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# Relationship between using cloth dryers, personal computers or mobile phones and subjective well-being

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## Table of contents



## 1. Overview

This work package provides the results of a comprehensive literature review on the relationship between the use of cloth dryers, personal computers, or mobile phones and subjective well-being (SWB). These three examples have been selected in Hofstetter et al. (2004) for further study and as demonstration of a new approach, the CHap indicator. The selection of these examples was not based on empirical evidence that these consumer items would enhance subjective well-being. The selection was rather based on the availability of data in the chosen Japanese data set on young women (Hofstetter et al. 2004). Nevertheless, it was expected that using personal computers and mobile phones could alter the lifestyle of some women to an extent that also impacts their subjective well-being. Our own results and the data from the literature will be discussed here.

There are two additional points we would like to make for the reader:

- Although we were most interested in how these activities impact overall happiness we included all type of measures for subjective well-being.
- We strongly believe that results from cross-sectional analysis give very premature insights on the relationship between SWB and activities/possession and use of goods because the causality can often go in both directions. However, there are only very few longitudinal studies available on those issues and we therefore present also results from cross-sectional analyses.

## 2. Cloth Dryer

No specific information was found regarding the relationship between cloth dryers and subjective well-being. The only study coming close is Boelhouwer and Stoop (1999) who analyzed the correlation between the number of household appliances and happiness and found a correlation of r= 0.15.

Our own results suggest that the happiness measured on a 5 point scale decreases by a non-significant amount of 0.02 points for those young Japanese women that have acquired a cloth dryer (NY) compared to those that remain without cloth dryer (Table 2-1). Life satisfaction showed an increase and living standard a decrease. All are statistically non-significant.

**Table 2-1: Impact of purchasing a cloth dryer on three utility indicators (Ozawa & Hofstetter 2004)**

| Indicators for ultimate utility | NN (656) | | NY (14) | | Difference NY-NN |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean |
| Happiness | -0.052 | 0.675 | 0.071 | 0.730 | -0.019 |
| Life Satisfaction | -0.008 | 0.862 | 0.357 | 1.277 | 0.365 |
| Living Standard | -0.014 | 0.578 | -0.071 | 0.730 | -0.057 |

Note: NN means no cloth dryer in year y and year y+1, NY means no cloth dryer in year y but one in year y+1, SD = standard deviation

Our results do not confirm the results by Boelhouwer and Stoop (1999). It is assumed that the difference is due to the fact that Boelhouwer and Stoop (1999) were only able to look into correlations and the fact that we have only very few cases that adopted a cloth dryer which makes the result weak. The available evidence suggests that there is probably no significant long-term impact on happiness when buying a cloth dryer.

## 3. Personal Computer

Oropesa (1995) analyzed the linkage between owning a computer and life satisfaction by using the DDB Needham Worldwide's 1989 life style study. He analyzed 2853 respondents in 1989 and additionally 3123 respondents from the 1990 Life Style Study. At the moment of the study only 22% owned a computer. The relationship between life satisfaction and owning a computer was beta= -0.024.

In Veenhoven (2003) two studies from Denmark are quoted where happiness regarding the ownership of specific durable consumer goods was analyzed. They asked the question "how happy you are now on a scale from 1 to 5?" for computer owners and non-owners. Results are shown in Table 3-1. In both samples higher happiness levels are found among computer owners.

**Table 3-1: Happiness related to computers. DMt = Difference of means after transformation, range from –10;+10 (Veenhoven 2003)**

| Owning a computer | Not owning a computer | Number of individuals totally | details | reference |
|---|---|---|---|---|
| DMt = 7.05 | *DMt = 6.89* | 1494 | 18-88 aged, general public, Denmark 1993 | Ventegodt S. (1995), Quality of Life in Denmark, The Quality of Life Center Kobenhavn, Denmark |
| DMt = 7.19 | *DMt = 6.93* | 4500 | Persons born at the University Hospital in Copenhagen 1959-1961 | Ventegodt S. (1996), The Quality of Life of 4500 31-33-year-olds, Forskingcenter for Livskvalitet Forskingcenter Forlag, Kobenhavn, Denmark |

Gatersleben (2000 p. 137) analyzed the correlation for energy use for computers and life satisfaction and comes to r= 0.07 with $p<0.05$ (Data: Netherlands 1997, N = 787).

In the so-called “E-living project” Anderson (2004) looked into the impacts of computer use on social capital and quality of life. Figure 3-1 shows an analysis of the mean change in the individual perceived quality of life scores for those UK wave 1 respondents who did not have home Internet access but who had acquired it by wave 2. We can see that those who had acquired Internet access in their household did not report a statistically significant increase in any quality of life score except for ‘good communications with friends’ and this result may not be reliable given the location of the error bars. Interestingly the control group who did not acquire Internet access reported an increase in satisfaction with their environmental conditions and their overall quality of life at wave 2 compared to wave 1.

Although Anderson (2004) does not ask for the changes in happiness the results do indicate that personal computers have indeed wider impacts by changing the way and intensity of communication with friends. It would have been interesting to see whether this single improvement would have impacted the overall happiness.

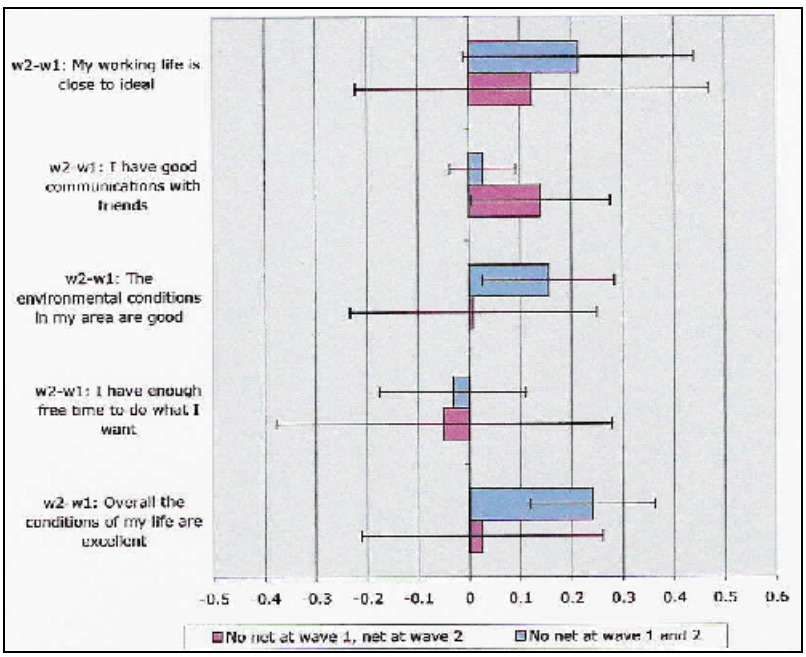


**Figure 3-1: Mean differences in QoL scores for wave 1 UK respondents who acquired home internet access by wave 2. A negative score indicates a decrease from wave 1 to 2, error bars are +/- 2 SE. Error bars spanning 0 indicate no significant change. N = 469 (no net), 120 (got net) (Anderson 2004)**

Kraut et al. (1998) showed in their first longitudinal study based on 231 individuals in 73 households during 1995/1996 using the internet extensively for communication, that greater use of internet was associated with a decline in participation’s communication with family members in the household, with declines in the size of the social circle and with increase in loneliness and depression.

A three year follow up of 208 of the first round participants showed that the negative effect regarding the family communication, the size of social circle as well as the increase of loneliness and the depression symptoms dissipated, only the increase of stress remained (Kraut et al. 2002).

In a further longitudinal study involving 406 new purchasers of computers and TV’s Kraut et al. (2002) showed that computer purchasers generally experienced positive effects from using the internet on communication and social involvement after a year (increasing the size of

social circles, more face-to-face interactions with friends and family, becoming more involved in community activities and feeling greater trust in people). The use of the internet has thereby different impacts for extraverts and introverts regarding to the community involvement and regarding loneliness. While internet use is positively related to community involvement and reducing loneliness for extraverts it is the opposite for introverts (Figure 3-2).

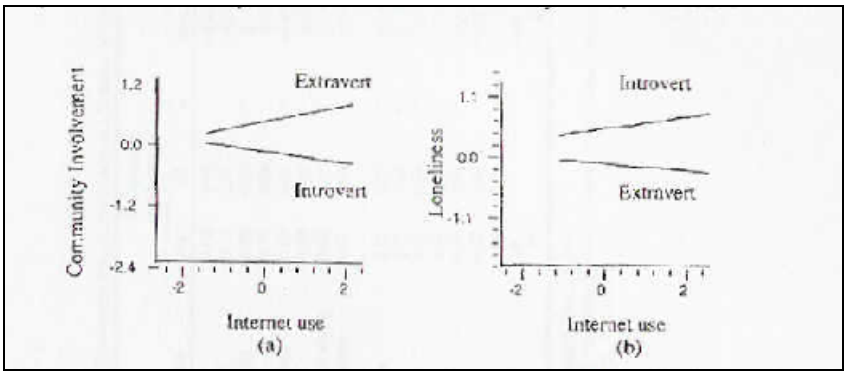


**Figure 3-2: Relationship between internet use and loneliness/community involvement for introverts and extraverts (Kraut et al. 2002)**

In a panel study Kraut and Kiesler (2003) showed that people using the internet for social purposes are more socially engaged offline as well but their use for internet on social purpose predicts declines in some measures of social engagement.

In another national panel survey in the U.S. in 2000 and 2001 Shklovski, Kraut and Rainie (in press) summarized that the longitudinal data showed that heavy use of the internet is associated with reductions in likelihood of visiting family or friends on a randomly selected day (see Figure 3-3).

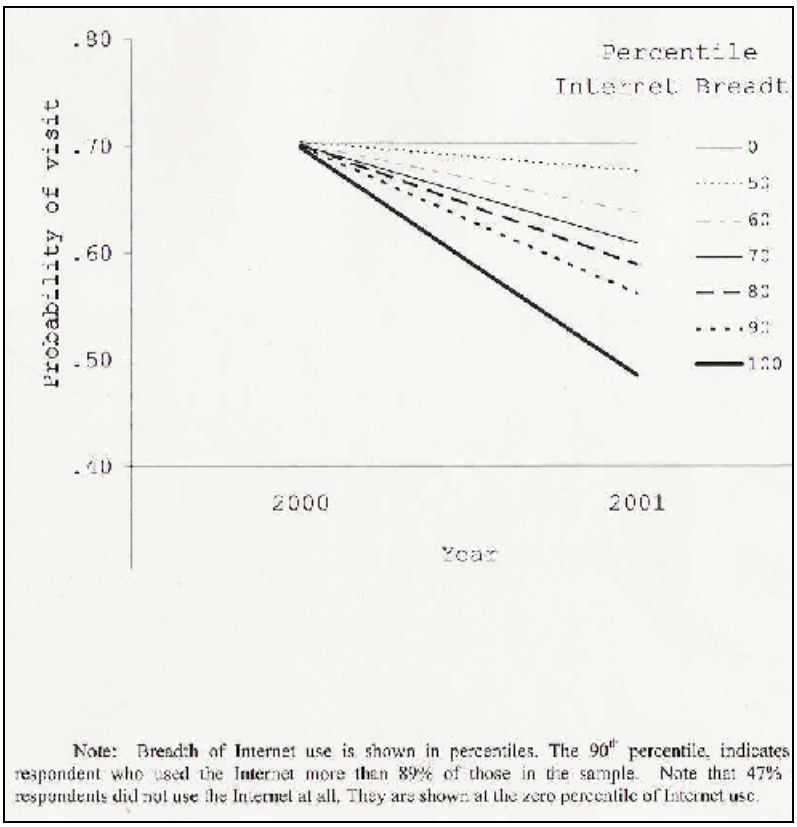


**Figure 3-3: Changes in probability of visiting yesterday among people differing in internet breadth visits (Shklovski, Kraut and Rainie in press)**

Further, the longitudinal study showed that family or friends visits drive more e-mail communication and phone calls drive more family or friends visits. However, the e-mail drives neither phone calls nor family or friends visits (Shklovski, Kraut and Rainie in press).

In a meta-analysis of 16 studies done in the U.S., Israel, Singapore, China, Hong Kong and Japan Shlovski, Kiesler and Kraut (in press) found that the association of internet use and social interaction in close relationship is very small. Cross-sectional studies indicate that the internet use is positively correlated with interaction in unspecified close relationships but negatively related to social interactions with friends while longitudinal studies show, that internet use predicts slight positive increase in social interaction in friendship (Figure 3-4). Shklovski, Kiesler and Kraut (in press) mention that all of the effect sizes were very small.

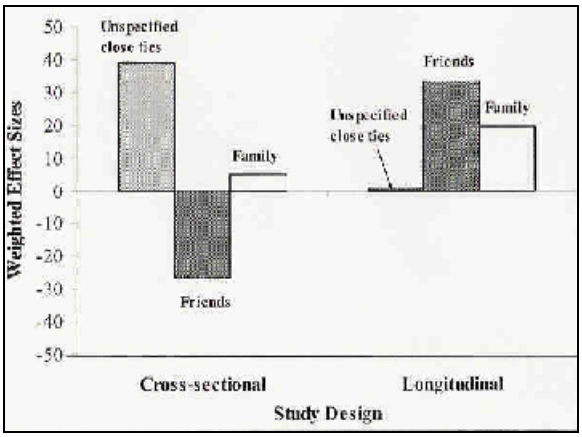


**Figure 3-4: Effect sizes of internet use on unspecific close ties, friends and family depending on the study design (Shlovski, Kiesler and Kraut in press)**

Our own results are presented in Table 3-2 and suggest that happiness and life satisfaction are not statistically significant and only to a very minor extent affected by the purchase and use of a personal computer. However, the living standard is substantially (but not statistically significant) higher for people purchasing a personal computer.

**Table 3-2: Impact of purchasing a personal computer on three utility indicators (Ozawa & Hofstetter 2004)**

| Indicators for ultimate utility | NN (183) | | NY (23) | | Difference NY-NN |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean |
| Happiness | -0.033 | 0.755 | 0.000 | 0.462 | 0.033 |
| Life Satisfaction | 0.044 | 0.837 | 0.130 | 0.757 | 0.086 |
| Living Standard | -0.016 | 0.633 | 0.174 | 0.491 | 0.190 |

Note: NN means no personal computer in year y and year y+1, NY means no personal computer in year y but one in year y+1, SD = standard deviation, *significant at the p<0.1 level

Focusing on the evidence from longitudinal studies and especially considering the findings from Kraut et al. (2002) suggests that purchasing and using a personal computer connected to the internet affects daily life in a relevant manner and alters social relations. However, the effect on introverts and extroverts are very different and the overall impact on happiness and SWB seems to be very limited. If there is an impact the impact may be slightly positive.

# 4. Mobile Phones

In Veenhoven (2003) two studies from Denmark are cited where happiness regarding to specific durable consumer goods is analyzed. They asked the question: “How happy you are now on a scale from 1 to 5 for people owning a telephone and not owning a telephone?”. Results are shown in Table 4-1 (regarding stationary phones, not mobile phones).

**Table 4-1: Happiness related to mobile phones. DMt = Difference of means after transformation, range from –10;+10 (Veenhoven 2003)**

| Owning a telephone | Not owning a telephone | Number of individuals totally | details | reference |
|---|---|---|---|---|
| DMt = 6.95 | *DMt = 6.73* | 1494 | 18-88 aged, general public, Denmark 1993 | Ventegodt S. (1995), Quality of Life in Denmark, The Quality of Life Center Kobenhavn, Denmark |
| DMt = 7.09 | *DMt = 5.74* | 4500 | Persons born at the University Hospital in Copenhagen 1959-1961 | Ventegodt S. (1996), The Quality of Life of 4500 31-33-year-olds, Forsking-center for Livskvalitet Forskingcenter Forlag, Kobenhavn, Denmark |

People owning stationary telephones are happier than people not owning a telephone. While the representative sample in the first study showed a small difference the second sample with young 31-33-year olds shows a huge difference. One can assume that the reasons for not owning a phone among 30-years old are very different from the general public (poverty, social isolation, etc.).

Oropesa (1995) analyzed the linkage between owning telecommunications and life satisfaction by using the DDB Needham Worldwide’s 1989 Life style study. He analyzed 2853 respondents and additionally 3123 respondents from the 1990 Life Style Study. The relationship between life satisfaction and owning telecommunications was beta= -0.035 (with $p< 0.10$).

In the so called “E-living-project” Anderson (2004) looked also on the impacts of using mobile phones on social capital and quality of life. Figure 4-1 shows a similar analysis for those UK wave 1 non-mobile phone owners who had acquired a mobile phone by wave 2. Given that the group of people in the UK who did not have a mobile phone at wave 1 is relatively small (the 32% who were ‘laggards’) and also biased towards older citizens it is not surprising that the error bars are large. However those who acquired a mobile phone reported an increase in their perception of their free time for reasons that are not at all clear. It may be that these respondents felt more in control of their time or could better organize their free time using their mobile but this argument is tenuous at best.

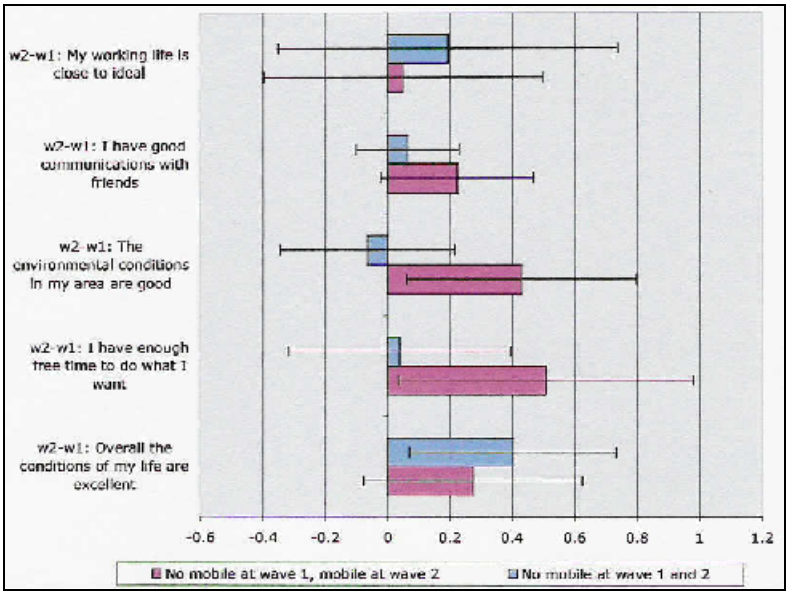


**Figure 4-1: Mean differences in QoL scores for wave 1 UK respondents who acquired a mobile phone by wave 2. A negative score indicates a decrease from wave 1 to 2, error bars are +/- 2 SE. Error bars spanning 0 indicate no significant change. N = 77 (no mobile), 62 (got mobile) (Anderson 2004)**

Wilska (2003) looked on the mobile phone use as part of young people's (16-20 years) consumption style in Finland. This study is not directly related to happiness but could eventually give a basis for further analyses. The result showed that the consumption style of mobile phones is consistent with their general consumption style. About 26% of the respondents are "addictive" users (important to receive a lot of phone calls, making phone calls without particular reason, feeling uncomfortable without phone), 31% are "trendy" users (internet connection to phone, newest technology etc. are important) and 40% are "thrifty"" users (price is important, mobile phone is only necessary for connecting people and organising things etc.).

Similar to the e-living project the saturation among our survey sample is already high. From more than 2300 young Japanese women only 344 did not own a mobile phone in the second survey year. Therefore, the results may not be characteristic for the mainstream user. However, our results suggest that no statistical significant changes in happiness (and life satisfaction and living standard) occur when somebody acquires a mobile phone. While the signal for happiness and life satisfaction is positive, the living standard declines.

**Table 4-2: Impact of purchasing a mobile phone on three utility indicators (Ozawa 2004)**

| Indicators for ultimate utility | NN (45) | | NY (20) | | Difference NY-NN |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean |
| Happiness | -0.044 | 0.424 | 0.000 | 0.459 | 0.044 |
| Life Satisfaction | 0.022 | 0.783 | 0.100 | 1.165 | 0.078 |
| Living Standard | 0.044 | 0.520 | 0.000 | 0.459 | -0.044 |

Note: NN means no mobile phone in year y and year y+1, NY means no mobile phone in year y but one in year y+1, SD = standard deviation, *significant at the p<0.1 level

The provided evidence does suggest that getting a mobile phone has a very limited impact on overall happiness or quality of life that may be positive or negative. However, the results from the e-living project (Anderson 2004) confirm that mobile phones alter some aspects of life in a relevant manner.

## 5. Conclusions

Our own results are in line with the results found in the literature: cloth dryers, personal computers, and mobile phones have, if at all, a very limited impact on overall happiness/SWB. Most results from longitudinal study design are not significant and negative impacts on SWB are likely, especially for cloth dryers. Results from Kraut et al. (2002) suggest that a stratification of the samples in introverts and extroverts may lead to more relevant results where extroverts show positive impact due to internet usage. Many studies also confirm that these technologies alter the life and lifestyles of the sampled subjects, i.e., the non-significant changes for the full group may look rather different for individuals.

## Acknowledgements

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