

ICT activity in later life: Internet use and leisure activities amongst senior citizens in Finland

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Abstract The article examines the relationship between the Internet use and leisure activities amongst Finnish seniors. Traditionally, the young have been the most active users of the Internet and other information and communication technologies (ICTs). In recent years, however, older age groups have increasingly become more interested in ICT, yet a significant proportion of Finnish seniors rarely log on. Using data from a nationally representative survey ($N = 542$) conducted in the summer of 2010, we explored the connection between the frequent Internet use and general leisure activity. The basic socio-demographic variables were controlled in the analysis. The findings indicate that the active Internet use in old age has a strong positive correlation with the number of different leisure activities amongst Finnish seniors. As most European societies continue to age, it is clear that future research should focus on the implications and the role the Internet and other new ICTs will play in the everyday life amongst the ageing citizens.

Keywords Internet · Senior citizens · Leisure · Survey research · Finland

Introduction

Academic researchers and policy-makers alike share the view that the new information and communication technologies (ICTs) are in many ways incremental in the future of

the advanced societies. One of the key focuses in ICT research is to better understand the effects that these applications have on individuals and the society in general (e.g. Cummings and Kraut 2002; Haythornthwaite 2002). Even though the Internet and other new communication technologies are perceived in many ways as being useful, their proliferation and implications still remain largely uncharted for. In this sense, understanding and examining the role of the Internet in the everyday life becomes particularly important in ageing societies. However, much of the existing research has focused on the younger age groups, commonly perceived as the more active ICT users.

A constant finding regarding senior citizens and their ICT abilities has been that the young are more likely users of the new ICTs than older people. This observation applies to time spent on computers, the Internet, and other related appliances as well as their use frequencies (e.g. Franzen 2000; Gershuny 2003). Existing literature also often indicates that young people are more willing to try new products and services than older people (e.g. Räsänen 2008; Hargittai 2007; Charness and Boot 2009). In many senses, a common feature with the past ICT literature is that it often treats older population groups as homogenous when it comes to their technology use (see e.g. Morris et al. 2007; Turner et al. 2007). However, statistics show that this is not entirely the case (see also Werner et al. 2011); for instance, 100% of Finns aged 16–35 had accessed the Internet over the past 3 months, as against the 43% of those aged 65 or older (Statistics Finland 2010). Yet, at the same time, the oldest age group also provides a clear division between users and non-users, with 50% of those aged 65 or older reporting never having accessed the Internet (Statistics Finland 2010). Therefore, in this context, such conceptions as ‘digital divides’ and ‘information haves’ and ‘information have-nots’ have often been referred to (see e.g. Norris 2001; Räsänen 2008).

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In this article, we approach the issue of ICT inequality from the point of view of examining the implications of technology diffusion into the everyday life. As the new technology is becoming more and more embedded into the daily life, knowledge and ability to familiarise the Internet use, for instance, can serve as major influence on personal choices and activities. In addition to the new technologies, different leisure activities also play a significant part of everyday life for most. Past research has shown that engagement with such activities is not only experienced as rewarding and satisfying, but also has positive impact on health and psychological well-being (e.g. Coleman and Iso-Ahola 1993; Singh-Manoux et al. 2003), particularly amongst the older age groups (see, e.g. Varghese et al. 2003; Harrison and Ryan 2010; Karp et al. 2006; Wang et al. 2002). Further, it has been shown that entering retirement does not have a strong effect on the level of leisure participation (see, e.g. Scherger et al. 2011). However, with the growing role of the Internet as an everyday activity, as well as its potential incentive for other leisure activities (see e.g. Bryce 2001, p. 9), examining the relationship between the Internet use and leisure activity (especially amongst the seniors) then becomes particularly interesting.

Past research does imply that online activity can play a role in many aspects of the daily life. For instance, recent research (e.g. Whitty 2008; Mesch and Talmud 2006) refers to the Internet and ICT as supplementary to many offline activities and relationships. There are also other recent studies supporting this assumption. For example, it has been found, that the frequent Internet use correlates both with informal sociability and civic activity and that the frequent Internet users were socialising with their friends and participating with various voluntary organisations more often than others (Räsänen and Kouvo 2007). In addition, it has also been found that the frequent Internet use has a positive correlation on community participation and satisfaction, suggesting that technology acts as a ‘community builder’, and that members with online access tend to be more involved and active within the community (Dutta-Bergman 2005).

It is also possible to argue that the high-frequency Internet use would correlate with a high frequency of other activities. We may assume, for example, that those who are engaged in many different free-time activities are more likely to log on than those with only few activities. This is supported by Stark-Wroblewski et al. (2007), who found that seniors who were using e-mail and the Internet reported, not only fewer health issues, but also placed more value on general activeness than non-users of similar age categories. According to Statistics Finland (2009a), some of the most common Internet use purposes amongst Finns aged 55 and 74 included searching information about

services (and events), travelling, and educational events and courses. It is therefore possible to argue that the Internet in this sense can play a role in regards of leisure activity amongst older Finns.

Although existing research on the Internet has had a tendency to focus more on the impacts on social participation and sociability, the aim in this article is to provide new information concerning the Internet and its broader implications in everyday life. In order to do so, we try to gain a better understanding of the connection between online activity and leisure activities. Leisure activities in this study can be described either as type of cognitive activities (e.g. reading, writing, painting, etc.), physical activities (e.g. outdoor activities, exercise, etc.) (see, e.g. Varghese et al. 2003) or cultural activities (e.g. going to the museum, concerts, theatre, etc.). The purpose of this study is to provide new information regarding the relationship between Finnish seniors and the Internet. We approach this topic by studying the correlation between ICT activity and leisure activity, and whether leisure activity and the Internet usage are connected, even after controlling the other possible explanatory variables.

The following two research questions were formulated:

- (1) How does the frequency of leisure activities connect with the frequent Internet use amongst Finnish senior citizens?
- (2) Is the relationship between leisure activity and the frequent Internet use significant when taking into account basic socio-demographic factors?

Methods

Data

Our data consist of results of a nationally representative survey conducted in the spring of 2010. The participants represent age groups from 60 to 79 years. The data utilised in the analysis were derived from a survey data ‘Cultural Capital, Consumption, and Social Networks amongst Older Adults’ collected in the spring of 2010. The method of data collection was a postal survey, and the sample was selected from the Central Register of Population database. The questionnaires were sent to a random sample of 800 Finnish-speakers aged 60–79 years, out of which seven were non-contacts. The survey gave a response rate of 68% ($N = 542$). The sample represents the Finnish population aged 60 and over relatively well, at least in terms of age and gender distributions. The gender distribution of our data corresponds to the gender distributions of 60–79-year-old population. However, the age distribution is slightly biased, indicating that younger age groups (under 65-year-olds) are

under-represented by 4% in the data. In addition, it must be noted that our data can only be compared against both Finnish and Swedish speakers.

Variables

We are interested in the association between the frequency of the Internet use and leisure activity. In the questionnaire, the respondents were asked to evaluate how often they use the Internet or e-mail for personal use. The variable does not differentiate more diverse types of use; it simply reports the Internet and/or email usage. At the same time, however, the advantage of this variable is that the usage is restricted for personal (and not work-related) purposes. The original variable has a total of eight frequency categories: ‘every day’, ‘several times a week’, ‘once a week’, ‘several times a month’, ‘once a month’, ‘less than once a month’, ‘never use’ and ‘no access’. In the explanatory analysis, in which we investigate the relationship between the frequent Internet use and leisure activity, the variable was recoded into two categories of frequent users, those who use the Internet every day or several times a week, and others, who use it less often or not at all. We shall explicate our variable treatment procedure in connection with descriptive data analysis.

In terms of leisure activity, a total of 20 were listed in the questionnaire: reading, listening to music, gardening, watching television, watching sporting events, writing, painting, exercising, outdoor activities, going to theatre performances, playing a musical instrument, going to concerts, going to museums or galleries, going out to eat, going to movies, making arts and crafts, singing, travelling, using the computer and educational tours. Respondents were simply asked to indicate which leisure activities they had engaged in during the last year. The original item used was ‘Please indicate which leisure or recreational activities you have engaged in during the last 12 months (please check all that apply)’. On average, the Finnish seniors had engaged in eight activities mentioned in the questionnaire during the last year (median being nine activities). Following this, the variable was divided into two groups. The first group includes those respondents who had participated in more than eight activities, and the second group consists of those who had participated in eight or less activities.

In the analysis, the Internet use frequency is treated as the dependent variable and leisure activity as the primary confounding variable. Control variables include age, gender, education, health, and participation in working life.

Age was categorised into three groups, ‘60–64-year-olds’, ‘65–69-year-olds’ and ‘70–79-year-olds’. The 60–64-year-olds are usually considered as representing the economically active population, although only approximately two out of five Finns in that age group are actually

in working life. By the age of 65, most Finns are already retired (Statistics Finland 2009b). Age has to be included in the analysis as a control variable since it can affect the possibilities of engaging in different leisure activities. In general, the 60–64-year-olds are in better financial position than people aged 65 and older, which contributes to the greater possibilities of attending several leisure activities. In addition, physical health usually deteriorates with age, narrowing the number of leisure opportunities for elders. It is also clear that age itself is interlocked with the Internet use frequency (Peacock and Künemund 2007; Räsänen 2006). Therefore, the sample population was decided between the ages 60–79 years.

Education was measured according to the highest level of formal education the respondent had completed, and categorised into three groups on the basis of Statistics Finland’s official categorisation: bachelor/higher, secondary and primary. Earlier studies have shown that people with higher education participate, for example, more actively in cultural activities (e.g. Bourdieu 1984; Katz-Gerro 2002; Harrison and Ryan 2010). Thus, education is used as a control variable when analysing connection between the Internet use and leisure activity. In addition, previous studies have indicated that education is also a significant predictor of the Internet use frequency (e.g. Dutta-Bergman 2005; Räsänen and Kouvo 2007).

A self-rated measure of one’s current employment situation was also included in the analysis. Respondents were asked whether they were still working for pay or not. It has been shown that economic activity can explain whether one uses the Internet or not (Peacock and Künemund 2007). In addition, employment status can have an impact on the number of leisure activities, since economically active people usually have better chances to become introduced to numerous new activities, with the help of their colleagues, for instance. At the same time, however, people who work for pay have less time to engage in leisure activities than those who are already retired. Following these considerations, a measure of economic activity was included in the analysis.

In addition to leisure activity, age, education, gender and self-rated measure of current employment situation, a subjective measure of health was also included in the analysis. Respondents were asked to evaluate whether their health was ‘very good’, ‘good’, ‘fair’ or ‘poor’. The variable was categorised into two groups. The first group includes those respondents who rate their health as very good or good, and the second group consists of those who consider their health as fair or poor. Subjective health was included in the analysis as a control variable since subjective health ratings are often connected with culture, consumption, and other activities amongst older population groups (e.g. Pinquart 2001; Harrison and Ryan 2010).

Analysis techniques

The methods of analysis used in this study are descriptive statistics and logistic regression. First, we used descriptive statistics (namely, frequency analysis and cross-tabulations) to give an overview of the senior citizens' Internet use patterns. The aim of this analysis was also to describe the interconnections between the Internet use, the number of leisure activities, and socio-demographic factors. After that, logistic regression models were applied in the explanatory analysis. More detailed descriptions of the techniques are given in connection with each analysis procedure.

Results

Descriptive analysis

By examining the Internet use frequencies, we are able to establish how often senior citizens log on. In addition, the analysis helped to distinguish 'active users' from 'non-active' and 'non-users'. The Internet use was originally measured in the questionnaire using an eight-point scale. Table 1 gives the distribution of responses for each category (percentages and numbers of valid cases).

According to our findings, a considerable share of the respondents had either no Internet access (28%) or they never use it (16%). On the other hand, however, the portion of those who use the Internet on a daily basis (28%) or several times a week (15%) is also quite large. The share of respondents falling into the remaining categories is much smaller. For example, 4% of the users report using the Internet once a week. Only 13% of the respondents report logging online occasionally, from once a week to less often than once a month. These findings suggest a clear pattern of either frequent use or non-use use amongst Finnish seniors. Table 1 also shows the shares of the combined categories for those who use the web several times a week, and for those who use it less often. Using this dichotomised variable, 43% of the users can be labelled as 'frequent users', and the remaining 57% 'others', who are either infrequent users or non-users.

In general, the percentages shown in the table are in line with the official statistics. According to Statistics Finland

(2010), approximately 43% of the Finns aged 65–75 years had accessed the Internet during the last 3 months. At the same time, 19% of this age group used the web on a daily basis. However, it should be noted that the statistics available do not make similar assumptions for the use purposes as our measure does. Therefore, age classifications used in the official Internet usage statistics are not directly comparable to our sample. While acknowledging this, it is feasible to argue that our survey data is relatively representative in terms of the overall Internet use rates. Regarding our study, we may notice that the number of Finnish seniors actively using the Internet is almost equal to the number of infrequent users and non-users. Given this, the next question connects with the possible differences between frequent users and others.

Table 2 shows the proportions of 'frequent users' and 'others' by respondents' general activity, age, education, gender, and economic activity. The number of valid cases

Table 2 Frequent Internet use by independent variables

	Frequent user, % (n)	Other, % (n)
Number of activities		
9 and over	57 (156)	43 (120)
Under 9	25 (67)	75 (199)
Age		
60–64	59 (96)	42 (68)
65–69	43 (66)	57 (86)
70–79	25 (47)	76 (145)
Education		
BA/higher	66 (88)	34 (46)
Secondary	43 (71)	57 (93)
Primary	27 (51)	73 (141)
Gender		
Male	47 (110)	53 (126)
Female	37 (111)	63 (191)
Work for pay		
Yes	66 (55)	35 (29)
No	38 (166)	62 (274)
Health, χ^2		
Very good/good	55 (108)	44 (87)
Fair/poor	34 (115)	66 (223)
All	41 (223)	59 (319)

Table 1 Internet use amongst the sample of Finnish senior citizens

	Every day	Several times a week	Frequent user	Once a week	Several times a month	Once a month	Less than once a month	Never use	No access	Other
%	28	15	43	4	5	1	3	28	16	57
n	145	78	223	20	28	6	16	143	83	296

is given in parentheses. First, of those with at least nine leisure activities, 57% are the frequent Internet users. Only 25% of those with less than nine activities belong to the frequent user category. In the preliminary analyses (not shown in the table), we also noticed that those respondents who were using the Internet once a week or less often resembled non-users rather than frequent users when looking at the leisure activity patterns. This group was clearly less likely to have at least nine activities than were the frequent Internet users. Owing to this and to the limited number of the infrequent Internet users in our sample ($n = 70$), we continued the comparison between the frequent users ($n = 223$) and others ($n = 296$).

When comparing age groups, we find that the younger age groups are also more likely to use the Internet regularly. For instance, 59% of respondents below the age of 65 are frequent users, while just 25% of over 70-year-olds belong to this category. Education, gender, and economic activity appear to have an impact as well. Senior citizens with higher educational qualifications are more frequent users than those with lower education. Only 27% of the respondents with primary education report using the web frequently. On the other hand, the frequent-user rate for those with secondary education is 43%, and 66% amongst those with a university degree. Men are more likely to be frequent users than women (47% for men and 37% for women). Simultaneously, 66% of those who are still participating in gainful employment are frequent users. Only 38% of respondents outside paid-work belong to the frequent user category. In addition, the difference between those who work for pay and those who do not is rather considerable, nearly 20% points. Also, health status appears to make a difference here; 55% of those respondents who consider being either in very good or good condition use the Internet frequently. There is a 21% point difference between those frequent users who rate their health as fair or poor.

Regression analysis

The explanatory analysis of the association between the frequent Internet use and leisure activity was carried out in two parts. First, the unadjusted effect of leisure activity and each control variable was tested. After that, the effects of the other variables were tested by entering a new variable one at a time into the model including the effect of leisure activity.

Table 3 shows the results of the logistic regression main-effect tests for the frequent Internet use. The effects of the confounding and control variable(s) in the models are presented with the odd ratios ($\exp \beta$). The odds ratio is the increase, or decrease if the ratio is less than one, in the odds of being in one outcome category when the value of

the independent increases by one unit (e.g. Tabachnick and Fidell 2001). Odds ratios are thus used to compare the relative strengths of the independent variables. The statistical significances of the models are indicated in the table by Chi square statistics (χ^2). The pseudo-coefficients of the determination (Nagelkerke Pseudo R^2) of the models are also reported in the table.

The unadjusted effects shown in the second column on Table 3 reveal that all selected variables are statistically associated with the frequent Internet use. Leisure activity, age and education seem to have the strongest effects, as the odds for being a frequent Internet user amongst those with at least nine leisure activities is almost four times higher compared to those with fewer activities. The parameter estimates also indicate that the younger the respondent, the more likely he or she is to use the Internet regularly. The odds ratios for the frequent Internet use against the oldest age group are 4.4 in the age category 60–64 and 2.4 in the age category 65–70. Differences by education show that those who have the best educational qualifications are the most likely to use the Internet frequently. The predicted probabilities of being a frequent Internet user are five times as likely amongst those with a BA degree when compared to those with only primary education. Still, those with secondary education are twice as likely to be frequent users as those with primary education. Also, males are somewhat more likely than females to be the frequent Internet users; men are approximately 1.5 times as likely as women to use the Internet regularly. We may also notice that both economic activity and health have stronger impacts on the frequent Internet use than gender. The effects of other independents have not yet been controlled in these findings, however.

Model 1 shows that the leisure activity variable can explain 13% of the variance in the frequent Internet use. This is a considerable share indicating that the association between the variables is clear. In Model 2, the effect of age is adjusted. This affects the differences between the leisure activity groups, but not by much. The odds for being a frequent user are still 3.5 times as high for those who have at least nine leisure activities against those who have less than nine activities. The predicted probabilities between age groups do not change very much in this model. The model shows that 21% of the variance in the frequent Internet use is accounted for by leisure activity variable and age.

Model 3 adds education. This moderately increases the explained variance, and also affects the differences between the leisure activity categories. The odds for being a frequent user drop from 5.3 to 3.6 (secondary) against one when examining categories BA/higher and primary. The difference between those with secondary and primary education is no longer significant. In addition, the odds

Table 3 Frequent Internet use by independent variables, logistic regression models

Main effects	<i>n</i>	Unadjusted effects, exp β	Model 1, exp β	Model 2, exp β	Model 3, exp β	Model 4, exp β	Model 5, exp β	Model 6, exp β
Number of activities, χ^2		56.1***	56.1***	41.3***	15.0***	18.0***	17.3***	15.6***
9 and over	276	3.9***	3.9***	3.5***	2.3***	2.6***	2.6***	2.5***
Under 9	266	1	1	1	1	1	1	1
Age, χ^2		43.9***		36.1***	25.5***	23.3***	10.8**	9.7**
60–64	164	4.4***		4.0***	3.5***	3.3***	2.5**	2.4**
65–69	152	2.4***		2.2**	1.7*	ns	ns	ns
70–79	192	1		1	1	1	1	1
Education, χ^2		50.2***			22.2***	21.0***	19.5***	16.9***
BA/higher	134	5.3***			3.6***	3.5***	3.4***	3.2***
Secondary	164	2.1**			ns	ns	ns	ns
Primary	192	1			1	1	1	1
Gender, χ^2		5.3*				6.0*	5.7*	6.0*
Male	236	1.5*				1.6*	1.6*	1.7*
Female	302	1				1	1	1
Work for pay, χ^2		22.1***					2.9 (ns)	2.8 (ns)
Yes	84	3.1***						
No	440	1						
Health, χ^2		23.1***						2.1 (ns)
Very good/good	195	2.4***						
Fair/poor	338	1						
All, <i>n</i>	542							
χ^2 (model)			56.1***	85.2***	89.4***	95.0***	95.0***	97.0***
df			1	3	5	6	7	8
Pseudo R^2			0.13	0.21	0.24	0.25	0.25	0.26

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, *ns* not significant

ratios for both age groups slightly decrease. Model 4 adds gender, and Model 5 adds economic activity into the equation. What is noteworthy is that economic activity does not remain statistically significant in the fifth model. In general, however, these models do not provide very significant changes with regard to the effect of the leisure activity variable. Both the fourth and the fifth models explain 25% of the total variance. Model 6 takes in subjective health. Neither health status nor economic activity is significant here. Otherwise, the final model does not change the interpretations given above since the effects of leisure activity and control variables are as strong as they were in the previous model.

Now, it appears that the coefficients of the determination (Nagelkerke Pseudo R^2) provide satisfactory shares in the final four models. It is, of course, not surprising that the addition of new variables better explain analyses based on logistic regression models. However, what is important here is that the selected factors appear to be complementary rather than alternative sources of explanation. We can thus conclude that the frequent Internet use can be

predicted rather efficiently by leisure activity and the selected control variables. Therefore, our original finding is that leisure activity is clearly associated with the frequent Internet use pattern holds even after controlling for many of the basic socio-demographic variables.

Discussion

Despite the fact that many European societies are ageing, the past ICT-related research has had a tendency to focus on working aged adults and other more ‘active’ population groups, and very little has been known of older age groups and the kind of implications that the Internet use has on their life. For instance, a potential divide between ICT users and non-users has been feared to serve as catalysis for some population groups drifting further apart from the society (Charness and Boot 2009). As there appears to be a clear division between users and non-users amongst the older age groups, the question of the Internet’s role in the day-to-day living is very much relevant amongst the senior

citizens. Therefore, the aim in this study was to provide new information concerning the implications of intensive ICT use may have on other aspects of everyday life, particularly in those of older age groups.

The major difference compared with younger age groups is the fact that, in Finland, a relatively clear division of active Internet users and non-users within the older age groups exists. Moreover, the share of those who report logging but do so only occasionally was surprisingly small. This then provides clear evidence that the older age groups are not homogenous when it comes to the Internet use, as differences in Internet association continue to persist. Despite this, our results, in general, are in line with other similar studies, as well as recent youth studies dealing with ICT usage (e.g. Whitty 2008; Söderström 2009; Räsänen and Kouvo 2007). The results also bring up the fact that the active Internet use appears to reflect on leisure activity as well. Seniors who have variety of different leisure activities are by far more likely to be active users of the Internet than those less active during their day.

Naturally, we should be cautious here to avoid making strong arguments about the direction of the causal relationship between the technology and activities. The relationship between the frequent Internet use and leisure activity is somewhat two-folded. Those already active in their leisure time might be prone to adapting new types of activities, such as the Internet use, in their lives. In these cases, leisure activity can also be viewed as the incentive for intensive Internet use, rather than the other way around. At least, the official statistics concerning older Finns indicate that information retrieval relating to potential leisure activities tend to be amongst the most common user purposes (Statistics Finland 2009a). However, it is perhaps feasible to conclude that the new ICTs can provide possibilities to engage with other activities, just as likely as engagement with various activities may increase the likelihood of using the given technologies.

The results also reflect the respondents' educational and socio-economical background. On this basis, we may argue that the effects of the basic social structures do not notably change in later life. It is possible that while older people are becoming more active ICT users, their behaviour is also beginning to increasingly resemble that of their younger counterparts. It is argued that these days ICT use patterns, along with consumption patterns amongst the older age groups appear to be similar with that of the other age groups (e.g. Jones et al. 2008; Gilleard and Higgs 2008). This means that older people are also increasingly engaged with active lifestyles of contemporary consumer society. Furthermore, those now entering retirement age are also expected to live longer than age cohorts before them. In this sense, it is necessary to stress that the Internet is considered as a vital tool in improving the services offered

by the public sector organisations. The fact is that many of the public, as well as other, services will be Internet-based, even to an extent that these systems may soon be the primary way to receive professional support on health issues and daily advice on local occasions. We approached these implications here by examining the correlation between ICT activity and general activity, and whether general activity and being a frequent Internet user are connected, even after controlling the variables. According to our results, active senior lifestyle often involves frequent online access as well.

In this study, we relied on a cross-sectional survey data from one country alone. However, we believe that the findings of this study have relevance beyond Finland. The Nordic countries have often been referred to as the world's leading information societies (e.g. Castells and Himanen 2002; Viherä and Nurmela 2001); therefore, we expect that the findings would also be relatively similar in other Nordic countries, which share similar ageing population structure. In addition, the sample was drawn from a pool of less than one thousand respondents. It is thus obvious that further research is required both from internationally and temporally comparative perspectives.

The results of this study also indicate that providing senior citizens with tools and means to use these services can pay off in the societal context, as general activity is usually associated with better health. Lack of use is usually connected with the failure to provide clear enough benefits for the non-active users to alter their behaviour. With the increasing diffusion of new technology as part of the society, the role of the Internet requires constant evaluation to understand the implications on the daily life for both users and non-users.

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References

- Bourdieu P (1984) *Distinction. A social critique of the judgement of taste* [transl. R. Nice]. Routledge and Kegan Paul, London
- Bryce J (2001) The technological transformation of leisure. *Soc Sci Comput Rev* 19:7–16
- Castells M, Himanen P (2002) *The information society and the welfare state: the Finnish model*. Oxford University Press Inc., New York
- Charness N, Boot WR (2009) Aging and information technology use: potential and barriers. *Curr Dir Psychol Sci* 18:253–258
- Coleman D, Iso-Ahola SE (1993) Leisure and health: the role of social support and self-determination. *J Leis Res* 25:111–128

- Cummings JN, Kraut R (2002) Domesticating computers and the Internet. *Inf Soc* 18:221–231
- Dutta-Bergman MJ (2005) Access to the Internet in the context of community participation and community satisfaction. *New Media Soc* 7:89–109
- Franzen A (2000) Does the Internet make us Lonely? *Eur Sociol Rev* 16:427–438
- Gershuny J (2003) Web use and net nerds: a neofunctionalist analysis of the impact of information technology at home. *Soc Forces* 82:141–168
- Gilleard C, Higgs P (2008) Internet use and the digital divide in the English longitudinal study of ageing. *Eur J Ageing* 5:233–239
- Hargittai E (2007) Whose space? Differences among users and non-users of social network sites. *J Comput-Mediat Commun* 13:276–297
- Harrison J, Ryan J (2010) Musical taste and ageing. *Ageing Soc* 30:649–669
- Haythornthwaite C (2002) Strong, weak, and latent ties and the impact of new media. *Inf Soc* 18:385–401
- Jones IR, Hyde M, Victor CR, Wiggins RD, Gilleard C, Higgs P (2008) Ageing in a consumer society: from passive to active consumption in Britain. The Policy Press, Bristol
- Karp A, Paillard-Borg S, Wang HX, Silverstein M, Winblad B, Fratiglioni L (2006) Mental, physical and social components in leisure activities equally contribute to decrease dementia risk. *Dement Geriatr Cogn Disord* 21:65–73
- Katz-Gerro T (2002) Highbrow cultural consumption and class distinction in Italy, Israel, West Germany, Sweden, and the United States. *Soc Forces* 81:207–229
- Mesch G, Talmud I (2006) The quality of online and offline relationships: the role of multiplexity and duration of social relationships. *Inf Soc* 22:137–148
- Morris A, Goodman J, Brading H (2007) Internet use and non-use: views of older users. *Univ Access Inf Soc* 6:43–57
- Norris P (2001) Digital divide: civic engagement, information poverty, and the Internet worldwide. Cambridge University Press, New York
- Peacock SE, Künemund H (2007) Senior citizens and Internet technology: reasons and correlates of access versus non-access in a European comparative perspective. *Eur J Ageing* 4:191–200
- Pinquart M (2001) Correlates of subjective health in older adults: a meta-analysis. *Psychol Aging* 16:414–426
- Räsänen P (2006) Information society for all? Structural characteristics of Internet use in 15 European countries. *Eur Soc* 8:59–81
- Räsänen P (2008) The aftermath of the ICT revolution? Media and communication technology preferences in Finland in 1999 and 2004. *New Media Soc* 10:225–246
- Räsänen P, Kouvo A (2007) Linked or divided by the Web? Internet and sociability in four European countries. *Inf Commun Soc* 10:219–241
- Scherger S, Nazroo J, Higgs P (2011) Leisure activities and retirement: Do structures of inequality change in old age? *Ageing Soc* 31:146–172
- Singh-Manoux A, Richards M, Marmot M (2003) Leisure activities and cognitive function in middle age: evidence from the Whitehall II study. *J Epidemiol Community Health* 57:907–913
- Söderström S (2009) Offline social ties and online use of computers: a study of disabled youth and their use of ICT advances. *New Media Soc* 11:709–727
- Stark-Wroblewski K, Edelbaum JK, Ryan JJ (2007) Senior citizens who use e-mail. *Educ Gerontol* 33:293–307
- Statistics Finland (2009a) Internetin käytön muutokset: Tieto- ja viestintätekniiikan käyttö 2008—tutkimuksen tuloksia. Katsaus 2009/1. Tilastokeskus, Helsinki
- Statistics Finland (2009b) Statistical yearbook of Finland 2009. Statistics Finland vol. 104 (new series). Tilastokeskus, Helsinki
- Statistics Finland (2010) Internetin käytön muutokset: Tieto- ja viestintätekniiikan käyttö 2009—tutkimuksen tuloksia. Tilastokeskus, Helsinki
- Tabachnick BG, Fidell LS (2001) Using multivariate statistics. Allyn and Bacon, London
- Turner P, Turner S, van De Walle G (2007) How older people account for their experiences with interactive technology. *Behav Inf Technol* 26:287–296
- Varghese J, Lipton RB, Katz MJ, Hall CB, Derby CA, Kuslansky G, Ambrose AF, Sliwinski M, Buschke H (2003) Leisure activities and the risk of dementia in the elderly. *N Engl J Med* 348:2508–2516
- Viherä M-L, Nurmela J (2001) Communication capability as an intrinsic determinant for information age. *Futures* 33:245–265
- Wang H-X, Karp A, Winblad B, Fratiglioni L (2002) Late-life engagement in social and leisure activities is associated with a decreased risk of dementia: a longitudinal study from the Kungsholmen project. *Am J Epidemiol* 155:1081–1087
- Werner JM, Carlson M, Jordan-Marsh M, Clark F (2011) Predictors of computer use in community-dwelling, ethnically diverse older adults. *J Hum Factors Ergon Soc* 53:431–447
- Whitty MT (2008) Liberating or debilitating? An examination of romantic relationships, sexual relationships and friendships on the Net. *Comput Hum Behav* 24:1837–1850