

## **Applying Gerontographics in the study of older Internet users**

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### **Abstract:**

One of the main weaknesses of studies on older Internet users is a lack of differentiation among users. This study sought to explore whether gerontographics, an approach to segmentation of older adults based on individual psychological and physical well-being, is applicable in research on older Internet users. For that purpose, the study examined members of online communities for senior citizens. An online survey was conducted with 218 members of sixteen such English language-based communities and subsequent analysis demonstrated that their members may indeed be segmented according to their reported health and subjective well-being. Moreover, the results displayed significant differences among the groups in their background characteristics, interests, and perceived benefits of participation in the communities. These findings showed that online activities may be differently experienced by audience segments with dissimilar physical and psychological well-being. Consequently, they constitute powerful evidence of the value of the gerontographics in studies of Internet use and successful aging.

**Keywords:** Audience research, Segmentation, Old age, Internet, Online communities.

### **Introduction**

It may be said that the twenty-first century is characterized by two “megatrends” – the *emergence and widespread diffusion of new media*, and the *rapid aging of the population* as a result of better health services and improved quality of life in most developed nations. The *rapid aging of the population* is pervasive, enduring and has no parallel in human history. Moreover, forecasts suggest that the twenty-first century will witness even more rapid aging than did the previous century (The United Nations’ Department of Economic and Social Affairs 2009). Such forecasts pose a variety of social and economic challenges related to health and quality of life throughout the life course (Rowe & Kahn 1998, Vaillant 2002).

The *emergence and widespread diffusion of new media* may be attributed to innovative Information and Communication Technologies (ICT), from personal computers to e-books and mobile phones. The digital revolution has not bypassed the older population. Yet, in most studies of digital media and ICT, information about this group is often negligible. Moreover, studies focusing on older adults revealed considerable weaknesses, including a lack of differentiation among users. This article aims at underscoring the importance of such differentiation and tests the applicability of the gerontographics segmentation approach (Moschis 1996) to the study of older Internet users.

## **Literature Review**

### ***The Weaknesses of the Existing Studies of Older Internet Users***

Recent statistical reports demonstrate that older adults are the fastest growing segment among Internet users (Pew Internet and American Life Project 2010, 2012, Organization for Economic Co-operation and Development [OECD] 2011), and in some countries the rate of Internet users in this age group is higher than 60% (OECD 2011). This growth is driven simultaneously by several factors, including the large increase in the numbers of seniors in many nations, innovative developments in the technology itself, increased knowledge about aging and the needs of the older adults, and a growing concern for the care of older persons (Loeb 2012). Nevertheless, the literature on older adults' use of the Internet is rather limited.

Previous studies explored three main issues, the first being the age-related 'digital divide', which was reflected not only in terms of percentage of older Internet users, but also in the usages people made of the Internet. This digital divide was a main concern for many studies that examined the barriers and limitations for Internet use, intervention programs, and their effects (e.g., Kiel 2005). The second issue that was extensively explored was the utilities of the Internet for older adults, and the main functions described were: communication medium, information source, task-orientated tool (e.g., shopping, financial management), and leisure activity (e.g., Opalinski 2001). Yet, it seems that the issue that excited most researchers was the third – the impact of Internet use on older adults' psychological well-being.

Studies demonstrated that learning computer and Internet skills enhances a sense of independence (e.g., Henke 1999), and creates a process of empowerment (e.g., Shapira, Barak & Gal 2007). In addition, Internet use is associated with strengthened self-image and self-confidence, higher levels of social connectivity, higher levels of perceived social support, decreased feelings of loneliness, lower levels of depression, and generally more positive attitudes toward aging (e.g., Van De Watering 2005, Dickenson & Hill 2007, Fokkema & Knipscherr 2007). As successful aging is associated with high levels of psychological health and social engagement (Rowe & Kahn 1998), such findings suggest that Internet use may play a significant role in successful aging.

There is no doubt that the new media have profoundly and radically changed norms and practices in all domains of personal and public life, but the extent to which their use can support healthy and active aging is poorly understood. The existing knowledge regarding older adults' use of the Internet has four considerable weaknesses. First, most studies on the role of Internet use in promoting healthy and active aging applied a *macro level* approach and referred to Internet use a single activity, without differentiating between various functions and activities. As different activities may provide diverse benefits, and may also have potential negative impacts, this approach may be misleading. Second, most studies have focused on psychological well-being, and overlooked possible physical effects (e.g., through promoting a healthy life style). Third, although the Internet may be accessed through various technological platforms, most studies focused on computer use only. Fourth, many studies failed to differentiate among users – a shortcoming that constitutes the focus of the present study.

Older adults are considered a rather heterogeneous audience. Gerontology literature provides solid evidence demonstrating increases in physical, sociological and psychological variability with age (Nelson & Dannefer 1992, Wolfe & Snyder 2003, Yang & Lee 2010). Therefore, one may argue that seniors are the most heterogeneous audience of all. Nevertheless, studies of older Internet users tended to consider them as a homogeneous group. Moreover, most studies tended to examine seniors who are relatively young, healthy, affluent and educated. Older adults with chronic health conditions, those in the lower socioeconomic strata, people with dementia, minorities and immigrants have typically not been included in the populations examined. Those who first adopted ICT were typically of higher socioeconomic status (Kaiser Family Foundation 2005), possibly explaining this tendency initially. The present diffusion of Internet use among senior citizens, however, renders this bias no longer acceptable.

Without differentiating among various sub-segments within the older audience, any argument regarding the role of Internet use in successful aging should be considered a potentially misleading generalization. Online activities, like their offline counterparts, may be experienced differently by various users: What is beneficial for one may contribute nothing or even harm another. In addition, people may use the same online function *differently* and receive various benefits as a result. Examining older Internet users as one homogeneous group conceals such distinctions, thereby limiting our understanding of the particular ways in which Internet use supports healthy and active aging.

### ***Segmentation as a Possible Solution to Lack of Differentiation***

Segmentation analysis involves dividing a broad audience into subsets of audiences with common characteristics, needs, perceptions, attitudes and/or behaviors. Rooted in consumer behavior and market research, segmentation is based on the rationale that as consumers differ considerably from one another, one size does not fit all. The alternative, a customized approach to selling a product or a service, may decrease profitability. Hence most businesses adopt segmentation that calls for dividing the market into subsets of

consumers. Any such subset may be selected as a target audience to be reached with a distinct marketing mix that best meets its needs and preferences (Kotler 2009).

Communication and audience research resembles marketing and consumer behavior studies in many respects. While the former is not generally conducted for commercial purposes, both fields deal with *audiences* and *consumption* – of media and content and of products and services, respectively. Therefore, segmentation may well prove as useful in communication and audience research as it is in marketing studies. Segmentation may enable differentiation among sub-audiences when exploring media use and content consumption and interpretation.

In fact, audience researchers have long known the benefits of segmentation, applying it for various theoretical and practical purposes, such as exploring strategies for health communication (Wolff, Massett, Maibach, Weber, Hassmiller Mockenhaupt 2010), assessing the effectiveness of public engagement campaigns (Maibach, Leiserowitz, Roser-Renouf Mertz 2011), and studying how people **allocate their attention across digital media** (Webster and Ksiazek 2012). Consequently, segmenting the current substantial group of older Internet users may enhance our understanding of the role the Internet plays in their lives.

Over the past few decades, approaches to segmentation of mature audiences have emerged out of various disciplines, such as psychology, sociology, economics and marketing, of which three are considered dominant: *Sociodemographic* segmentation, based on characteristics such as age, gender, health, retirement and family status (e.g., Garfein & Herzog 1995); *behavioral* segmentation, based on seniors' activities and lifestyles (e.g., Gollub & Javitz 1989) and *psychographic* segmentation, based on measures such as values and attitudes (e.g., Wolfe & Snyder 2003). Nevertheless, segmentation is rarely applied in studies of older people as media audiences in general and as Internet users in particular.

### ***Gerontographics***

*Gerontographics* is a segmentation approach similar to that of psychographics or lifestyles, focusing exclusively – and in much greater detail – on seniors' needs, attitudes, lifestyles and behaviors. Propounded by Moschis and colleagues (Moschis & Mathur 1993, Moschis 1996, 2003, Moschis, Lee & Mathur 1997), gerontographics suggests that older adults who experienced similar circumstances in later life (i.e., social, psychological, biophysical, life events and other environmental factors) are likely to exhibit similar patterns of behavior. Based on a series of studies (ibid.), gerontographics has identified four segments of the mature audience that differ according to the extent and type of aging they have experienced:

1. *Healthy indulgers* have experienced the fewest negative life events (e.g., retirement, widowhood) and health conditions that exacerbate psychological and social aging. This group appears to focus on enjoying life, with a lifestyle similar to that of younger age

- groups. Hence it may be described as having a relatively high level of both physical and psychological well-being.
2. *Ailing outgoers* have experienced health decline, yet manage to maintain their self-image and a high level of life satisfaction. They tend to accept their age and the difficulties associated with it and exhibit great interest in getting the most out of life. As such, they are seen to exhibit relatively low-level of physical well-being and high-level of psychological well-being.
  3. *Healthy hermits* are relatively healthy people who experienced negative life events that affected their psychological well-being and led to some social withdrawal. Many of them resent the isolation and the social status associated with being old. Thus, they may be described as having relatively high physical well-being but low psychological well-being.
  4. *Frail recluses* are people with chronic health conditions who have also experienced various negative life events. They are mostly in isolation and tend to consider themselves as “old persons”, adjusting their lifestyles to reflect physical decline and changes in social roles. The group thus manifests relatively low physical and psychological well-being alike.

Changes in social, psychological or physical conditions may shift seniors from one segment to another. Many of the *frail recluses*, for example, may have been *healthy indulgers* who subsequently went through one of the intermediate stages experienced by *healthy hermits* and *ailing outgoers*. Such shifts are not mandatory, however, and one may remain in the same segment throughout later life. Moreover, although changes may occur over time, they are “relatively age-irrelevant because they may begin at any age in later life, or may never be experienced” (Moschis 1996, p. 59).

Since its introduction, gerontographics has been applied in many studies, predominantly in marketing and consumer behavior. For example, it was used to examine the preferences of older consumers with regard to financial services (Moschis, Bellenger & Curasi 2003), food and grocery stores (Moschis, Curasi & Bellenger 2004), retirement communities (Moschis, Bellenger & Curasi 2005), travel and leisure services (Moschis & Belgin 2008), long-term care insurance (Moschis & Weaver 2009), apparel and footwear brands and department stores (Moschis, Ferguson & Zhu 2011), home fire safety services (Bird & Tapp 2011) and so on. Most such studies, however, were carried out by Moschis and his colleagues, with only rare implementation of his segmentation approach by other scholars and in other fields.

There are three possible reasons for the relative scarcity of gerontographics in research. One, of course, is lack of awareness, but a more likely explanation is the false perception that gerontographics may be used for commercial purposes only and has no value in the social sciences other than consumer research. A considerable share of studies concerning older adults, in various disciplines, assesses a wide range of positive and negative effects on seniors’ physical and psychological well-being. As gerontographics uses these two dimensions as the basis for segmentation, it may prove useful in various types of

studies that explore later life. Specifically, its application in audience research may enhance the body of knowledge concerning the complex associations between media use and well-being among older adults.

The third explanation is the assumption that application of gerontographics demands use of the full (and very long) version of Moschis's questionnaire, that addresses numerous issues, including demographics, attitudes, daily activities, types of biophysical and psychological aging experienced, consumption-related needs and preferences, responses to marketing strategies and more. As Moschis defined gerontographics as an "approach" (Moschis 1996, p. 54) rather than a method, this study posits that use of the full questionnaire is not mandatory. One may simply adopt the *conceptual* framework. In addition, as psychological and physical well-being were the most dominant dimensions differentiating among the four segments identified by gerontographics (Moschis & Mathur 1993, Moschis 1996, 2003, Moschis et al. 1997), it is suggested that these variables are essential in any adaptation of the gerontographics approach.

### **The Present Study**

Considering the emphasis on psychological well-being in studies of older Internet users (e.g., Van De Watering 2005, Shapira et al. 2007), gerontographics appears to offer a highly relevant approach to segmentation of this particular audience. The present study aimed at exploring this premise and examining whether gerontographics is applicable in the study of older Internet users. For this purpose, it utilized a *micro-level* approach and focused on a specific online activity – participation in online communities for older adults. Such communities appear to be highly welcomed by their target audience, with an increasing number of seniors joining these communities and becoming active members (Nimrod 2010). The communities provide an ideal context for the study of older Internet users because unlike other online activities, participating in such communities is exclusive for older adults.

The study was designed to explore whether members of seniors' online communities can be segmented according to their physical and psychological well-being (the most dominant dimensions in gerontographics), and if so, (a) Can the segments be differentiated using background characteristics, participation patterns and/or interests and (b) Are there differences among the groups with regard to perceived benefits gained from participation in the communities? By addressing these questions, the applicability of the gerontographics segmentation approach was explored, and some suggestions regarding its value for the study of Internet use and successful aging were offered.

### **Design and Methods**

#### ***Data Collection and Sample***

The study was based on an online survey with a convenience sample of 218 members of sixteen seniors' online communities. In order to recruit participants, the principal

investigator (PI) contacted the administrators of thirty active communities and asked for their permission to post a call for volunteers on their websites. All the communities were English language-based, and according to their names, home pages, and welcome posts, explicitly targeted seniors. Eleven community administrators approved, and nine even posted the call on the PI's behalf. Three administrators refused, and others did not respond even after three to five requests. Such lack of response was interpreted as indifference and the PI decided that if the administrators have not expressed any reservations, community members who wish to take part in the study should be presented with the opportunity to do so. Consequently, in these cases, when it was technically possible, the PI independently posted messages in the communities. Of the eight unauthorized messages posted, five survived. Others were immediately deleted by community administrators and the PI was banned. The remaining sixteen (eleven approved and five non-approved) communities surveyed are listed in **Table 1**. Nine of the communities were from the US, five were British, one was Canadian, and one was Australian, but all of them targeted global audiences. Four communities had both a forum and a chat room, one had a forum and a newsletter, and the rest had a forum only.

The call for volunteers included a short description of the research aims, and a link to the survey website (a Survey-Monkey application). The first page of the website included a longer description of the research aims, detailed instructions, and the PI's contact information. Volunteers were asked to read the instructions and confirm their consent to participate. Then, they were asked to fill in an online survey questionnaire, which typically took ten-fifteen minutes of their time. Respondents were invited to contact the PI with regard to any question they may have, but none did. Data collection lasted four months, and reminders were posted in the communities throughout this period. Collection ended when additional reminders yielded no new responses. After screening out participants who did not confirm that they have read the instructions (to guarantee the quality of the data), and questionnaires with less than 80% of the questions answered, the final sample size was 218.

There were no sampling criteria and participation was anonymous. Therefore, after considering the characteristics of the study, the Institutional Review Board in the PI's institution ruled that review was not necessary, and the study was exempted from human subjects review. To maximize protection of human subjects, the research did not use any identifying details (including usernames, web names, IPs, etc.). Moreover, as aforementioned, respondents were provided with extensive information about the study in the first page of the website. This, as well as asking the volunteers to confirm that they have read the information and were willing to participate in the study, was done to make sure that volunteers were able to make an informed decision about whether or not to participate in the study. In addition, it was not mandatory to answer all the questions, and if any question caused the participants even the mildest inconvenience, they could choose not to answer it. They were free to withdraw from the study at any time and for any reason.



**Table 1:** The communities surveyed in this study

Community name	Type	Center	Recruitment method
Age concern	Forum	UK	Investigator's post
Age net	Forum + Chat	UK	Administrator's post in the forum
Circles of friends	Forum	US	Administrator's post in the forum
Elderly forum	Forum	US	Investigator's post*
Florida Retirement Forums	Forum	US	Administrator's post in the forum
Fifty plus forum	Forum	UK	Administrator's post in the forum + PMs
My senior Portal	Forum + Newsletter	US	Administrator's post in the newsletter
Over 50s	Forum + Chat	US	Investigator's post*
Pensioners forum	Forum	UK	Investigator's post**
Retirement forum	Forum	US	Investigator's post*
Seniors Discussion Forum	Forum	US	Investigator's post*
The over 50 golden group	Forum	US	Administrator's post in the forum
Third Age	Forum + Chat	US	Administrator's post in the forum
Your Life Choices	Forum	Australia	Administrator's post in the forum
50 Plus Club	Forum + Chat	Canada	Investigator's post*
50 plus forum	Forum	UK	Administrator's post via PMs

**Notes:** IDF stands for I don't feel. PM stands for Private messages. \*no official permission.

\*\*authorized but removed after four days.

### **Measurement**

The questionnaire included mostly closed and some open-ended questions regarding the following areas:

**Participation patterns.** The online interview began with several general questions that examined usage patterns, including: membership duration, frequency and length of visits, posting behavior, and visiting other communities. Respondents were also asked to report if there were factors constraining their participation in the community, and if so, what they were.

**Interest in issues discussed in the communities.** Respondents were presented with a list of the thirteen most-discussed topics in seniors' online communities (Nimrod 2010), and



asked to rate their interest in these topics using a four-point scale ranging from “have no interest” to “very interested”. Sample topics include items such as “health”, “retirement”, and “family”.

**Benefits of participation.** Respondents were presented with the *Paragraphs About Leisure - Form E (PAL-E)*, developed by Tinsley and Kass (1980a, b). This scale includes a list of twenty-seven paragraphs describing psychological benefits of participation in leisure activities. Respondents were asked to rate the relevance of each paragraph to their experience of participation in seniors’ online communities, using a five-point scale ranging from “not true” to “definitely true”. Sample questions include items such as “When participating in seniors’ online communities I have an opportunity to enjoy things I don’t find in my daily life”, and “When participating in seniors’ online communities I find that getting along and cooperating with the other participants is one of the best things about this activity”.

**Physical and Psychological well-being.** In order to assess members’ physical well-being, respondents were asked to rate their health on a four-point scale ranging from 1=excellent to 4=poor. Members’ psychological well-being was measured by the short version of Ryff’s Psychological Well-Being (PWB) scale (Ryff & Keyes 1995). This is a self-report instrument that asks respondents to describe their present agreement or disagreement with eighteen statements on a six-point scale ranging from “strongly disagree” to “strongly agree.” Sample questions include items such as “When I look at the story of my life, I am pleased with how things have turned out.”, “I like most aspects of my personality”, and “The demands of everyday life often get me down” (reverse coded).

**Background questionnaire.** The last part of the interview included a background questionnaire with demographic and socio-demographic questions. The variables examined were: age, gender, marital status, education, economic status, and country of residence. Since the questionnaire included two measures that were developed by other scholars (i.e., the PAL-E and the PWB scale), sharing it with the readers will violate authors’ rights. Interested readers are invited to contact the PI for further details.

### **Data Analysis**

Two variables were used to divide the sample into four segments: Reported health and PWB score (calculated by summarizing the scores for each statement after reverse coding of the negative ones). Respondents were classified as follows: (a) *Healthy indulgers* – excellent or very good health and PWB scores equal to or higher than the mean score (79.06); (b) *ailing outgoers* – fair or poor health and PWB scores equal to or higher than the mean score; (c) *healthy hermits* – excellent or very good health and PWB scores lower than the mean score and (d) *frail recluses* – fair or poor health and PWB scores lower than the mean score.

For the purpose of data reduction, a factor analysis was conducted on the perceived benefits data using principal components extraction and Quartimax rotation with Kaiser normalisation. To control the number of factors extracted from the data, a minimum eigenvalue of 1.0 was used with attributes loading at greater than 0.4. Each factor was

interpreted and labelled, based upon each rotated factor loading, especially on the highest loading of each factor. To identify significant differences between groups in their socio-demographic characteristics, participation patterns, interests, and perceived benefits from participation, cross-tabulations and chi-squared tests were employed, as well as one-way Analysis of Variance (ANOVA) and Least Significant Difference (LSD) tests. A confidence interval of 95% was used in all tests and only statistically significant findings are presented in this article.

## Results

### ***Sample Characteristics and Participation Patterns***

Most respondents were 55-75 years old, and the mean was 64.7 years. Fifty-six percent were female, 64% were married, and most of the rest (18%) were divorced. The average number of years of education was 15.1. Fifty-four percent of the respondents reported having average income and 26% reported income higher than average. Forty-eight percent were from the US, 33% were from the British Isles, 13% from Australia and four percent from Canada. Relatively few (2%) resided in non-English speaking countries.

Seventy-six percent of the respondents were repeat visitors in the community from which they were referred to the survey. Of those, 19% were relatively new members (less than a month) and 63% were 'veterans' (more than a year). Forty-two percent of the repeat visitors were 'heavy users', who reported having visited their community every day or nearly every day, and 32% were 'medium users', who reported having visited their community at least once a week. Most repeat visitors (74%) reported that a typical visit at the community lasted up to thirty minutes, and most (73%) reported being active (i.e., posting) at least to some extent. Forty-two percent of the "posters" were frequent posters, who reported posting messages in many or in most visits, 11% posted half of the times, and 47% posted in few visits only. More posters (39%) tended to answer others' posts rather than initiate new discussions (5%), but most (56%) reported doing both. Seventy-nine percent reported visiting online communities other than the community from which they were referred to the survey, and 33% did so every day or almost every day.

### ***The Four Groups of Members of Online Communities for Seniors***

The *healthy indulgers* constituted the largest group among the divided sample, comprising 43.1% of respondents. This group had a significantly higher mean PWB score and better reported health than the rest of the groups. The *ailing outgoers*, accounting for 17.4% of the sample, had lower PWB scores than the *healthy indulgers* and higher scores than the other groups. They reported significantly better health than the *frail recluses* but significantly poorer health than the *healthy indulgers* and *healthy hermits*. The *healthy hermits* (22.5%) reported significantly lower PWB than the *healthy indulgers* and *ailing outgoers* and poorer health than *healthy indulgers*, but significantly better health than the other groups. The *frail*

*recluses* (17%) reported significantly poorer health than the rest of the groups and significantly lower PWB than the *healthy indulgers* and *ailing outgoers* (see **Table 2**). There was no significant difference in mean PWB score between the *frail recluses* and the *healthy hermits*.

**Table 2:** The four groups of members of online communities for seniors based on the gerontographics approach

	Group				Sample
	<i>Healthy indulgers</i>	<i>Ailing outgoers</i>	<i>Healthy hermits</i>	<i>Frail recluses</i>	
Psychological Well-Being					
Mean	86.59	82.16	71.44	70.37	79.06
SD	4.35	4.47	6.06	6.53	8.86
Self-rated health					
Mean	1.56	2.62	1.80	3.17	2.07
SD	0.50	0.65	0.41	0.49	0.80
Group size	94	38	49	37	218
Percentage of sample	43.1	17.4	22.5	17.0	100

**Note:** Health was measured on a four-point scale ranging from 1=excellent to 4=poor.

According to LSD tests, the difference between each pair of means is significant ( $p < 0.01$ ) except in the case of psychological well-being among *healthy hermits* and *frail recluses*.

### ***Differences among the Groups in Background, Participation Patterns and Interests***

The four groups differed significantly regarding two background characteristics: education and income (see **Table 3**). Analysis indicated that the *healthy indulgers* had significantly more years of education than the *frail recluses*. Additionally, the *healthy indulgers* had the highest rate of respondents who reported high income whereas the *frail recluses* had the highest rate of those reporting low income. Overall, the four groups reported a similar level of interest in the issues discussed in the communities. The *healthy hermits*, however, reported more interest in shopping than the *healthy indulgers*, while the *frail recluses* were significantly less interested in travel than the *healthy hermits* and the *healthy indulgers*. No significant differences among the groups were found with regard to participation patterns.

### ***Differences among the Groups in Perceived Benefits***

Factor analysis of the benefits data identified seven factors that explained 68.5% of the variance: 'service', 'self-expression', 'companionship', 'joyfulness', 'stimulation', 'standing out', and 'autonomy'. One-way ANOVA and LSD tests indicated significant differences among the groups regarding four such factors: 'joyfulness', 'service', 'self-expression', and 'standing out' (**Table 4**). The *healthy indulgers* reported significantly more 'joyfulness' than the other groups and the *ailing outgoers* did so significantly more than the *frail recluses*. The

*healthy indulgers* reported ‘service’ benefit significantly more than the *healthy hermits* and the *frail recluses* did. The picture was markedly different with regard to ‘self-expression’ that was reported by the *healthy hermits* and the *frail recluses* significantly more than the *healthy indulgers* and the *ailing outgoers*. Additionally, *healthy hermits* reported significantly more ‘standing out’ than the *healthy indulgers*.

**Table 3:** Differences between groups in background and interests

	Group				The Sample
	<i>Healthy indulgers</i>	<i>Ailing outgoers</i>	<i>Healthy Hermit</i>	<i>Frail Recluses</i>	
Income					
Lower than average	7.5	31.6	22.4	40.6	19.2
About the average	52.7	47.4	59.2	56.3	54.4
Higher than average	39.8	21.1	18.4	3.1	26.4
N	(93)	(19)	(49)	(32)	(193)
<i>Chi</i> = 30.777, <i>p</i> = .000					
Education					
Mean	15.70 <sup>a</sup>	14.00	15.21	13.76 <sup>a</sup>	15.07
SD	3.42	2.81	3.61	3.45	3.49
N	(90)	(18)	(48)	(34)	(190)
<i>F</i> = 3.271, <i>p</i> = .022					
Interests					
Shopping					
Mean	2.15 <sup>a</sup>	2.43	2.61 <sup>a</sup>	2.23	2.32
SD	0.88	0.85	0.99	0.91	0.92
N	(93)	(35)	(49)	(35)	(212)
<i>F</i> = 3.042, <i>p</i> = .030					
Travel	2.84 <sup>a</sup>	2.47	2.80 <sup>b</sup>	2.19 <sup>a, b</sup>	2.66
Mean	1.00	1.00	0.93	0.95	1.00
SD	(93)	(36)	(49)	(36)	(214)
N					
<i>F</i> = 4.506, <i>p</i> = .004					

**Note:** Education was measured according to total years of education.

Significantly different means are denoted by *a* and *b*. For example, the mean score for interest in travel is *a* for both the *healthy indulgers* and the *frail recluses*. This means that the mean score of the *healthy indulgers* is significantly higher than the mean score of the *frail recluses*. As the mean score for this interest is *b* for the *ailing outgoers*, there is no significant difference between the latter and the *healthy indulgers*.

**Table 4:** Differences in perceived benefits of participation among the four groups: One-way analysis of variance and LSD tests

Benefits Factor	Group	(n)	Mean	Std. Deviation	Std. Error
<i>Joyfulness</i> (Factor includes: enjoying the sensations, self-assurance, easy-going and humorous attitude, and time with the opposite sex)  <i>F</i> = 12.777, <i>p</i> = .000	<i>Healthy indulgers</i>	(94)	0.39 <sup>a, b, c</sup>	0.92	0.10
	<i>Ailing outgoers</i>	(38)	0.03 <sup>a, d</sup>	1.07	0.17
	<i>Healthy hermits</i>	(49)	-0.32 <sup>b</sup>	0.76	0.11
	<i>Frail recluses</i>	(37)	-0.60 <sup>c, d</sup>	0.95	0.16
	The sample	N=218	0.00	0.99	0.07
<i>Service</i> (Factor includes: authority, chance to help, influence, accomplishment, responsibility, creative contribution, use of skills, being important, and being active)  <i>F</i> = 5.088, <i>p</i> = .002	<i>Healthy indulgers</i>	(94)	0.25 <sup>a, b</sup>	1.02	0.10
	<i>Ailing outgoers</i>	(38)	0.04	1.08	0.18
	<i>Healthy hermits</i>	(49)	-0.17 <sup>a</sup>	0.91	0.13
	<i>Frail recluses</i>	(37)	-0.44 <sup>b</sup>	0.76	0.13
	The sample	N=218	0.00	0.99	0.07
<i>Self-expression</i> (Factor includes: skills improvement, being active, unusual experience, expressing feelings, making friends, and accomplishment.)  <i>F</i> = 4.430, <i>p</i> = .005	<i>Healthy indulgers</i>	(94)	-0.17 <sup>a, c</sup>	1.09	0.11
	<i>Ailing outgoers</i>	(38)	-0.24 <sup>b, d</sup>	0.97	0.16
	<i>Healthy hermits</i>	(49)	0.25 <sup>a, b</sup>	0.86	0.12
	<i>Frail recluses</i>	(37)	0.35 <sup>c, d</sup>	0.78	0.13
	The sample	N=218	0.00	0.99	0.07
<i>Standing out</i> (Factor includes: opportunity to perform or show off in front of a group, and doing things "my own way")  <i>F</i> = 2.761, <i>p</i> = .043	<i>Healthy indulgers</i>	(94)	-0.18 <sup>a</sup>	0.93	0.10
	<i>Ailing outgoers</i>	(38)	-0.06	0.10	0.16
	<i>Healthy hermits</i>	(49)	0.28 <sup>a</sup>	1.00	0.14
	<i>Frail recluses</i>	(37)	0.16	1.06	0.17
	The sample	N=218	0.00	0.99	0.07

**Note:** Space constraints entailed far briefer descriptions of benefits than those appearing in the PAL-E form. Significantly different means are denoted by *a*, *b*, *c* and *d*. For example, the mean score for the benefit factor *standing out* is *a* for both the *healthy indulgers* and the *healthy hermits*. This means that the mean score of the *healthy hermits* is significantly higher than the mean score of the *healthy indulgers*. There are no additional significant differences among the groups with regard to this benefit.

## Discussion

Cross-disciplinary adoption of theories, approaches and methods may be highly useful, enriching overall knowledge regarding various human phenomena. Such adoption must be carried out cautiously, however. Before accepting concepts from other fields, scholars should test their applicability and value in their respective fields of research. The principal questions these tests should include are “why” – why is a certain concept relevant and what is its possible value for the other field, and “how”? – should the concept be adopted as is or can one modify it to render it applicable in other fields?

The present study sought to conduct such a test, assessing the applicability of gerontographics (Moschis & Mathur, 1993, Moschis 1996, 2003, Moschis et al. 1997), an approach for segmenting older adults rooted in marketing and consumer behavior research, to the study of media and audience research. Selecting seniors’ online communities as a context for the study, this test yielded some insights regarding the users of such communities and emphasized the relevance of gerontographics to the study of older Internet users.

The sample of community members examined in this study was rather heterogeneous in terms of socio-demographic background. Nevertheless, with a mean age of 64.7 years and a mean number of years of education of 15.1 (bachelor’s degree), the participants may be considered relatively young and educated. In spite of this bias, however, the findings displayed significant differences among the four segments examined (*healthy indulgers*, *ailing outgoers*, *healthy hermits* and *frail recluses*) in reported physical health and psychological well-being. These findings confirmed that one may apply gerontographics regarding physical and psychological well-being alone – the approach’s most dominant dimensions – instead of using Moschis’s full questionnaire. More significantly, they demonstrated that older Internet users *can* be segmented according to the gerontographics approach.

The four groups examined in this study differed in education and income, with the *healthy indulgers* reporting higher levels of education and income than the *frail recluses*. This demonstrated the rather well-documented association between socioeconomic status and well-being in later life (e.g., Lantz, House, Mero & Williams 2005, Herd, Goesling & House 2007). Furthermore, the absence of significant age differences among the groups supported Moschis’s (1996) claim regarding the irrelevance of age to gerontographics. The lack of significant differences among the groups with regard to participation patterns was somewhat unexpected, however, as gerontographics suggests that older adults who experienced similar circumstances in later life are likely to exhibit similar patterns of behavior.

One possible explanation for this finding may be that despite similar participation patterns (e.g., frequency of visits, posting behavior), the various groups satisfied their psychosocial needs through differential exposure to specific *content*. Preliminary support for this explanation may be found in the admittedly few findings regarding reported interest in the issues discussed in the communities. The *healthy hermits* and the *healthy indulgers*

reported significantly more interest in travel than the *frail recluses*, while the *healthy hermits* reported more interest in shopping than the *healthy indulgers*. This implies that community members with good health (and *healthy hermits* in particular) used the communities as an information source for support of their offline activities.

The significant differences among the groups in perceived benefits of participation in seniors' online communities provided further insights about the roles the communities played in their members' lives. For members who reported a relatively high level of psychological well-being (i.e., *healthy indulgers* and *ailing outgoers*), the communities provided light entertainment and for the *healthy indulgers* they also offered an opportunity to be of help to others. For members with a relatively low level of psychological well-being (i.e., *healthy hermits* and *frail recluses*), the community provided a means of coping with the challenges associated with aging. Offering anonymity and invisibility, the communities enabled these groups to express their feelings and thoughts and to make new friends who could understand what they were going through. The communities also gave *healthy hermits* an opportunity to stand out, possibly compensating for the social withdrawal and sense of isolation associated with their life stage (Moschis 1996).

Overall, the findings of the current study suggest that even somewhat similar use may engender different benefits, demonstrating that online activities may be differently experienced by audience segments with dissimilar physical and psychological well-being. Moreover, they showed that the same online activity may play a completely different role in these segments' lives. As such, they provided powerful evidence for the applicability and value of the gerontographics segmentation approach in the study of older Internet users.

### **Theoretical and Practical Implications**

The theoretical and practical implications of the evidence that gerontographics is applicable in the study of older Internet users go back to the "why" and "how" questions one should ask before accepting concepts from other fields. The answer to the theoretical "why" question, which focuses on relevance and value, indicates that based on the test presented in this article, gerontographics may prove highly valuable in studies of Internet use and successful aging.

To date, most studies have explored how Internet use promotes well-being (e.g., Van De Watering 2005, Shapira et al. 2007). It should be noted, though, that some studies indicated that computer and Internet use has not shown any impact on the well-being of the elderly. The researchers provided two explanations for such findings, the first being that the bias is caused by not separating between the effects of computer and Internet use and the effects of the training process (Dickinson & Gregor 2006, Gilleard, Hyde & Higgs 2007, Slegers, Van Boxtel & Jolles 2007). The second explanation was the "ceiling effects" of the measures (White et al., 1999, 2002, Chen & Persson 2002), meaning that participants had relatively high scores on the measures prior to the intervention and as a result the intervention did not produce statistically significant results.



Application of gerontographics may support or refute these explanations and reveal possible variance in the impact of Internet use and specific online activities on the different segments. Furthermore, it may show how people at various levels of physical and psychological well-being *use* and *experience* the Internet and the numerous activities it offers. Moreover, it may even find that level of well-being affects Internet use and not the converse, as most current studies argue.

The evidence provided by the study's results suggests that the answer to the practical "how" question is that researchers can modify gerontographics to render it applicable in other fields. The use of Moschis's full questionnaire is not mandatory and one may simply adopt the conceptual framework using basic measures of physical and psychological well-being. This conclusion may be relevant not only to audience researchers but to all gerontologists seeking to segment study populations according to individual well-being.

It is both convenient and economical to use measures of physical and psychological well-being alone in applying gerontographics, but doing so ignores many aspects of gerontographics that may help portray and explain segment's behavior (such as the number and type of negative life events experienced, attitudes, needs, etc.). Consequently, future studies should apply this somewhat sparse method only if limited in scope (funding constraints or online data collection demanding briefer questionnaires, for example).

In any event, this pioneer study demonstrated the applicability of gerontographics to the study of older Internet users and thus opened various options for future research, including studies of other online activities (games, social networking, etc.), functions (e.g., information, task performance, leisure) and Internet use as a whole. Gerontographics may be particularly useful in longitudinal studies, displaying how life transitions (e.g., retirement) and/or transitions among segments affect older adults' Internet use, well-being and mutual association.

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