

# When do older adults consider the internet? An exploratory study of benefit perception

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*A.S. Melenhorst, D.G. Bouwhuis. When do older adults consider the internet? An exploratory study of benefit perception. Gerontechnology 2004;3(2):89-101.* Perceptions and experiences of both usability and usefulness can motivate or discourage older adults to use the internet. The present study explores older adults' perceptions of internet usefulness, or benefit. Thirty older internet users and non-users aged 60-74 years evaluated traditional media and internet applications for different communication purposes in their everyday lives. The participants were divided into three groups with different levels of experience. Both the amount of internet experience and the goal of the communication seemed to have affected their judgments. Experienced users valued internet applications more highly than less- and non-experienced users, in general. However, both users and non-users of the internet mentioned merits of the internet depending on the goal of the communication and the establishment of the medium in one's social environment. The goal-dependent differentiation of media evaluations within each of the three groups suggested a benefit-driven approach of media by older adults.

**Keywords:** aging, communication, technology experience, computer attitudes

The current generation of older adults was on the verge of retirement when the internet became popular. They were not automatically introduced to internet via their work, which otherwise might have encouraged or even forced them to learn about it. Those who have gone online probably did so voluntarily. For them in particular, the internet was a new method of communication the use of which seemed to be a choice. Why have some of these people gone online, while their peers have not?

The goal of this paper is exploring older adults' benefit perception of new communication technology, such as the internet. We assume that subjective evaluations will predict, in part, the eventual use of the medium. People's

expectation of benefits might be a critical motivation for technology use, rather than merely technology barriers. This idea contrasts the barrier-focused approach of new technology, which seems to be more common in the human factors and ergonomics literature, for example.

Indeed, older adults in particular may perceive the learning of new skills as a serious barrier to the use of technological equipment. Age-related declines of sensory and cognitive abilities<sup>1,2</sup> affect the ability to learn to deal with technologies, such as the Automatic Teller Machine<sup>3,4</sup>, computers<sup>5-7</sup>, and surfing the World Wide Web<sup>8,9</sup>. Although older adults are certainly able to learn the necessary skills for handling new technological devices<sup>10</sup> and adequate training programs increase

their performance<sup>3,11,12</sup>, on average it takes them more time than younger adults. They need more help<sup>7</sup> and finally may perform less efficiently<sup>9</sup>. In addition, generation-specific technology experience might interfere with the skill acquisition necessary to handle current user interfaces<sup>13</sup>.

Despite these possible barriers, a growing proportion of the population above the age of 55 started accessing the Internet. In the Netherlands, for example, where this study was conducted in 2000, the proportion of Internet users aged 55 to 64 years increased from 9% in 1998, to 16% in 1999, and 26% in 2000. In the age-group 65 years and older, these percentages were only 3%, 6%, and 9%, respectively, which nevertheless meant a tripling of the numbers within two years<sup>14</sup>. A higher socio-economic status and a higher level of education distinguished the older internet users from the older internet non-users<sup>14</sup>. This nourishes the common belief that leveling economic and ergonomic obstacles would automatically result in a higher technology use among older adults, which, however, might oversimplify older adults' motivations to use or not to use new technology. For example, older adults might not be motivated to buy a computer or to learn new skills, even if they could, as they do not perceive the expected result as desirable or helpful in fulfilling their aspirations.

Whereas research in human factors and ergonomics has addressed the understanding and leveling of potential obstacles for older individuals to use technology, the study of general motivational factors in older adults' technology use has received little scientific attention. We see this gap also reflected in the relatively small amount of gerontological research on motivation<sup>15</sup>. The model of Selective Optimization with Compensation<sup>16</sup> is one

of the few elaborate psychological frameworks for motivational behavior over the lifespan to date. It assumes that, with age, people increasingly tend to focus their limited energy on activities and domains that they perceive as being most essential and valuable in their lives. Optimizing their performance in these domains is an adaptive way of maintaining well-being in spite of limitations. The adoption of new technology by older individuals may be subject to motivational mechanisms similar to selective optimization with compensation. To be 'selected', the use of new technology should be perceived as sufficiently valuable, or beneficial, compared to the investment of effort required.

## STUDY RATIONALE AND OVERVIEW

We present an exploratory study with thirty older participants to examine if, and how, their internet appreciation was related to their experience with the medium and their perception of intrinsic value. Research suggests that technology experience is positively related to technology appreciation and skill, and negatively to technology anxiety<sup>17,18</sup>. Frequent internet users might appreciate the internet more than infrequent or non-users, simply because they are more experienced. Their internet appreciation would not necessarily express the perception of intrinsic value. Therefore, participants in this study had either much or some internet experience, or refused to use the internet and had no internet experience. 'Refusers' rather than 'neutral' non-users were selected for the inexperienced group, to ascertain the explicit choice of internet use in each of the three groups. To assure that we were assessing choice, all participants in this study had free access to internet facilities. To address explicitly value-related internet appreciation, we included communication goal as another independent variable. The participants assessed traditional media

versus internet equivalents for a variety of communication purposes. Different levels of internet appreciation for different types of communication goals would indicate that we measured perceived value or merit.

We expected that both internet experience and communication goal would affect the appreciation of the internet compared to traditional communication methods. Experienced internet users would value the internet more highly in general than people without or with only some internet experience. However, we also expected that participants would appreciate the internet to a different extent for different goals. They would consider the merits of the internet compared to the merits of the traditional medium for each communication purpose separately. Merely experience cannot explain such differences and would indicate intrinsic value as a motivating factor to use the technology.

## **METHODS**

### **Participants**

Thirty older participants aged 60 to 75 ( $M = 65.4$ ,  $SD = 3.9$ ), 14 women and 16 men, volunteered for this study. All were living independently in the metropolitan area of Eindhoven, the Netherlands, and all had access to a free seniors' internet course and free computer usage in a seniors' home located in their neighborhood. The participant sample was made up of two internet user groups with different levels of internet experience, both recruited from senior internet classes (teachers as well as participants), and one group of internet refusers. Most of the refusers were acquaintances or relatives of the volunteering users.

Participants were assigned to one of the three groups after a brief interview, based on a checklist. This checklist addressed the length of experience, having internet

access at home, weekly amount of time spent online, and level of comfort using the internet. Participants in the group with much experience had been using the internet for at least two years, had access at home, spent at least two hours per week online, and reportedly felt comfortable with the medium. Most of them were also teachers or helpers in internet classes for seniors. The participants in the group with some experience had less than two years experience, usually did not have access at home, spent less than two hours per week online, and reported not really feeling comfortable yet. A user with some experience in this study could meet at most one criterion of the very experienced user, and vice versa. For example, someone with more than two years of internet experience, but no access at home, spending just half an hour weekly, and reporting to feel like a beginner, was considered to have 'some experience'. Another volunteer with just one year of internet experience, but using the medium at home on a daily basis, and with a quickly developed expertise that enabled him to even teach peers in a senior internet class, was considered to have 'much experience'.

Refusers did not use the internet, and explicitly stated that they did not plan to begin, but had some general idea about its applications: although they had no internet experience, they had heard of the internet and email, and could give examples of what the medium could do. Educational levels were equal between the groups; the average was about four years at high school and an additional professional education, but each group also had one or two participants with a Bachelor's or a Master's degree. The groups differed with respect to gender; the very experienced group was mostly made up of men (80%), whereas the refusers were mostly women (80%). Men and women were almost equally represented in the

Table 1: Participant Characteristics

	Internet experience					
	Much experience (N=10)		Some experience (N=10)		No experience (N=10) *	
	Mean	SD	Mean	SD	Mean	SD
Mean age	64.1	4.0	65.7	3.7	66.4	4.1
Mean length of experience (yrs)	3.1	2.0	0.5	0.3	0	----
% with access at home	100	----	20	----	40**	----
Mean time per week online (hrs)	6.7	2.5	2.0	0.9	0	----
% feeling comfortable	100	----	40	----	0	----

\* Internet 'refusers'

\*\* Husband or wife uses the Internet

Table 2: Selected Information- and Communication Contexts

Context	Description and general examples
A	Stay in touch with someone you know very well (either nearby or far away/ abroad)
B	Practical communication with someone you know (message, quick question, set a time)
C	Find information about personal interests (leisure, health, information just for fun)
D	Find information about services (companies, public services, travel)

group with some experience (60% men). See Table 1 for an overview.

## Procedure

In a one-hour interview, each participant was asked to assess applications of the internet, specifically email and surfing or searching the Web, versus more traditional methods such as telephone, regular mail, guides, and reference works, for satisfying information and communication goals in four different communication contexts. The choice of these contexts was based on two exploratory interviews with older internet teachers about the most common applications of the internet in their classes. The selection is also consistent with the usage patterns found in the survey by Morrell, Mayhorn, and Bennett<sup>19</sup>.

Per context, the participants were asked to mention two concrete information or communication goals that had occurred, or could reasonably occur, in their everyday lives. For each context, the interviewer gave some general examples of potential goals (see Table 2). Analogously, the participants came up with their personal examples of information and communication goals, eight in total. Next, for each of these goals the participants indicated

two communication methods: the traditional communication method that they would most likely use, and the most likely internet equivalent.

For example, for acquiring information in context D (find information about services) participants might report needing to find out where to get a flu shot. They might report that they would use the telephone to call the health center, and describe how they could use the internet to find the answer. The internet refusers were also expected to be able to give this type of answer because a criterion for them to participate in this study was having some knowledge about the medium, even though they refused to use it.

The traditional communication methods participants indicated could vary between goals. For the purpose of this study, we contrasted the 'new' method (e.g., email and internet searches) with any traditional communication method available that deemed appropriate by the participant, given his or her goal. For context A, most participants mentioned the telephone and/or the regular mail, for B they mentioned the telephone, for C books, an encyclopedia and other printed media, and for D the yellow

pages, the telephone directory, or brochures obtained in the town hall, for example.

Once the participants had established their eight communication goals and the eight pairs of traditional versus internet methods of satisfying them, they indicated per goal which method they valued most. They were asked for an overall judgment for one or the other method, intuitively applying criteria that they deemed most relevant for the situation. For example, for personal communications 'intimacy' might be important, whereas for making an appointment the major judgment criterion might be 'speed'.

The assessments were made on 6-point scales with the one end (either left or right) representing the traditional medium and the other end the internet equivalent. Scale orientation was counterbalanced between participants. The scales were presented without values indicated, but for the analyses of the data an evaluation in favor of the internet was associated with a higher value. That means that a value below 2.5 (i.e., 0, 1, or 2 on the scale) was assigned to a preference for the traditional method, and a value above 2.5 (3, 4, or 5) to a preference for the internet. The participants were encouraged to elucidate the reasons for their preferences verbally.

The interview concluded with three open-ended questions for the experienced and the somewhat experienced internet users to assess how they became acquainted with the internet, what they considered as especially valuable versus useless applications, and the prevalence of email and internet use in their social environments. The refusers also answered a set of three questions, about why they did not use the internet, if they could imagine any advantages, and about the use of the internet in their social environments. The participants received the equivalent of \$10 (€8) for their time and cooperation.

## RESULTS

We will present the results of this study in three parts: the prevalence of different communication goals for the three participant groups, the evaluation of media for satisfying these goals, and qualitative data possibly explaining the quantitative results. However, we first reduced the data to eight, and eventually six goal categories based on the prevalence of communication goals.

The first reason for the reduction was comparability between participants. We clustered goals of the same type between participants. The second reason for the data reduction was avoiding the repetition of similar goals within the goal selection of some of the participants; evaluations of two very similar goals should not count twice.

The eight concrete goal examples each participant created (two examples per communication context), were similar between participants. This would allow capturing the participants' individual examples in eight goal categories, representing the eight examples for the total participant sample. In two of the four communication contexts (C and D) the individual goal examples showed a systematic similarity within participants for all participants, unlike the individual goal examples mentioned in context A and B. Due to the complete overlap within participants for both context C and D, six, rather than eight goal categories in total would most adequately capture the participants' examples of communication goals. The complete overlap within C and D resulted in 10 instead of 20 goals for each of these contexts, and in 60 instead of 80 goals maximum distinguished per participant group, in total. Melenhorst<sup>20</sup> provides a detailed description of the data reduction.

## Prevalence of Communication Goals

### *Prevalence of goals 1 and 2*

Table 3 shows a general homogeneity for communication goals in the total sample, with the exception of the goals about personal communications. Participants with some internet experience and internet refusers mentioned more examples of personal communications nearby (goal 1), and fewer long-distance examples (goal 2). In contrast, the experienced internet users mentioned an example of each, except for one participant with even two long-distance goals. The difference between the groups was significant according to a Chi-square Test of Homogeneity ( $\chi^2 = 25.03$ ,  $p < .001$ ), meaning that experienced internet users more often mentioned personal communications over long distance.

## Media Evaluations: Traditional Media versus the Internet

We found that the participants evaluated the use of a traditional medium versus an internet equivalent differently for each of the six communication goals. Table 4 shows the media evaluations per communication goal for each participant group. Figure 1 gives a visual representation of these data. Participants typically contributed one evaluation score per goal; however, the numbers for the two least experienced groups in goal 2 were based on fewer contributions (see also Table 3).

The media assessments shown in Table 4/ Figure 1 suggest that, on average, traditional communication methods were preferred to internet equivalents, indicated by the many ratings below 2.50. Only the most experienced users slightly preferred the internet for most of their communications.

Table 3: Numbers of Goal Examples per Participant Group for Goal Categories after Data Reduction

Communication goal category	Internet experience			Merging of goals per original communication context A, B, C, and D
	Much experience (N=10)	Some experience (N=10)	No experience (N=10)*	
1. Stay in touch nearby	9	10	10	A. Goals of some of the participants have been merged
2. Stay in touch abroad	10	5	4	
3. Make appointments (interactive)	10	9	10	B. No merging except for one goal of one participant
4. Send written messages (one-way)	10	10	10	
5. Find information (interests)	10	10	10	C. Goals have been merged
6. Find information (services)	10	10	10	D. Goals have been merged
Total numbers of examples	59	54	54	

\* Internet 'refusers'

Table 4: Media Assessments per Communication Goal by Participants with Different Amounts of Internet Experience

Communication goal	Evaluation score per participant group***							
	Internet experience						Total sample	
	Much experience (N=10)		Some experience (N=10)		No experience (N=10)*			
# Short description	M	SD	M	SD	M	SD	M	SD
1 Stay in touch nearby	0.70	(0.27)	1.50	(0.90)	0.00	(0.00)	0.73	(0.84)
2 Stay in touch abroad	3.14	(0.69)	1.88	(0.48)	0.50	(0.41)	1.84	(1.26)
3 Make appointment (interactive)	2.70	(0.67)	0.20	(0.26)	0.00	(0.00)	0.97	(1.31)
4 Send written messages (one-way)	3.70	(1.34)	2.88	(0.93)	0.20	(0.35)	2.26	(1.83)
5 Find information (interests)	2.50	(0.71)	1.45	(1.01)	0.35	(0.41)	1.43	(1.16)
6 Find information (services)	2.75	(0.83)	2.00	(1.11)	0.35	(0.47)	1.70	(1.30)
Media evaluation for 6 goals	2.61	(1.18)	1.66	(1.19)	0.20	(0.36)	1.47	(1.41)
Media evaluations for 5 goals**	2.51	(1.22)	1.50	(1.23)	0.16	(0.35)	1.39	(1.41)

\* Internet 'refusers'

\*\* Goal 2 omitted because of small numbers of responses in participant groups with some or no internet experience

\*\*\* Individual scores ranged from 0 (traditional medium valued most) to 5 (internet valued most). Means were weighted according to the reduced numbers presented in Table 3

In the total sample, the traditional method was preferred for each of the communication goals.

To examine statistical differences between groups and between goals, we performed repeated measures multivariate analyses of variance (MANOVAs) (Participant group Communication goal). Because the concentration of missing values in goal 2 (see Table 3) had consequences for the

analyses we carried out the MANOVAs twice. Once, we replaced the missing values with the Grand Mean (which disproportionately raised the scores for the internet refusers group), and once we retained the missing values but excluded goal 2 from the analysis.

*The effect of internet experience*

The averaged media evaluation scores per participant group, presented in the bottom

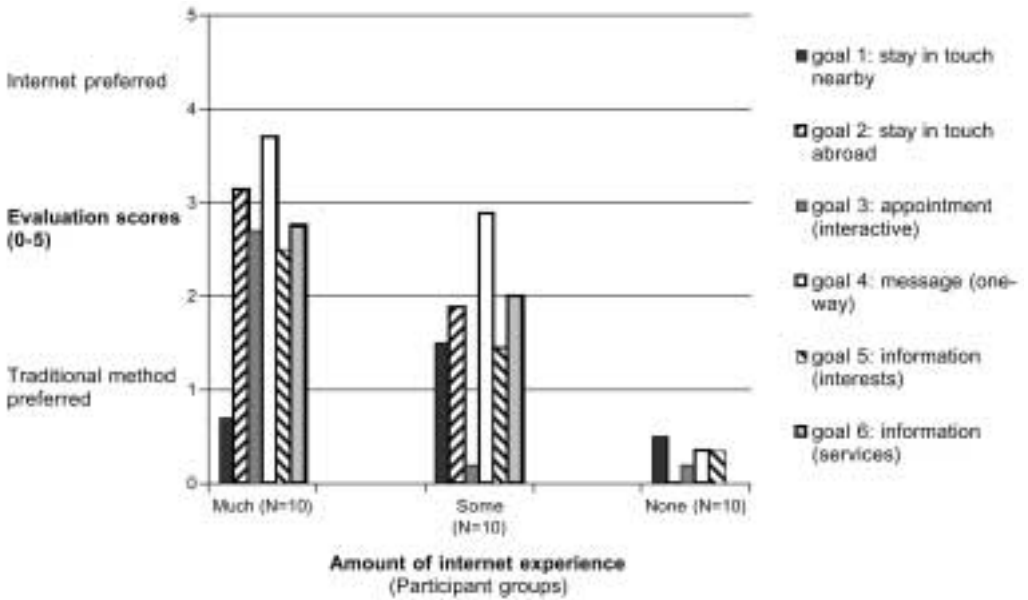


Figure 1: Media preferences of older adults with different amounts of internet experience, per communication goal

part of Table 4, suggested that internet appreciation was positively related to internet experience. This was supported by both MANOVAs, showing a significant effect of participant group ( $F(2, 27) = 76.73$ , or  $F(2, 23) = 50.48$ ,  $p < .001$ ), and by a Bonferroni Post Hoc Test, showing significant differences between the evaluation scores of each of the three groups ( $p < .01$ ).

### The effect of communication goal

The different evaluation scores between goals (Total sample, Table 4) suggested that media evaluations also depended on the communication goal. The Repeated Measures MANOVAs, with and without goal 2, showed a significant effect of communication goal ( $F(5, 23) = 20.33$ ,  $p < .001$  and  $F(4, 20) = 21.61$ ,  $p < .001$ , respectively). To examine for which of the communication goals the media evaluations were significantly different from the other goals, a Contrast Analysis was carried out. Goal 2 (stay in touch abroad) was excluded from this analysis. The Contrast Analysis for the five goals

showed that the internet appreciation associated with goal 1 (stay in touch nearby) and goal 3 (make appointments) was significantly below the mean internet appreciation for all five goals ( $F(1, 23) = 50.45$ ,  $p < .001$  for goal 1 and  $F(1, 23) = 34.93$ ,  $p < .001$  for goal 3, respectively). Traditional media were strongly preferred for these communications. In contrast, for satisfying goal 4 (send written messages), the participants' appreciation of the internet was significantly higher than for the other goals ( $F(1, 23) = 50.39$ ,  $p < .001$ ), although the score of 2.26 indicated that, on average, still a traditional method was preferred. Goals 5 and 6 did not significantly differ from the mean;  $F(1, 23) = 0.06$ , and  $F(1, 23) = 3.27$ , respectively; ns.

### Interaction effects

The differences between participant groups at the bottom of Table 4 were not reflected in every goal; there was an interaction between participant group and communication goal. This group-goal interaction was significant:  $F(10, 48) =$



9.67,  $p < .001$  (goal 2 included), or  $F(8, 42) = 13.47$ ,  $p < .001$  (goal 2 excluded). For finding information (goals 5 and 6), experienced internet users were more likely to appreciate the internet than less experienced users, or participants with no internet experience. The ratings for these goals showed the same pattern as the overall media evaluations for the six goals by the respective participant groups.

The two goals involving practical personal communications, goals 3 and 4, deviated from the overall pattern. For interactive communications (goal 3), only the most experienced internet users appreciated the internet. The ratings by the less experienced users showed a very low internet appreciation, especially for this purpose. For one-way messaging (goal 4), however, all internet users, regardless of experience, valued the internet relatively highly. The most experienced group appreciated the internet even more highly for this goal than for other goals. For the group with some internet experience, goal 4 was the only goal for which they slightly preferred the internet to a traditional method, indicated by the evaluation score of 2.88 (larger than 2.50).

Personal communications (goal 1 and goal 2) yielded the most deviating results, either for the prevalence of the corresponding communication goal, or for the media evaluations. We do not consider the media evaluations for goal 2 here, because of the many missing values in the least experienced groups (a meaningful result in itself). For goal 1, pursuing personal communications nearby, the internet appreciation was the lowest in the total sample. Even the most experienced internet users valued the internet extremely low for this purpose. In contrast with the overall pattern, for goal 1 they valued the internet even lower than less experienced internet users.

Table 5: Recurring Responses to the Issues in the Concluding Interview (Numbers of Participants giving the Response)

Issue	Response	Internet experience		
		Much experience (N=10)	Some experience (N=10)	No experience (N=10)*
How became acquainted	External incentive	8	9	N/A
Why not online**	No use for it	N/A	N/A	8
	Other priorities	N/A	N/A	6
	Lack of skills	N/A	N/A	3
Valuable applications**	Email long-distance	10	8	2
	Information search	7	5	1
	Useful in case of immobility	1	2	2
Useless applications**	Chat	9	9	4
Use in social circle	Many users	9	3	2
	Few users	1	7	8

\* Internet 'refusers'

\*\* More than one answer per participant was possible

**Qualitative Results**

The qualitative results consisted of the participants' comments during the media assessments and their responses to the concluding interview. Table 5 gives an overview of the interview results.

The most important incentives that had helped the internet users to start were the free senior internet course in a senior home nearby, a son or daughter who gave them a computer, or an internet provider calling with a special offer. In these cases, the (future) user was already interested in the new medium. On the other hand, stories of enthusiastic emailing and Web-

searching relatives and friends some of the internet refusers reported seemed not to have convinced them. Their major reason for not going online was that the internet had absolutely no use for them. In addition, 'other priorities', both financially and in their activities were a reason, and, for a minority of the refusers, the trouble or fear of handling the computer. However, three refusers spontaneously stated that fear of handling the computer was not the reason for not using the internet.

Participant comments during the interview revealed nuances about the usefulness of email. Five of the most experienced users and three of the less experienced users mentioned that email was 'too cold' or 'impersonal' in the specific context of goal 1, personal short-distance communications. They did not mention this objection when judging email in the context of goal 2, personal communications abroad. Five of the less experienced users found email 'too slow' or 'impractical' for setting appointments (goal 3), mostly because the other parties did not regularly check their mailboxes. Information searching was preferably done in a goal-oriented way, rather than via surfing. 'Chatting' was unanimously felt to be nonsense and a waste of time. Finally, the use of email by peers was also an argument to use or not to use email. The less experienced as well as the refusing participants mostly reported that few people around them were online, though their numbers were growing. Some of the less experienced users explicitly regretted this low internet activity in their social environments.

## DISCUSSION

The positive relationship between internet experience and internet appreciation found in this study was not surprising, and was consistent with earlier research addressing computer attitudes and computer anxiety<sup>17,18</sup>. However, the explanation for the participants' media

preferences might not be merely internet experience. Even the very experienced internet users only slightly preferred the internet to traditional methods, for which the most likely reason was not computer anxiety, a negative computer attitude, or lacking skills. This result supported the notion that internet use was judged primarily on its merits compared to traditional media available. As an illustration, the experienced users' judgments of the internet for personal communications nearby (goal 1) were almost scathing. For this purpose, they considered the internet as being cold, impersonal, and indirect compared to, for example, the telephone. They appreciated the internet for this purpose even less than did the participants with just some internet experience. In addition, these less experienced users did slightly prefer the internet for one of their goals (sending a one-way message). This was an indication that anxiety or lacking skills did not entirely account for their relatively low overall internet preferences.

Finally, lack of experience may not have accounted for all of the low internet appreciation by the refusers. Only three of them mentioned skills as a reason not to go online, whereas another three specifically emphasized that skills were not the reason. Most of the refusers' comments referred to uselessness and lack of added value to the traditional methods.

The differentiated goal-related internet evaluations within the different groups suggested benefit-related considerations for using or not using the internet which was not necessarily related to experience. The results for personal communications nearby, for example, showed that user experience did not automatically correspond with internet appreciation. It depended primarily on the characteristics of the communication goal. Other examples were the evaluations for

goals 3 and 4. Goal 4, send written messages, yielded an above average internet rating in total. This goal concerned one-way communication of a practical kind, for which email could be an improvement on the traditionally used, but slower regular mail. Both experienced and inexperienced users considered email as a suitable method for sending a written message. However, for making an appointment the inexperienced users agreed with the refusers, and preferred the traditional method (in this case the telephone). The experienced users still considered email useful for making appointments.

The degree of email use in the social circles of both user groups could explain the difference between goals 3 and 4. To reach the desired interactivity to arrange an appointment quickly, the other party or parties should be online on a regular basis as well. This appeared often to be the case in the experienced user group, indicated by the answers in the concluding interviews, but not (yet) in the inexperienced group. For sending a written message, time-requirements were seen as less important, and both groups considered email for this purpose. One other reason for not using email might have been the absence of a communication goal for which it was particularly suitable. Goal 2, 'stay in touch with friends or relatives abroad', was illustrative in this respect. The least experienced internet users and the internet refusers mentioned significantly fewer examples of contacts abroad than the experienced internet users (see Table 3). Apparently, the refusers who did have contacts abroad did not find these contacts sufficient an incentive to go online, although some of them could see advantages of email for these communications. This might be due to the availability of the other media, and the low prevalence of email in their social circles.

## Limitations

The study was exploratory in nature and included a relatively small sample of participants. Therefore, generalizations to the population at large should be made carefully. The independent variables, such as internet experience and the selection of communication goals, may need to be distinguished more precisely in possible follow-up studies. Finally, the methodological choice of selecting people with free internet access might have affected the ecological validity of the study. Nonetheless, this study still showed the relevance of technology benefit and may encourage and direct future research of technology acceptance focusing on benefit.

## CONCLUSION AND FUTURE DIRECTIONS

The benefit of a new medium, in this case the internet, depends on many factors, including the purpose of the communication, the establishment of the medium in one's social environment, but also in society as a whole, and of course on user-specific characteristics, such as skills and preferences. Most of these factors are not directly age-related, but their weight and interpretation may change when people get older. For example, emphasis on emotionally close relationships, and the inherently desired intimacy<sup>21,22</sup> may influence the perception of the internet as an adequate and appropriate communication channel. Another example is the current, practical situation of relatively few older adults being online, which also affects the usefulness of the internet to older internet users. Furthermore, a lack of skills discourages the use of internet, and older adults in particular feel that acquiring them involves considerable investment of effort and time.

How should the results of this study be considered in a broader and longer-term perspective? Many of the above-

mentioned barriers and objections are temporary and will probably disappear in a few decades; our study was conducted in the year 2000. The accessibility of the Web may be improved, devices may become user-friendlier, and all generations will grow up with the internet and use it naturally. In addition, the current approach of the internet compared to traditional methods may no longer be relevant; the internet will add to the existing spectrum, it will be an integrated part of it. Or, as Bikson and Bikson<sup>23</sup> argue: "In any case, it is evident that the internet infrastructure is not a simple substitute for in-person contact, telephone calls, print correspondence, or any other more conventional medium. Rather (...) messaging establishes a quite distinct avenue for exchange whose nature is still unclear and evolving." Internet communication is of another kind, with yet unknown opportunities and benefits, also for seniors.

This study indicated a distinct, selective preference for the internet by older adults, which may also hold in the future. Their media evaluations seemed largely to depend on perceived merits of a medium for their own communications. These merits, or benefits, seemed to be determined by the salience of particular communication purposes in everyday life and the specific demands inherent in these communications. Knowledge about media characteristics that older adults find important for different communication purposes may provide a direction for future development of internet applications and other new communication methods, so that older users can also take advantage of these media.

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