Review of Sociology Vol. 14 (2008) 1, 45–66

LINKS BETWEEN THE DIFFUSION OF INTERNET USAGE AND SOCIAL NETWORK CHARACTERISTICS IN CONTEMPORARY HUNGARIAN SOCIETY: A LONGITUDINAL ANALYSIS

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Abstract: In our analysis we examine how the Internet use affects relations, and whether the network characteristics of people exert provable influences on the spread of Internet usage. The empirical basis of our longitudinal research is the three surveys done in the framework of the World Internet Project between 2001 and 2003.

Keywords: sociability, social capital, Internet use, diffusion of the Internet

THE PROBLEM

In 2003 a fifty-year trend was broken in the USA: this was the first year when young people spent more time using a medium other than the television: the World Wide Web (Cole 2003). Seeing the rapid development, research results were published (Kraut et al. 1998; Nie et al. 2000, 2002 and 2003) claiming that Internet use isolates the users from their social networks since they have fewer contacts with their family members, friends and communities because of the usage. According to Professor Norman H. Nie an e-mail is suitable to create contacts between people in vain if it is not able to give the atmosphere of a chat beside a coffee or a beer or that of an embrace. So the Internet can be the final isolating technology which will finally ruin the communities already weakened by television and cars. According to their research (Nie and Erbring 2000), the more time someone spends on using the Internet, generally the less time he will spend on sharing other humans' company. Analyses based on a longitudinal database made in the US (Kraut et al. 2004) show that Internet use may lead to a reduction in the frequency of relations (visits) with friends and family members, and in addition, this effect is stronger in case of those having had more social contacts prior to the usage. "As a result of the usage of computer networks a whole

society may become less responsible or more atomistic" (Levine 2004: 84). The representatives of the pessimistic view say that although new relations are possible to be created through the Internet, they will be less close since sending an e-mail is a "lower" level form of communication than making a phone call or personal meeting. According to Cummings, Butler and Kraut's (2002) researches there is a sharp difference of quality between online and the offline personal contacts: the Internet contacts are not able to create as close relations as phone calls or personal meetings can, and they even say that phone contacts are more important for people than personal meetings. At the same time, their results show that people choose the communication tools depending on the social distance and the set target or activity. This means that the Internet does not overthrow people's everyday lives, it is, for the present, suitable for creating and maintaining weak relations contrary to the telephone, for example.

The negative effects of information technologies are reinforced by the fact that these allow the strengthening of anonymity and individualism, and so weaken the social norms and trust and destroy social capital (Kiesler et al. 1991).

All this raises the question of what influences modern information technology exerts on social integration, the cohesion of small communities and personal relations. Is this a new technology, after the television, destroying human relations, isolating the person and weakening the norm transmitting and controlling function of small communities? The question is mentioned more and more frequently in the literature of sociology.

Of course, beside the dystopic scenarios there are several representatives of the utopistic view, as well. At the end of 1997 Jon Katz presented the 'network citizen' using the Internet as part of his daily routine as a tolerant type of human feeling and taking responsibility for public affairs, possessing strong civil self-consciousness and loving freedom. According to the enthusiastic phrases the spread of the ICT tools strengthens the person against the state and the traditional hierarchic structures, and offers never-ever seen possibilities for the users to communicate with many others at the same time. Inter-activity, the possibility of asking and responding gains an even bigger role in the communication between persons and institutions which is not limited by geographical or political borders. Several software, web applications and community informatics developments feed the hope that declining civil activity, trust and deliberative political life based on continuous consultation and inclusion can be reinforced by the intelligent, cautious and innovative use of the ICT tools.

Cole and Robinson's (2002) surveys show that the Internet users do not spend less time on fostering their social relations than the non-users, and the social attitudes of the Internet users are more positive, while they feel less lonely. Wellman and his colleagues (2002) speak more definitely: "the Internet promotes inter-personal relations and the readiness to participate in organizations and provides a new possibility of community commitment", and so "the Internet is able to increase social capital, and this development is already detectable in the online communities" (Wellman et al. 2002: 19).

HYPOTHESES

In recent years in Hungary the sociological composition of Internet users, the PC-and Internet coverage of households has hardly changed.[1] In 2006 53% of the Hungarian adult population did not use a PC, and 64% could not be considered an Internet user according to estimates of the World Internet Project – abbreviated as WIP – (*The map of the digital future 2006*).

In Hungary despite the expectations regarding diffusion, the major population indices show only very slow development. The ratio of households equipped with a PC increased only by 1% from 2003 to 2004, which is exactly the same as the increase in the ratio of those having colour television sets, which is supposed to be an "old" technique. The only difference is that in the case of TV, the penetration rate was 96%, while in the case of PCs, it was 32%. Similarly the yearly 2% increase in Internet-access at home can hardly be interpreted as a dynamic one: if the increase keeps this pace it would take Hungary exactly 25 years to reach the present ratio of home Internet access in the USA.

Even more disturbing is the fact, that among non-users the majority of the sample did not have any kind of immediate, personal contact with the characteristic technologies of the information society, or with other people who do use the Internet or e-administration. The quality and quantity of social relations may influence the patterns of the diffusion of ICT-technologies, so it may be interesting to ask what kind of differences can be found between the users and non-users of the Internet based on the patterns of their social relations.

All in all we can state that based on the existing literature we presented in the introductory section of this paper, the analysis of the correlation between relational resources and Internet use is possible in two dimensions:

1. How the available relational resources of individuals affect the diffusion of the Internet?

2. How does the increasingly popular usage of the Internet influence the quality and quantity of interpersonal relationships?

In our paper, besides the analysis of socio-demographic characteristics influencing Internet usage we examine the impact of Internet use on interpersonal relational resources on a longitudinal (panel) database of the *World Internet Project 2001–2003.* We test four hypotheses formulated on the cross-sectional analysis of the 2002 *WIP database* (Molnár 2004). Based on that data it seemed that by a more extensive and longer use of the Internet as a means of networking and communication (and not only spending free time), relational resources can be increased. Yet regarding casual relations only hypotheses could be formulated, as it cannot be verified on a cross-sectional dataset, whether at a given time the most experienced users started to use the Internet just because they originally had bigger social networks, or their social capital increased due to their Internet use. Did experienced users start using the

1 Based on data from the World Internet Project 2003, in 2003 32%, in 2004 34% of households owned a PC, and this figure grew to be 38% in 2006. In 2004, 14% of the households had home Internet access, while this figure was 15% in 2005. See in more detail: BME-UNESCO-ITTK: *The Hungarian Information Society Yearly Report 2005 and 2006.*

Internet because they already had higher social skills whose higher needs could be perfectly satisfied by the Internet? Or is it the case that lengthy use of the Internet has a beneficial effect on communicative and contact-making competencies? To answer these questions, these current users should not be compared to current non-users, but with themselves prior to their Internet-use. This connection can be tested on longitudinal data by analysing those who became users in the given period, which was facilitated by the 3-year longitudinal dataset of the WIP.

The advantage of the longitudinal dataset is that it facilitates the analysis of temporary changes in relationships, among those using the Internet in all 3 years of data collection, those who did not use the Internet in that period, and those who started/stopped using the Internet at that timeframe. This panel study launched in the initial period of the diffusion process provides hope to get to know more precisely the (real-time) mechanisms affecting relational resources. The advantage of Hungarian researches is that due to the low penetration rate of ICT-technologies, their social consequences can be studied in progress, which makes it possible to fine tune the introduction of the cultural obstacles of the diffusion process by examining the sociability and communication networks of users, non-users, adopters and dropouts. As we indicated earlier, it is highly probable that the quality and quantity of interpersonal relationships influence the patterns of the diffusion of ICT technologies, yet in our study we posed the question from the aspect what kind of differences can be found between Internet users and non-users in the patterns of their social networks. We formulated our first hypothesis on this ground.

Based on data from 2002, we formulated 4 different hypotheses.

(1) Our first hypothesis is that primarily people with originally more social capital start using the Internet, that is, we think that the trends of Internet diffusion are similar to that of the distribution of network capital/social relations (Albert and Dávid 1998, 2000).[2]

On the other hand using the Internet also affects sociability, social capital. This impact may have three directions.

(2) ”Positive impact” hypothesis: using the Internet increases social capital. The older and the more intensive net-user someone is, the more likely one is able to increase his/her social capital by using the Internet.

(3) ”Neutral impact” hypothesis: using the Internet neither increases nor decreases social capital.

(4) ”Negative impact” hypothesis: using the Internet may result in the decrease of interpersonal contacts with friends and family members. It may be especially true among those having very high levels of social capital even before starting to use the Internet, and among those who spend a very significant amount of their time on the Internet.

2 The general tendency is that men tend to have more friends than women, and more women have no friends at all than men. As age increases, the number of friends decreases; as the level of education, income and urbanization of the place of living increases the number of friends also increases.

SAMPLE AND METHODS

The longitudinal panel sample of the WIP between the years 2001–2003 provides – among other things – an excellent opportunity to study the dynamics of Internet usage. Analysing the data of almost 2700 respondents[3] it turns out that during the given three-year period three-quarters of them did not use the Internet at all and the ratio of those using the Internet in all three years, that is, who can be considered continuous users, is only 14%. The number of adopters is similar in 2002 and 2003; their ratio in the sample is 4% annually. The ratio of dropouts is one-fourth of the number of adopters, the same in both years. Based on our data it seems that 3% of the population aged 16 or older became Internet users yearly *(Figure 1).*

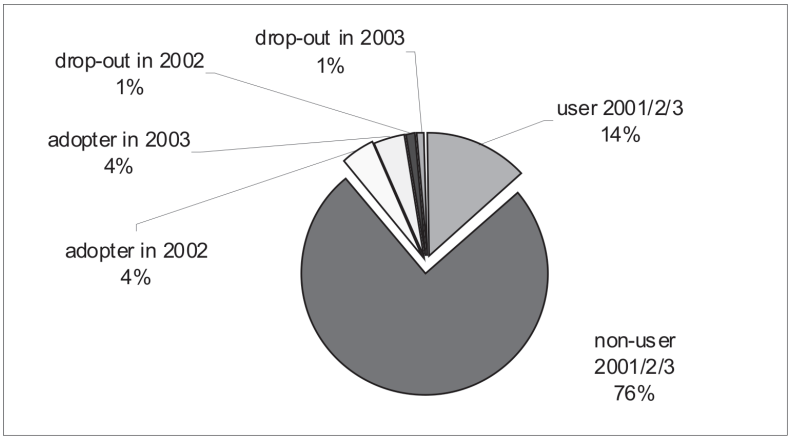

Figure 1. Dynamics of Internet Use between 2001 and 2003 (N=2682)

As to the dynamics of Internet usage four groups can be separated: the group of users (14%), non-users (76%), adopters (8%) and dropouts (2%). By comparing the socio-demographic, network characteristics and sociability of these groups, we try to test our proposed hypotheses.

The four groups can be clearly differentiated by most of the socio-demographic variables such as age, level of education, region and ethnicity. Regarding sex the only difference is between the groups of users and non-users: 18% of men while 11% of women use the Internet.

It is not very surprising that the group where the average age is the highest is among the non-users (53 years). However, it is interesting that the group of dropouts seems to be the youngest (average age is 29 years); the group of users is a little bit older (32 years old on average). The group of adopters is the second oldest with an average of 37 years.

3 A complex individual weight variable was used in the analysis based on the distribution of age groups, education, sex and settlement type.

Figure 2 shows that the educational level is highest among the users and the adopters. The level of education of dropouts is somewhat higher than that of non-users, but not as high as that of the users and adopters.

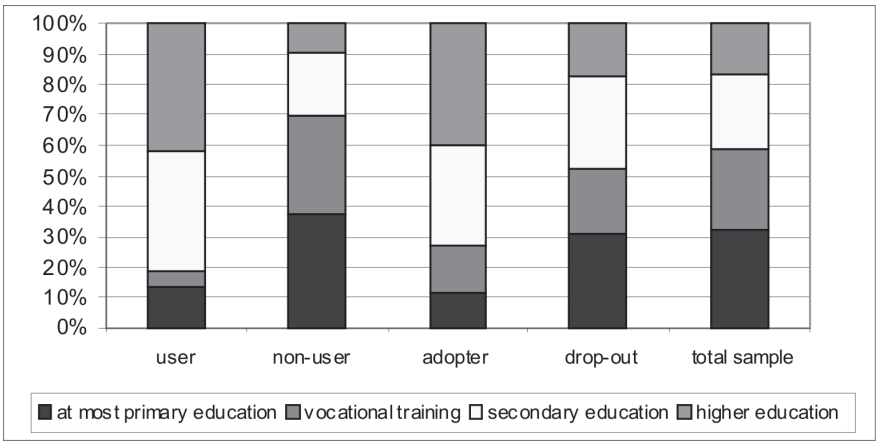

Figure 2. Level of Education in the Four Groups based on Internet Use

Having presented the negative effects of aging and low level of education on Internet use, we cannot be surprised to see the "passivism" of pensioners. (*Figure 3*) On the other hand it is probably due to some compulsion that one of the most 'active' Internet-user groups is that of the entrepreneurs: every fifth of them was an adopter. The group of students is very heterogeneous: while the highest ratio of users is found in this group, the ratios of adopters and dropouts are also quite high.

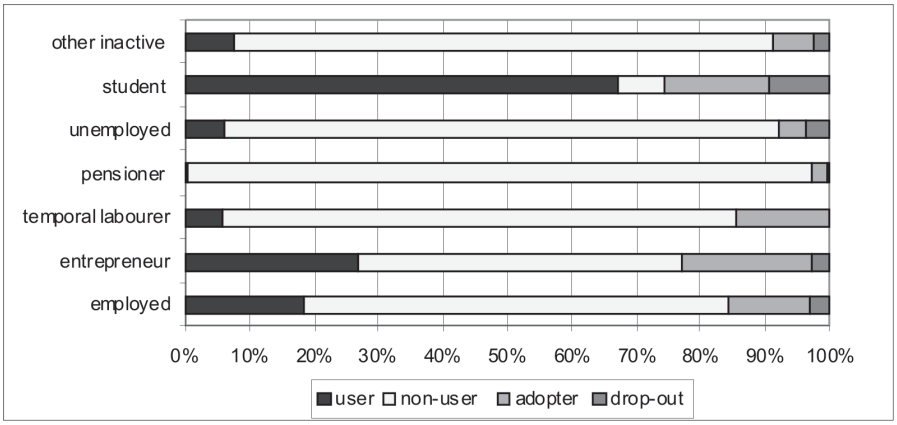

Figure 3. The Four Groups based on Internet Use according to Economic Activity

The regional distribution of the four groups is very different. Based on Figure 4 Northern Hungary is the most disadvantageous region from the aspect of Internet usage. We can find the lowest ratio of users, and the highest ratio of dropouts in this region. Central Hungary is in the most favourable position: both the ratio of users and adopters are the highest here.

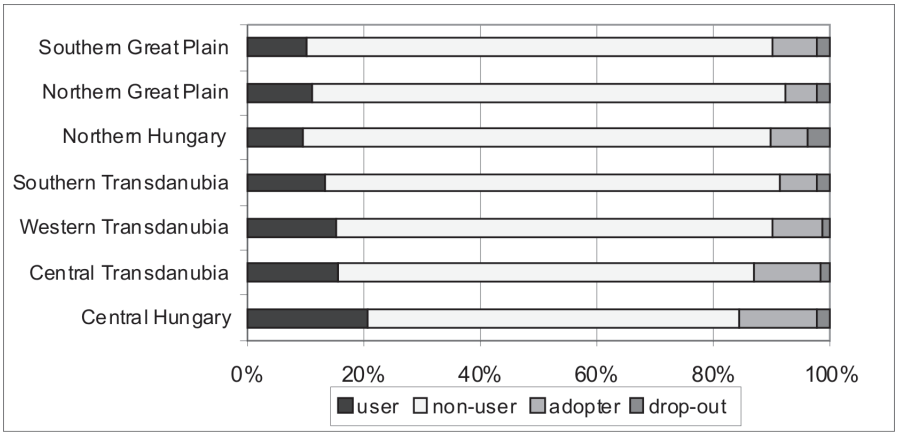

Figure 4. The Four Groups based on Internet Use according to Regions

MULTIPLE LOGISTIC REGRESSION ANALYSIS

The most suitable tool to test our first hypothesis is multiple logistic regression. In the text and tables we only indicated relationships with a significance level of $p<0.05$.

The groups (models in the logistic regression analysis) we compared:

– Internet users versus non users,
– Those starting to use the Internet during the period of research versus the non-users,
– Those stopping to use the Internet in the research period versus those using the Internet in all three years.

The differences of the groups and the factors influencing the models were analysed by binary logistic regressions. The explanatory variables in our model were: sex, age, level of education, economic activity, level of education of the father, material conditions (income quintiles based on per capita household income), region of the place of living, settlement size, ethnicity of the respondent (Gypsy or not), and whether he/she lives alone. None of the models shows significant relationships regarding ethnicity, and whether the respondent lives alone or not.

Table 1. Logistic Regression Models in Groups based on Internet Usage – Odds Ratios (Only Significant Ones)

	Model 1 Odds for Internet users versus non-users	Model 2 Odds for adopters versus non- users	Model 3 Odds for dropouts versus Internet users
Sex		1.670**	
Reference category: women			
Age	***	***	
Reference category: 14–29 year-olds			
30–39 year-olds	481***		
40–49 year-olds	325***	.387**	
50–59 year-olds	168***	.146***	
60 or older	.057***	.042***	
Educational level	***	***	***
Reference category: max. primary			
Vocational			
Secondary	4.188***	2.835*	.067*
Higher	12.768***	9.910***	.017**
Region	**	**	
Reference category: Central-Hungary			
Central Transdanubia			
Western Transdanubia	.258***	.246**	
Eastern Transdanubia	.302**	.215**	
Northern Hungary	.395**	.359*	
Northern Great Plane	.414*	.226**	
Southern Great Plane	.354**	.246**	
Settlement type			
Reference category: village			
Town			.277*
County town			
Budapest (capital)			
Father's level of education	***	*	
Reference category: max. primary			
Vocational			
Secondary			
Higher	5.977*		
Economic activity	***	***	
Reference category: employee			
Independent entrepreneur			
Temporary worker			
Pensioner	.331**		
Unemployed			
Student	12.892***	11.237***	.031**
Other inactive	.376**		
Per capita household income quintile			
Reference category: the poorest quintile			
2.			
3.			
4.			
Top quintile	2.143*		

Note: significant at a *0.05 level, **0.01 level, ***0.001 level

In the 3 models the independent impact of the explanatory variables are mostly manifested in Model 1: out of the 8 socio-economic variables in 7 there is a significant difference between Internet users and non-users. (*Table 1*) There are also quite strong differences between the groups of adopters and non-users, similarly to Model 1. Among others, due to the smaller number of cases the independent impact of the individual factors can be least detected in the Model 3 on the odds of dropouts.

Examining the odds of men the chance for using the Internet is more than 1.5 times higher than that of women. With age advancing the odds of Internet usage dramatically decreases: as compared to those less than 30 years old, the odds for those older than 60 to use the Internet is 94% less, but even in case of the group of 30–39 year-olds it is 50% less. The level of education has the strongest impact on Internet usage: as compared to those with maximum primary education, those with higher education have an odds ratio of 13, but even those with secondary education have more than 4 times higher chance to be in the group of Internet users. The chance of being an Internet user is 6 times higher in the group with higher educated fathers as compared to the children with fathers with primary education. As compared to the Central Hungarian region (the capital city, Budapest is included here), in all other regions people have at least less than 50 % chance to be Internet users. Surprisingly even in the well-developed Western Transdanubian region the odds to be an Internet user is 75% less as compared to the central region. As compared to employees, students have 13 times higher, but pensioners 70% lower odds to be users. The positive impact of income can be detected only in the highest quintile: they are 2 times more likely to be Internet users than those in the lowest quintile.

In the analysed period between 2001–2003 the odds to be a new Internet user decreased heavily by ageing: as compared to those younger than thirty even those in their forties have 60% lower odds to start using the Internet. Again we find the dramatic impact of education: compared to those with primary education those with secondary education have almost 3 times, those with higher education almost 10 times higher odds to become new Internet users. As compared to central Hungary, those living in the other regions have app. 60–70% lower odds to become users. Compared to employees, students were 11 times more likely to become adopters.

Those who stopped using the Internet in the research period were 70% less likely to live in towns than in villages. They are 94–99% less likely to be found in the groups of the higher educated than in the group of those with primary education. The odds ratio for being a dropout is 97 less in the group of students than in the group of employees.

DROPOUTS – THOSE WHO STOPPED USING THE INTERNET

Regarding the dropouts the multivariate analysis showed strong but quite few significant relations, probably due to the small number of cases (in the sample the number of dropouts was 64). At the same time the data based on cross-tabulations (Figures 4, 5 and 6) show quite a clear picture of the phenomenon. We think it worth for further considerations at least for policy decision making.

In spite of the fact that the dropouts, being the youngest group, may seem to be in an advantageous situation from an innovative aspect, for them using the Internet is like a short flirt, lasting only for 1–2 years. They are not motivated enough either individually or by their social environment to become conscious, permanent users. The Internet does not become part of their daily routine; in fact nothing changes if they have no Internet access.

Figure 5 clearly demonstrates that the group of dropouts is very similar to the group of non-users regarding PC purchase and the presence of other family members using the Internet. Among them the rate of PC owners at home is just above the average. It is worth noting that cellular phone on the other hand is highly integrated in their lives (mainly young people): four-fifths of them actively send short messages (SMSs).

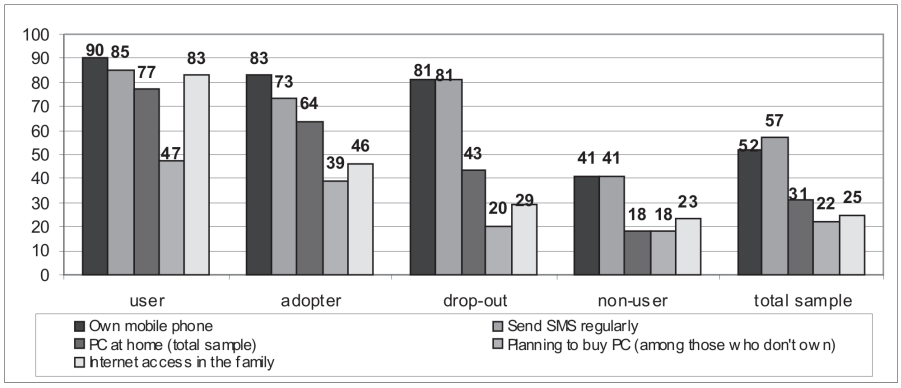

Figure 5. Use of Cellural Phone and PC in the Four Groups defined in relation to Internet Use, 2002[4]

4 We use the 2002 survey results because in this year we find data both for the adopters and for the dropouts.

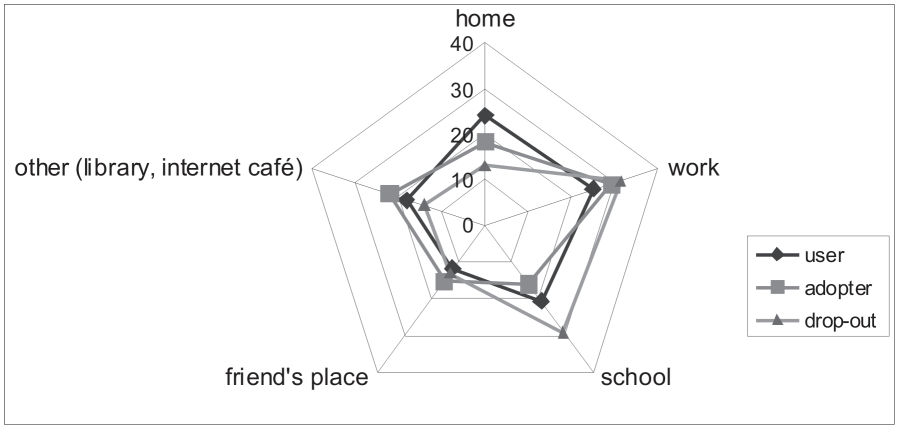

Figure 6. Locations of Internet Usage in the Three Internet-user Groups, 2002 (%)

Figure 6 compares the location of Internet usage in the three Internet-user groups. One can see that in case of dropouts the state subsidised ”Sulinet” programme (School-net programme) unfortunately only has a temporary effect: the ratio of those using Internet at home or at other public places are the lowest among them. Once leaving school thus having no access any more, these young people will not look for other options and substitution.

SOCIAL NETWORK AND INTERNET USE

Our first hypothesis based on studies that emphasize the positive relation between social relations, social capital and Internet usage is that the Internet users – per se – possess a higher level of social capital, which – as our second hypothesis suggests – will be supplemented and increased due to Internet usage. Introducing further variables to the logistic regression model of the longitudinal panel database we can examine if the personal network characteristics – both kin and non-kin – affect independently the probability of belonging to one of the Internet-user groups. When testing the first hypothesis the interesting group is the adopters because in their case we can ”clearly” vision the beginning; contrary to the users whose level of social capital has already been altered in some way simply because they have been using the Internet.

Table 2. Logistic Regression Models of the Groups based on Internet Usage – by the Social Network Variables (only significant odds ratios are indicated)

	Model 1 Odds for Internet users versus non-users	Model 2 Odds for adopters versus non-users	Model 3 Odds for dropouts versus Internet users
Visited friends last month *Reference category: no*	1.487*		
Have friends *Reference category: no*	1.682*	2.024*	
Participated in programs organised by clubs, etc. *Reference category: no*	1.670*		
Have relatives/friends abroad *Reference category: no*	1.419*		
Have relatives/friends in the countryside *Reference category: none*	2.491**		

Note: significant at *.05 level, at **.01 level

In *Table 2,* supplementary to *Table 1* only the significant social network variables are indicated. The network variable referring to the intensity of kin relations (visited relatives last month) had no independent effect on any of the three models. This might suggest that non-kin ties are more influential in the process of Internet usage.

The results show that Internet users tend to have more social contacts, they are socially more active than the non-users: for those who visit friends, participate in social activities and/or have friends abroad or in the countryside the chances are between 1.5 and 2.5 times higher to be an Internet user than for those who are socially less involved. What is even more important to note is that – by filtering the effects of all the other factors – simply to have friends doubly raised the odds for somebody to become an adopter. This strongly affirms our first hypothesis that Internet use penetrates faster among those whose level of social capital is initially higher.

PERSONAL RELATIONSHIPS

It is not among the aims of the WIP surveys to give a proper and detailed account of the individuals' personal network characteristics, therefore the questions regarding both kin and non-kin ties/relations were quite randomly chosen, and were difficult to be sorted out on the basis of being applicable to Internet usage or not.

In the three examined years we calculated the rate of those who had no friends based on the question *How much time one spent with friends?* Since there were no data on the actual number of friends the only dimension in which any shift was measurable is the "friends gained versus lost" category. According to the WIP data one third of the

total sample has no friends[5]: this number corresponds with the results of surveys exploring individuals' social network systems (Albert and Dávid 1998, 2000).

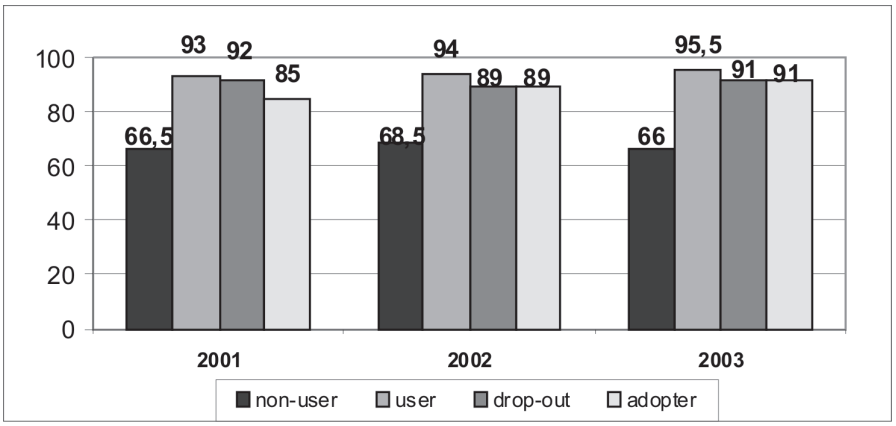

Figure 7. Proportion of have Friends between 2001–2003 in the Four Groups defined in relation to Internet Use

From *Figure 7* a similar conclusion can be drawn as from *Table 2* about the relationship between social capital and Internet usage. Among the non-users the rate of having friends is the lowest so in this respect we can say that in this group the level of social capital is also lower than in the other groups. The other three groups studied differ less from each other but the difference is still significant. Between 2001 and 2003 in the adopter group the rate of those who have friends increased by 6%: in this case we can say that the gain in friends/hip – among other factors – can be due to Internet usage. This result confirms our second hypothesis, the positive impact of the Internet on social relations.

On the contrary, in the dropout group one can see the shift moving in another (opposite) direction. In 2001 the two groups with the highest rate of having friends were the dropout and Internet-user group. By 2002 and 2003 the dropout group is more similar to the adopter group contrary to the Internet-user group who have friends in a significantly higher rate. The shift towards losing friends in the dropout group is irrelevant: represented mostly by young people their – naturally – rich social networks are not affected when they stop using the Internet, the impact is neutral. Gaining or losing friendships is independent to stopping Internet usage.

In 2003 two completely new questions were added in order to map further the different spheres of one's social network structure: one referred to the number of friends/relatives living in the countryside[6], the other referred to the number of friends/relatives living abroad[7].

5 28% in 2001, 26% in 2002 and 27% in 2003.
6 Outside one's own settlement.
7 Unfortunately one slice of the cake is missing: the total number of friends/relatives one has contact with.

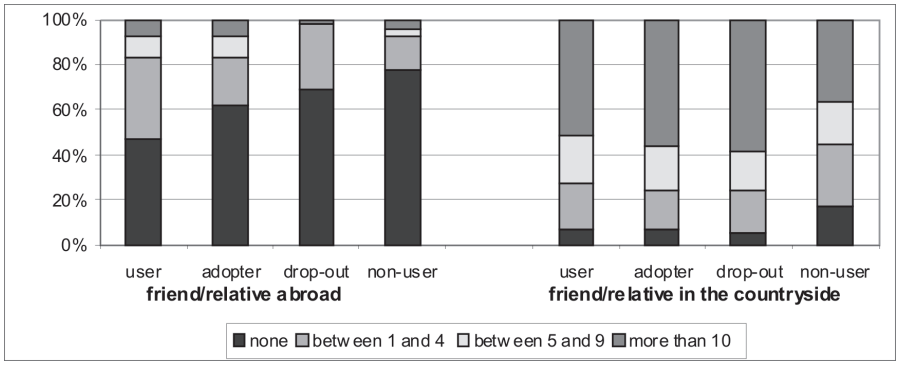

Figure 8. Number of Friends/Relatives living Abroad and in the Countryside

Figure 8 also strongly affirms that there are big differences in the level of social capital between the groups based on Internet usage. There is hardly anybody among the non-users who has friends/relatives abroad, and this is also the group with the lowest rate of having any social ties in the countryside. The dropout group – compared to the other two groups using the Internet – is in the most disadvantageous position concerning friends/relative abroad: the average number of ties abroad in the user group is 2.4, in the adopter 2.3 and 0.7 in the dropout group. Behind this rather negative result lies the question of motivation or in fact the lack of it: since they have no contacts abroad to maintain they are not able to benefit from one of the biggest advantages of the Internet. We should refer to the observations made by Cumming et al. that people's choice of the different communicational means depends "not only on the quality of the relationships sustained using it, but on opportunity costs as well" (Cumming et al. 2002: 108). To this we should add that there seems to be an opposite motion as well: people can completely abandon one communicational tool and change if found unnecessary. For members in the dropout group Internet is the medium given up and cell phone is the one preferred/chosen.

From the 2003 WIP survey we also know how often respondents meet their relatives and friends. *Figure 9* shows that the intensity of maintaining both kin and non-kin ties is highest in the Internet user group. There is a notable difference between the Internet-user and non-user groups concerning the intensity of meeting friends and relatives.

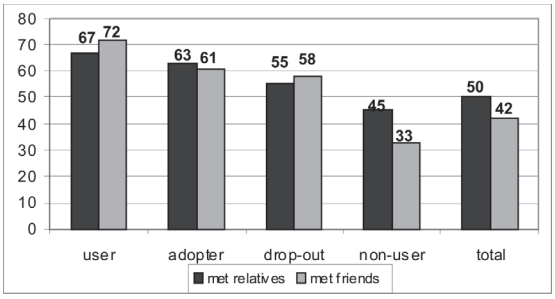

Figure 9. Proportion of those who met Friends and Relatives in the Previous Month 2003 (%)

Comparing the four groups by the frequency of taking part in different social activities throughout 2003 we find that the least active people are overrepresented in the non-user group (*Figure 10*). The most distinctive difference between the adopters and the dropouts is that while the dropouts maintain their friendship ties on a more intensive level, the adopters go much more to restaurants and oddly to libraries.

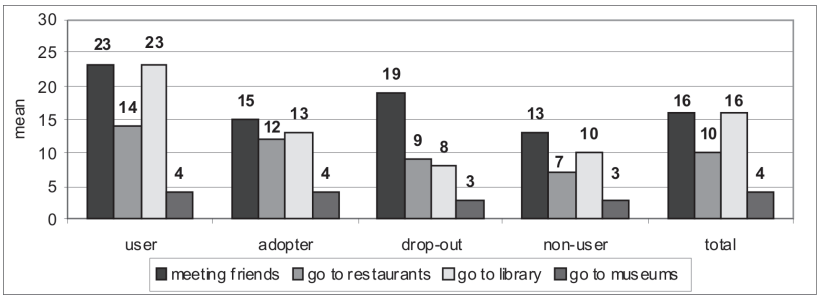

Figure 10. Number of Occasions of Doing certain Activities on a yearly basis, 2003

SOCIABILITY – SOCIAL SKILLS

In order to enhance and utilize one's social capital a special skill (sociability) is needed for the individual to be able to activate his "network" capital. As our second hypothesis suggests the positive relationship/correlation between Internet usage and sociability probably holds in a wider context, referring to weak ties like civil and associational acquaintances. Whereas in case of the strong ties – kin and close non-kin ties – a neutral or negative impact may prevail as formulated in the third and fourth hypotheses.

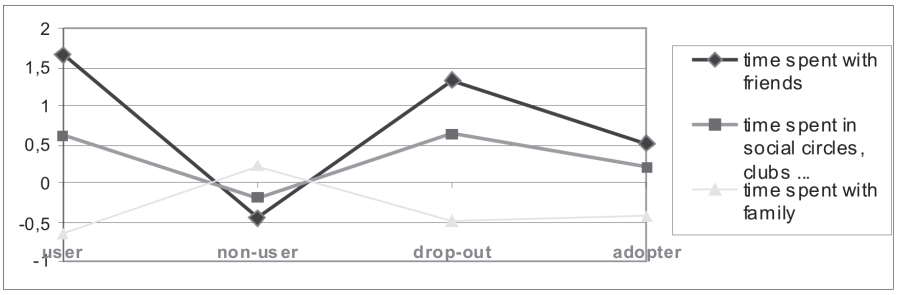

Figure 11. Time spent Together in Different Settings, in 2001, 2002 and 2003 (mean z-score)

The amount of time spent in different social settings (family, friends, civil) can be a strong indicator for showing their relation to Internet usage (*Figure 11*). Respondents not using the Internet spend significantly more time with their family. Analysing with logistic regression it turned out that the factor responsible for this difference is age: once controlled for age-groups this difference between the groups disappeared. It is only in the youngest age group (18–29 years old) where there is a significant difference between the users and the non-users: the latter spending more time with their families.

Regarding the average time spent with friends the opposite tendency seems to prevail: the Internet-users spend more time with their friends. But as mentioned previously it is again the effect of age, except in the youngest age group where the users spend more time with their friends. In this respect there is a variance within the different groups actually using the Internet: the adopters spend less time with friends. The amount of time spent in social circles, clubs or volunteer organizations is quite low and it is equally distributed between the groups.

Although the amount of time spent with the family is the least among the users, this number in itself does not seem to affect either the quality of family life or the frequency of family visits: see Figure 9 where it is particularly the users who visited relatives in the highest rate during the month prior to data collection.

Users spend more time than non-users at various events organised by NGOs and civil circles.

MAINTAINING SOCIAL RELATIONS ONLINE

In the WIP surveys many questions applied to the different aspects of how Internet usage affects relations and how these ties are maintained. The following figures[8] refer to how respondents in the three Internet-user groups agree to each statement. The data is based on the WIP 2002 survey. We used a five-point scale where 5 means total agreement while 1 refers to total disagreement.

From *Figure 12* to *Figure 14* we can see that those who have been Internet users over all the 3 years (user group) feel that they not only communicate more with their

8 In the figures shown the significance level is at least .05.

families, friends and people with similar professions because of the Internet, but that they increased the number of their personal contacts. There are many respondents[9] who even assert that certain personal matters are rather shared with an online relation than with someone face-to-face (*Figure 13*). The longer one is a user the bigger the chance is for one to agree to that Internet helps to increase the number of personal contacts. It is also very important to note that in the user group versus the adopter group there is a higher rate of those who think that with Internet use they do not spend less time with their relatives/friends or people with similar profession. This is strongly confirmed our data on the time spent with the family and friends (see *Figure 12*).

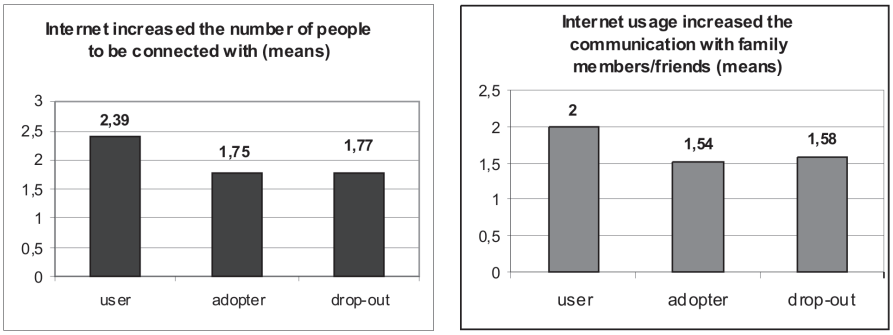

Figure 12. Time spent Together with Family Members/Friends and Others

According to *the users* it is easier to make contacts online than offline (face-to-face). This points out a very important feature of an application like e-mail, namely that it facilitates the communication with people with whom one otherwise would not be connected: either because personally they never met before or because the low cost of Internet communication stimulated the contact. The Internet (e-mail) also contributes to strengthen the principle of homophyly by which people choose someone similar to them even in different aspects like profession or hobby (*Figure 13*).

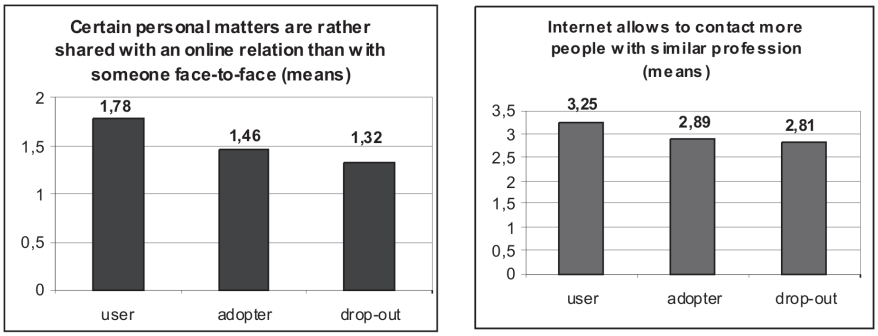

Figure 13. Making Contacts using Internet

9 Still compared to the other statements this is where people score and agree with the least.

Nevertheless, among the users the criterion of having an e-mail address is articulated in order to maintain a relation. The difference between the user and adopter group is that in the previous one the respondents agreed in bigger numbers to the statement that ”it is more likely to maintain a relation with somebody who has e-mail address” (*Figure 14*).

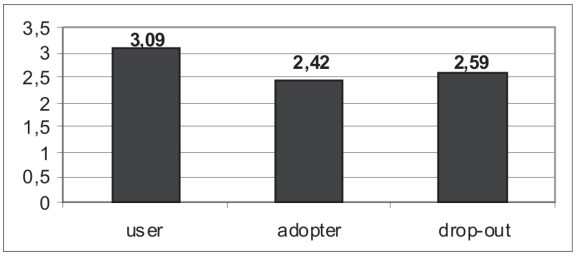

Figure 14. It Is more likely to Maintain a Relation with Somebody Who Has E-mail Address (means)

Our data confirm that long-time and intense Internet usage leads to a more extensive exploitation of the communicational techniques in order to maintain social ties. The respondents belonging to the *user group* send or receive more SMS and e-mails than people in the *adopter group* (*Table 3*). The difference between the two groups in the rate of e-mail sending/receiving is twofold: 30% of the adopters versus 60% of the users!

Table 3. E-mail Usage

	More than once a week send/receive ….. (%)	
	SMS	e-mail
User	85	61
Adopter	73	30
Dropout	81	30
Sig.	.000	.000

The questionnaire gives the opportunity to compare the three groups using the Internet on the basis of the number of friends:

1. Whom they knew online first and met afterwards,
2. Whom they knew online but haven’t met yet,
3. Whom they knew offline but later keep in touch by e-mail.

From *Table 4* we can see that for all kinds of online relations it is the user group in which people have the most number of friends on average. For example while the user respondents have two friends on average whom they knew offline but at present they keep in touch by e-mail, among the adopter respondents this number is only 0.7.

Table 4. Aspects of Online Friendships (mean number of friends)

	Number of friends whom…		
	knew online first and met afterwards	knew online but haven't met yet	knew offline but later kept in touch by e-mail
User	0.91	3.52	2.02
Dropout	0.21	1.09	0.64
Adopter	0.18	0.87	0.70
Sig.	.003	.190	.002

With the longitudinal data we are also able to study the dynamics of the number of friends for each group in the three years.

Table 5. Dynamics of Social Relations: knew online first and met afterwards (%)

	Number of such friends			
	Decreased	Didn't change	Increased	Total
User	10.5	71.3	18.2	100
Dropout	20.7	72.4	6.9	100
Adopter	6.4	86.4	7.3	100
Sig.	.004	.004	.004	.004

The biggest difference seems to be between the user and the group. (*Table 5*) While almost one-fifth of the permanent Internet users reported that the number of those friends whom they knew online first then met personally increased, while one fifth of the dropouts felt exactly the opposite: the number of such friends decreased in the 3 years. These numbers are quite straightforward in indicating how important online communication is in meeting new people and in maintaining old relationships. Once this opportunity ceases there is the chance for one's social network system to shrink substantially, which in the case of the dropout group means young people (below 18 years) living in small villages.

It should be noted that for a relationship originally online is rarer to remain virtual, than to meet face-to-face: 25% of the users reported that the number of such friends decreased (*Table 6*) while this rate was 10% in the previous case (*Table 7*).

Table 6. Dynamics of Social Relations: knew online first but haven't met yet (%)

	Number of such friends		
	Decreased	Didn't change	Increased
User	24.7	65.2	19.1
Dropout	17.9	64.3	17.9
Adopter	10.1	79.8	10.1
Sig.	.000	.000	.000

Interestingly we found the biggest increase in the number of friends whom were met offline but with Internet usage e-mail became the most important means of keeping in touch with them. Among the users the rate of those for whom this number increased is almost 30% (*Table 7*).

Table 7. Dynamics of Social Relations: knew offline but later kept in touch by e-mail (%)

	Number of such friends		
	Decreased	Didn't change	Increased
User	22.1	49.2	28.7
Dropout	13.8	75.9	10.3
Adopter	14.5	70.0	15.5
Sig.	.000	.000	.000

From our data the tendency seems obvious: Internet usage (especially in the case of the *user group*) increases both online and offline relations.

SUMMARY

Our data analysis proved our first hypothesis. All the different data showed that *adopters* possess a higher level of social capital than the non-users: on the basis of the logistic regression analysis – which filters the impacts of all the socio-demographic parameters – the effect of network capital (*measured by having friends*) was traceable. People's chance to become an Internet user is more than twice as much if they have friends than if they do not.

When studying the impact of Internet usage on personal relations and on the three different types of sociability separated in our theoretical framework the result was unambiguously positive and showed that Internet usage increases social capital. For the longer-time one is an Internet user the more likely that he could broaden his social sphere by means of the Internet. Our data also confirm that this does not happen at the expense of existing offline relations. Our results are quite convincing in the case of the adopters: no matter how high the level of their social capital is at the starting point, their sociability rate is still lower than that of the users simply because the former

respondents simply did not have enough time to make the best of this communicational tool. This supports among others the findings of Wellman (2002).

In the 3 years studied no doubt the network capital was always highest in the user group: they probably had a higher sociability rate right from the start which through Internet usage was even further expanded by making new contacts and by maintaining the old ties at the same time. Parallel to this phenomenon our observation is that Internet usage has a neutral effect on family relations.

We presume that Internet diffusion is very much affected by the Hungarian social network structure, namely the lack of social network capital. This also points to the necessity of analysing the cultural barriers in the Internet diffusion mechanism: we are claiming that the reason for in 2003 every third respondent refusing to use the Internet by answering "I don't need it" is, that people with low social capital do not require such techniques that will broaden or even maintain the few social contacts they have. For them there are no positive aspects of Internet use. This can partly explain why the rate of Internet diffusion is still so low; 23% of the non-users live with relatives who are Internet users, and on top 18 % of them live in households where there is a PC at home. Other than with the existence of the cultural barrier it is quite difficult to explain the fact that with such high rates of direct experience of Internet usage (family member is a user) and the high rates of the given conditions (PC available at home) there is only a 2 per cent growth in the number of people using Internet at home.

Our data confirm that the diffusion of Internet use is very much influenced by cultural traditions and the fine fabric of the social network structure, as the difference between the fragile and sparse social ties of the non-users and the numerous social relations combined with a high sociability of the users and the adopters is quite remarkable. One should note the importance of the different public places (Tele-house, library) and the role of the friends in case of the adopter group. The popularity of such places is precisely the outcome of the extensive social network system. This is also proven by our data showing that the chance to use the Internet is primarily affected by one's non-kin ties (friends, acquaintances) rather than the strong, family and other kin ties. We also showed some evidence that it is the quality rather than quantity of the ties that are influential factors.

If it is as it seems that the cultural context is the bottom line of the diffusion process then it is very difficult to predict the future rate of expansion. The great paradox in this situation is that while our data confirm the positive aspects of Internet usage on one's social capital building and the social network system, it is the very non-user who (although very much in need) can not benefit and increase his social capital because of the sparse social ties that hinders anything in the first place.

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