used the number of hours spent on the Internet as an indicator of online interaction, others simply employed a binary opposition to Internet use (user versus nonuser). However, both characterizations might not be adequate because they ignore what kinds of activities individuals practice on the Internet. Therefore, online interaction in this study was characterized by not only the amount of time spent at Internet cafés but also the frequency of patterns of online activities engaged in these places (educational/informational, communicational, entertainment, and business usage) to further analyze whether the social consequences of online interaction depend on what users actually do online. Furthermore, previous studies generally used the amount of time spent with family members and close friends to characterize social involvement with family and with friends respectively. This study, however, operationalized these indicators by directly asking questions about the quality of relationships with family and friends.

The multiple regression analyses on Internet café usage explained an insignificant proportion of variance in loneliness. Therefore, consistent with the findings of previous research (Donchi & Moore, 2004; Subrahmanyam, 2003), in this study, the amount of time spent at Internet cafés and the frequency of patterns of activities performed online did not influence feelings of loneliness. In other words, Internet café usage did not lead to either an increase or a decrease in loneliness. Hence, this result is contradictory to both perspectives (utopian and dystopian) mentioned above. A similar result (neutral effect) was indicated in the regression of pro-social attitudes on Internet café usage. Neither the amount of time spent, nor the frequency of patterns of activities, influenced pro-social attitudes. This suggests that Internet café usage does not lead to weak or strong attitudes

toward a sense of belonging, contributing to a community, and helping others in the community. This result contradicts previous research which reports that Internet users express more positive pro-social attitudes than nonusers (Cole & Robinson, 2002; Liang & Wei, 2002), or that frequent Internet use is associated with less pro-social attitudes (Mesch, 2001).

Negative consequences of Internet use on loneliness in previous research has been explained by the theoretical assumption that Internet use displaces time spent for social activities, which in turn, makes users lonely (Kraut et al., 1998). Based on this premise, for the sample of this study, it can be assumed that Internet café usage does not displace youth's social activities because it was not found to lead to an increase in perceived loneliness. Furthermore, Nie and Hillygus (2002) found that the actual place where online interaction occurs could be a significant factor. Users in Internet cafés can engage in face-to-face social contact with others in the cafés while concurrently using the Internet technologies. This combination of online and face-to-face socialization that characterized Internet café adoption patterns could be another factor that contributes to the lack of evidence for a negative impact in relation to perceived loneliness. It is recommended that future research studies should consider either controlling individuals' face-to-face social involvement or including it as a moderator variable while analyzing the influences of Internet usage on loneliness.

Moreover, the Internet not only offers an alternative sphere of communication to sustain existing social ties, but also facilitates establishing new online social relationships that may also be continued offline (Rheingold, 2000). As a result, interpersonal communications taking place within the social space of the Internet may at least suppress if not decrease the feelings of loneliness even though previous research showed that these online relationships may not be as deep and strong as face-to-face companionships (Parks and Roberts, 1991; Putnam, 2000). Quality of online relationships in relation to the experience of actual face-to-face relationships should also be taken into account in future studies.

The impact of Internet use on loneliness may also depend on the type of culture that Internet users belong to. For instance, Hofstede's (1984) construct of cultural dimensions classifies all cultures around the world into two groups: individualistic cultures versus collectivist cultures. He states that the ties between individuals are loose in the former whereas they are close in the latter. Most of the empirical evidence for the negative effect of Internet use on loneliness has been gathered from individualistic cultures (e.g. United States). However this study was conducted in a collectivist culture and did not reveal any significant effect on loneliness. Thus, it is possible to hypothesize that individuals in individualistic cultures may be more susceptible to loneliness than their counterparts in collectivist cultures. Future research ought to be designed to specifically determine whether the type of culture mediates the effect of Internet use on perception of loneliness

Regarding consequences for social network with family and friends, both regression analyses of college students' perceived quality of social relations with family and with friends in relation to Internet café usage explained significant variances. While the amount of time spent at Internet cafés and the frequency of entertainment-based activities online negatively impacted social involvement with both family and friends, the frequency of communicational usage (e.g. email, chat, forums etc.) positively affected development of a social network with friends but not with family. In other words, for this particular sample, spending more time online and frequent online entertainment activities (e.g. video games) seem to lead to a reduction in the quality of social involvement with both family and friends. In contrast, frequent communicational usage appears to increase the quality of social involvement with friends but does influence socializing with family. The findings are consistent with both utopian and dystopian perspectives outlined earlier, but contradict other studies that did not find a connection between Internet use and socializing with family and friends (Cole & Robinson, 2002; Lee & Zhu, 2002; Mikami; 2002).

Again, the negative impact of time spent at Internet cafés could be explained by the same theoretical assumption related to loneliness mentioned earlier. Internet use displaces time spent with family and friends, which in turn, decreases users' sense of social affiliation with them (Kraut et al, 1998). Or else, as suggested by Coget, Yamauchi and Suman (2002) but was not specifically tested in their study, it could be that users spend their online time in less social activities, or engage in communicational activities less frequently. Such assumptions are supported by the relationship between negative (time spent and entertainment-based usage) and positive (communicational usage) associations germane to social networks with friends. Therefore, it could be indicated that Internet café usage negatively impacts social involvement had the study included only "time spent at Internet cafés" in the regression analysis. In this sense, one of the most important implications of this study for the related literature is that Internet use may not be defined adequately by only measuring time spent online. More specifically, what activities users engage in while using the Internet also needs to be taken into account.

Overall, these complex results suggest that social consequences of Internet usage on social capital is not a simple matter that can be explained by one-directional perspectives (utopian and dystopian) mentioned earlier or the neutral effect perspective. Therefore, the findings seem to support the theoretical assumption that the Internet as a technological medium and its implication for a society is "ambivalent" (Feenberg, 1991). It is also apparent that the Internet, at its substantive core, will continue to act in the manner of a complex medium that transforms social reality in subtle and profound ways. More research is needed to better understand the social dynamics in our contemporary complicated society which Castells (1996) describes as "network society".

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