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Media-Based Leisure and Wellbeing: A Study of Older Internet Users

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ABSTRACT

Studies exploring digital technology in the context of leisure for older people tend to neglect their parallel use of traditional media. By simultaneous examination of both online and offline recreational media use, the present study explores media-based leisure repertoires and wellbeing among older Internet users. Data were collected via a survey of 10,527 Internet users aged 60 and up from seven countries (Austria, Canada, Denmark, Israel, the Netherlands, Romania, Spain). Analysis examined participants' media use and differences among people with disparate use patterns. The study identified four groups of Internet users according to the media-based leisure activities they engaged in: *innovative traditionalists*, *entertainment seekers*, *selective content consumers*, and *eclectic media users*. The groups differed in their activity repertoires, background characteristics, and leisure preferences. Being an *eclectic media user* (i.e., relatively less selective) was significantly associated with lower life satisfaction. Results indicate an advantage to selectivity in media use for leisure and confirm that participation in certain activities may compensate somewhat for distressing conditions in old age. They also suggest diminished boundaries between offline and online leisure among older Internet users and call for further development of the functional approach to Internet use in later life.

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Cross-national study; digital technology; media repertoire; old age; quality of life

Introduction

The emergence and diffusion of new Information and Communication Technologies (ICTs) has profoundly affected individuals' leisure activities, older adults notwithstanding. Accordingly, a growing number of studies explore *digital leisure* activities offered by the new media, describing individuals and diverse social groups' digital leisure practices, spaces, and experiences (Schultz & McKeown, 2018). Leisure researchers, however, tend to examine young adults' involvement in digital leisure (Silk, Millington, Rich, & Bush, 2016; Valtchanov & Parry, 2016), often excluding older adults from the population studied. As a result, relatively few studies in the leisure field explore digital leisure of older people in comparison to the body of research on younger age groups (Hebblethwaite, 2016). By contrast, numerous gerontology scholars have documented the beneficial effects of Internet use on older adults (for reviews, see Chen & Schulz, 2016; Choi, Kong, & Jung, 2012; Damant, Knapp, Freddolino, & Lombard, 2016; Forsman & Nordmyr, 2017). Most of their research, however, did not differentiate between leisure and other functions of Internet use, and often ignored elders' parallel use of digital and traditional media.

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In contrast to approaches that classify leisure as free time and/or a state of mind, this article is based on the conceptualisation of leisure as activity associated with free choice (Sintas, de Francisco, & Álvarez, 2015). In digital environments leisure activities are mediated, forming a part of an individual's media repertoire. The concept of *media repertoires* refers to the sets of available media offerings that individuals use regularly (or frequently) (Kim, 2016). A repertoire-oriented approach to media use is characterised by a user-centred perspective, entirety (i.e., the need to consider the whole variety of media regularly assembled by a person) and relationality – namely consideration of the interrelations and specific functions of the components of a media repertoire (Hasebrink & Domeyer, 2012). Research of media-based leisure repertoires, as an extension of media repertoires studies, focuses on leisure activities in which the use of media (both digital and traditional) is central and may clarify under which circumstances Internet use can be beneficial.

This paper is based on the premise that digital and traditional media are no longer separate parts of older adults' media-based leisure repertoires but increasingly intertwined, supporting scholars that have argued that the notion of convergence (Jenkins, 2006) is central to understanding the current media environment. While offering new media practices (e.g., social networking), the Internet also provides digital equivalents of mass media (e.g., online newspapers and broadcasts). The resulting media convergence enables users to fulfill their psychosocial needs through one screen medium, leading to the conclusion that media-based leisure repertoires of Internet users comprise several interdependent online and offline elements that should be explored simultaneously.

Numerous studies indicate that traditional media-based leisure activities, such as watching TV and reading newspapers, are most common in older adults' leisure (Depp, Schkade, Thompson, & Jeste, 2010; Nimrod & Adoni, 2006). New media technologies may affect elders' leisure involvement by offering digital leisure activities that could displace and/or complement their traditional media-based activities. To gain a better understanding of the role digital leisure plays in older adults' lives, the present study explores media-based leisure repertoires based on both types of media (traditional and new) and their association with wellbeing among older Internet users. By doing so, the study contributes to the scholarly discourse about the effects of digitalisation on leisure.

Literature review

While previous research has provided some evidence of older adults' engagement in, barriers to, and benefits of digital leisure, significant gaps in the literature persist. First, literature seldom explores how older persons' online and offline leisure activities complement each other. Some studies show that older adults use the Internet as an instrument supporting offline leisure. For example, research on older tourists found that they use online communities to exchange practical information, locate potential travel companions, swap homes, and share experiences during travels and upon returning home (Nimrod & Adoni, 2012). Similarly, a study of amateur genealogists revealed that online information sharing is an important feature of this hobby (Fulton, 2009). An exploratory study (Genoe et al., 2018) showed that older adults find benefits in replacing offline leisure activities with digital equivalents as long as the rewards gained from participation outweighed the effort the participation required. Further, they found that older adults view digital technologies as an alternative means of pursuing leisure activities that were usually done offline (e.g., keeping in touch with family) and as a source of inspiration for offline activities. This calls for concurrent examination of online and offline leisure activities.

Second, although in many countries a majority of individuals aged 65 and over already use the Internet, they are typically behind younger cohorts in the intensity and variety of use (Anderson & Perrin, 2017, Organisation for Economic Cooperation and Development [OECD], 2017). This problem, commonly called the *age divide* (Shultz et al., 2015), is also reflected in less participation in digital leisure activities and relatively little use of online leisure-related functions (Genoe et al., 2018; Van Deursen & Van Dijk, 2014). Besides age, the use of ICTs in later life depends on health (Chen & Chan, 2011), gender (Kolland, Wanka, & Gallistl, 2014), education, and income (Seifert &

Schelling, 2016). Accordingly, research has reported significant inequalities in Internet use within the older population (Friemel, 2016; Hargittai & Dobransky, 2017). This necessitates differentiation among subgroups of older Internet users. Studies on the digital divide, however, have so far focused on older adults' ICT usage and skills, not accounting for differences in digital leisure involvement between older users with diverse background characteristics.

Third, and most important, literature has reported inconsistent findings on the effects that online activities have on older adults' wellbeing. Numerous studies have provided considerable evidence demonstrating a positive association between the two constructs (for reviews, see: Chen & Schulz, 2016; Choi et al., 2012; Damant et al., 2016; Forsman & Nordmyr, 2017), with some also demonstrating causality by applying longitudinal methods (e.g., Choi et al., 2012). Research, however, has also presented conflicting findings that revealed a negative association (or none at all) between the two variables. Berner, Rennemark, Jogr eus and Berglund (2012) found no significant association between Internet use and life satisfaction; Choi and DiNitto (2013a) indicated that older Internet users had higher levels of depression and anxiety than non-users, and Matthews and Nazroo (2015) concluded that frequent Internet use was associated with more intense feelings of loneliness in later life.

To address this inconsistency, Lifshitz, Nimrod, and Bachner (2018) suggested a functional approach to Internet use in later life that simultaneously but separately examines each of the principal online functions common among older adults (*interpersonal communication, information, task performance, and leisure*). In testing this functional approach, they found that all functions significantly and positively associated with subjective wellbeing (SWB). However, after controlling for sociodemographic variables, only online leisure remained significantly correlated with wellbeing measures. Hence, the effects of Internet use on SWB in later life might not depend on the type and frequency of Internet use but rather on its purpose. Only when the purpose is recreational are the benefits to SWB significant.

The functional approach emphasises the roles that the Internet plays in users' lives and focuses on subjective experience rather than objective behaviour. It suggests that each function may be related to a variety of online activities and that a specific activity may play different roles for different users and/or under varying circumstances. This notion is rooted in the *uses and gratifications perspective*, a central theory in media and communications research that posits the existence of an active consumer audience attempting to satisfy its psychosocial needs through selective exposure to media and specific content (Blumer & Katz, 1974; Papacharissi & Rubin, 2000; Rafaeli, Ravid, & Soroka, 2004; Rosengren, Palmgreen, & Wenner, 1985). Accordingly, the significance of digital leisure to SWB found by Lifshitz and colleagues (2018) does not negate the potential benefits of all other functions, as they may satisfy other psychological needs.

The positive effects of digital leisure activities on older Internet users were also demonstrated in previous cross-sectional as well as longitudinal studies that limited their focus to specific activities. For example, numerous studies have shown positive impacts of *online gaming* on older adults' physical and cognitive functioning (for reviews, see Bleakley et al., 2015; Toril, Reales, & Ballesteros, 2014). Other studies explored the social aspects of online gaming, reporting improved intergenerational communication (Osmanovic & Pecchioni, 2015) and decreased social isolation (Khosravi, Rezvani, & Wiewiora, 2016). Furthermore, older online game players reported mental exercise, enjoyment, social interaction, and general escape from daily life as key benefits (Kaufman, Sauv e, Renaud, Sixsmith, & Mortenson, 2016).

Similarly, studies of older adults' *online communities* found joyfulness, stimulation, and companionship to be the most salient benefits of participation, while simultaneously showing that participation in online communities has various positive impacts on members' offline social life, interests, and activities (Nimrod, 2014). In-depth interviews with older bloggers indicated that *blogging* facilitates community and social interaction, fosters older adults' self-expression, and strengthens their sense of self (Brewer & Piper, 2016). Studies of *social networking services* (SNS, e.g., Facebook) showed that older users gained feelings of connection through SNS use (Ivan &

Hebblethwaite, 2016; Sinclair & Grieve, 2017). Studies that focus on specific activities, however, are limited in scope and cannot portray users' digital leisure repertoires, nor their association with offline activities.

The various gaps in the literature, such as a limit in scope when studying digital leisure activities and the limited consideration of traditional media use as well as various subgroups of older adults, call for a new approach to studying digital technologies and leisure in later life. Accordingly, we recently suggested three pathways towards a better understanding of the association between digital leisure and SWB: (1) Simultaneous exploration of various online leisure activities, (2) concurrent examination of online and offline leisure activities, and (3) differentiation among subgroups of older Internet users (Gallistl & Nimrod, 2019). To demonstrate the usefulness of the three paths, we analysed data collected online among a sample of older Israeli Internet users. Results indicated that the association between media-based leisure activities and SWB did not depend on the medium type (offline or online), but rather the purpose they served: Whereas activities associated with *online updates* and *offline content* positively associated with SWB, other activity types showed no significant correlations and one (*offline radio*) even associated negatively with SWB. Furthermore, this study identified three groups of Internet users based on the media-based leisure activities in which they engaged: *Onliners*, *Offliners*, and *Lighter Users*. Despite differences in background characteristics, these groups reported similar SWB – a finding that led us to suggesting a balancing mechanism wherein participation in certain online and offline activities may somewhat compensate for distressing conditions in later life. Nevertheless, it is hard to generalise from this study, as it was limited to one cultural context.

Applying the three suggested principles (Gallistl & Nimrod, 2019), the present study aimed to provide a multinational perspective on media-based leisure activities and SWB in later life by answering the following research questions:

RQ1: What types of media-based leisure repertoires are observed among older Internet users? To what extent do offline and online leisure activities interweave in later life?

RQ2: Are there differences among the types of media-based leisure repertoires in background characteristics, leisure preferences and SWB?

RQ3: If so, which determinants (background characteristics and media-based leisure involvement) explain the differences in SWB?

Responses to these questions improved the understanding of the role that online and offline media-based leisure plays in older adults' SWB and further developed the functional approach to the study of Internet use in later life.

Material and methods

Data collection and sample

The study was conducted in the context of Ageing + Communication + Technology (ACT), a project that addresses the transformation of the experiences of ageing with the proliferation of new forms of mediated communications in networked societies. The study was based on a survey of Internet users aged 60 and up. This age limit was set in accordance with the United Nations' (2017) official definition of old age. Data were collected in seven countries (Austria, Canada, Denmark, Israel, the Netherlands, Romania, and Spain) by local and international commercial firms. With the exception of Romania, where the survey was conducted via the telephone due to a low rate of Internet users among the older population, all firms applied an online survey. Study participants

were reached out by the firms, and age and gender quotas were instituted to ensure that each sample is representative of the country's older online population.

The overall sample size consisted of 10,527 Internet users aged 60 and over. Participants' ages ranged from 60 to 101, with a mean of 67.52 years ($sd = 6.07$), of whom 52% were male, 70.7% were married, and 56.9% had children. Thirty-five percent of the participants had an academic education, 55.9% reported having income higher than the average in their country, 74.1% percent were retirees, and 20.2% worked full- or part-time. The rest were unemployed or worked in an unpaid position. Forty-nine percent lived in big cities or their suburbs, 31% in a town or a small city, and the rest in a country village, a farm, or home in the countryside.

Measurement

The study applied a questionnaire that was tested and validated by Jensen and Helles (2015) in a major cross European audience research. This questionnaire had validated translations into German, Danish, and Hebrew. Translations into Spanish, Romanian, French (for the French speaking Canadians), and Dutch were done by the current research team. To validate the translations, native English-speaking persons re-translated them into English. This process was repeated until the re-translations were identical to the original English version.

The current investigation was based on a specific part of the data that explored the participants' media use the day before they responded to the survey. Participants were asked to think about the previous day and report how much time (in hours and minutes) they spent using various media. This part of the questionnaire was split into two phases: The first related to traditional mass media (TV, radio, newspapers, and magazines, books) and differentiated between old media and digital/Internet-based use (via computer, mobile phone, or digital reader), while the second considered various Internet-based activities (e.g., using SNS, reading and writing entries in forums and blogs, and playing online games). Only activities typically associated with leisure were selected and all others (e.g., emails, online errands) ignored.

SWB was measured with a question asking study participants to evaluate their satisfaction with life as a whole on a Likert scale ranging from 1 ('not satisfied at all') to 10 ('very satisfied'). Analysis also took into account responses to a question exploring participants' leisure preferences by asking them to indicate the three things they were most likely to do if they have a few hours of free time, as well as various demographic and sociodemographic particulars, including age, gender, family status, education, monthly income, work status, place of residence, and satisfaction with health (on a 10-point Likert scale). All demographic variables (except for age and health) were measured in a categorical manner.

Data analysis

Data were analysed using SPSS V. 24 software. The first step was a factor analysis of the data describing time spent on media-based leisure activities the day before responding to the survey. For that analysis, we used principal components extraction and Quatrimax rotation with Kaiser normalisation. The accepted factors had an eigenvalue of at least 1.0 and reported factor loadings were at least 0.4. The identified factors were then subjected to cluster analysis, classifying groups of older Internet users with similar media-based leisure repertoires. The identified clusters were then named by the authors based on the interpretation of each clusters' involvement in online and offline media-based leisure activities. As most online and offline activities showed a high range with extreme values, we applied the filter for outliers as suggested by Tabachnik and Fidell (2013) for the cluster analysis. That filter was then used in all subsequent analyses.

In the next step, we examined differences among the groups in life satisfaction, total reported time dedicated to media use during the previous day, background characteristics and leisure preferences, using cross-tabulations and chi-square tests, as well as one-way Analysis of Variance

(ANOVA) and Least Significant Difference (LSD) post hoc tests. Finally, we conducted a multiple linear regression to explore clusters and background variables associated with life satisfaction in the current sample. Only background variables that reflected significant differences among clusters were included in the multiple linear regression model. As the countries involved in the study were not equally represented in the sample, weights were used to correct for over- or underrepresentation. Unless otherwise stated, all reported findings were significant at or above the .05 level.

Results

The structure of media-based leisure activities

To explore the association between various online and offline activities, participation in 18 media-based leisure activities reported by study participants was subjected to factor analysis (Table 1). Analysis revealed seven activity factors that explained 51.7% of the variance. Factor labels resulted from the authors' interpretation of common characteristics of the activities in each factor. Five of the seven factors (*social media*, *online news*, *offline mass media*, *online broadcasting*, and *alternative books*) showed a tendency to be either offline or online, while for the remaining two (*video on demand* and *time fillers*), offline and online activities were equally involved. Nevertheless, analysis suggested that factor consistency was more closely connected to the purpose of use, rather than the (online or offline) medium used.

The first two factors, *social media* and *online news*, included activities that were related to maintaining social connectedness through media use. *Social media* contained activities associated with social relations, including posting and reading entries at forums or blogs and using SNS and chat software (e.g., Skype and WhatsApp). *Online news* included activities aimed at receiving frequent updates and information about current affairs, such as obtaining news via various online sources and reading newspapers online.

The four factors *offline mass media*, *online broadcasting*, *alternative books*, and *video on demand* served the purpose of content consumption in different forms and media. *Offline mass media* was centred on consuming traditional forms of media, such as newspapers, books, and radio in an offline format. *Online broadcasting* comprised the online equivalents of traditional broadcasting media, namely, online TV, and radio. Similarly, the factor labelled *alternative books* included new

Table 1. Factors and factor loadings for exploratory factor analysis of online and offline media-based leisure activities.

Factor	Activities included in the factor	Factor loading	Variance explained
Social media (2.30, .33)	Writing entries at forums, blogs, etc. (online)	.760	12.8%
	Reading entries at forums, blogs, etc. (online)	.728	
	Using social networking services (online)	.502	
	Using chat software (online)	.429	
Online news (1.33, .56)	Obtaining news (online)	.812	7.4%
	Reading newspapers (online)	.809	
Time fillers (1.29, .17)	Watching TV (offline)	.684	7.2%
	Playing games (online)	.668	
Offline mass media (1.22, .20)	Reading newspapers (offline)	.751	6.8%
	Reading printed books (offline)	.641	
	Listening to the radio (offline)	.509	
Online broadcasting (1.13, .19)	Watching TV (online)	.789	6.3%
	Listening to the radio (online)	.631	
Alternative books (1.03, .06)	Reading books in electronic version (offline)	.766	5.7%
	Listening to audio books (offline)	.513	
Video on demand (1.01, .04)	Watching videos or DVDs (offline)	.819	5.6%
	Downloading music, films etc. (online)	.405	

Note. Data were weighted by country. Weighted N = 4,798, Actual N = 8,930. Pairwise case deletion. Principal component extraction and Quatrimax rotation with Kaiser normalisation. Factors included based on eigenvalue of at least 1. Only loadings of at least .4 are presented. The seven factors explained 51.7% of variance. KMO = 0.7. Eigenvalue and Cronbach's Alpha are in parentheses.

book formats (digital and audio books). *Video on demand* consisted of activities dedicated to the consumption of audiovisual content in an asynchronous manner through videos and DVDs as well as by downloading videos, films, music, etc.

Watching offline TV and playing online games were included in a factor we decided to label *time fillers*, for two reasons: First, such activities often serve as default activities when there is nothing better to do and/or between performance of more significant activities (Nimrod, 2007) or as an escape from daily life (Kaufman et al., 2016). Second, they are usually associated with frequent and extended duration of use. In our sample, the average reported time dedicated to watching TV was 3.5 hours and to online games 1.5 hours.

Clusters of older internet users

Cluster analysis of the seven factors of media-based leisure activities produced an optimal four-cluster solution for older Internet users (Table 2). The first cluster was named *innovative traditionalists*, based on the cluster's tendency to consume traditional mass media content via online and digital formats: Most prevalent activities in this group were online news, online broadcasting and alternative books. This group also displayed a relatively high overall engagement in media-based leisure activities, with an average total time of 10 hours on the day before the survey.

The second cluster was labelled *entertainment seekers* as this cluster showed the sample's highest involvement in social media and time fillers, activity factors associated with entertaining media use. This cluster also reported the highest overall engagement in media-based leisure activities, both online and offline, with an average of 11.9 hours on the day before the survey. Obviously, this number does not necessarily reflect time use in practice, as many of the uses could be accomplished simultaneously (e.g., reading a newspaper while listening to the radio).

The third cluster labelled *selective content consumers*, also involved relatively heavy users (previous day's mean = 9.7 hours). Like the first two, this group exhibited selective media use. In this case, however, selectivity was associated primarily with the content consumed. Reporting the most intense use of online news and video on demand, individuals in this cluster appeared to search actively for the content that interested them and clearly demonstrated a preference for asynchronous media use. Even if the content this group consumes may be similar to the first two clusters (i.e. similar use of online news as the *innovative traditionalists* and possibly consumption of entertaining content), the fact that they are significantly less involved in social media and time fillers and prefer video on demand over traditional broadcasting indicates their selectivity.

Table 2. The four clusters of older internet users.

Variable	Innovative traditionalists	Entertainment seekers	Selective content consumers	Eclectic media users
Activity factor ¹				
Social media***	-0.01 ^b	1.46 ^a	-0.27 ^c	-0.40 ^d
Online news***	0.21 ^a	0.11 ^b	0.74 ^a	-0.53 ^c
Time fillers***	-0.97 ^c	0.96 ^a	-0.19 ^b	-0.27 ^b
Offline mass media	-0.05	0.01	-0.08	-0.03
Online broadcasting***	1.26 ^a	-0.14 ^b	-0.14 ^b	-0.14 ^b
Alternative books***	2.39 ^a	-0.18 ^b	-0.24 ^b	-0.26 ^b
Video on demand***	0.04 ^c	0.18 ^b	0.64 ^a	-0.43 ^d
Life satisfaction ^{2*}	7.90 ^a	7.64 ^b	7.86 ^a	7.76
Total online time ^{3***}	3.01 ^b	3.89 ^a	2.86 ^b	1.30 ^c
Total offline time ^{3***}	7.31 ^b	8.20 ^a	6.90 ^c	5.76 ^d
Weighted N	362	664	1074	2020
Percentage of sample	8.8	16.1	26.1	49.0

Note. Data were weighted by country. Weighted N = 4798, Actual N = 8980. Significance was tested using one-way ANOVA with LSD Post Hoc Tests. Significant group differences are marked with (a) (b) (c) (d). ¹Standardized means (z score) ²Mean ³Mean in hours. *p < 0.05, **p < 0.01, ***p < 0.001.

Unlike all other clusters, the last cluster showed no particular pattern of involvement in media-based leisure activities and was hence named the *eclectic media users*. They were characterised by relatively lower involvement in all activity factors and reported the least total media use time. Nevertheless, they still reported a total average use time of 6.8 hours the day before the survey and were involved in a variety of media-based leisure activities. The four clusters did not differ in their use of offline mass media. In terms of cluster size, the *eclectic media users* were by far the most prevalent group in the sample, accounting for 49% of respondents. The second largest group in the sample was *selective content users* (26.1%), followed by the smaller groups of *entertainment seekers* (16.1%), and *innovative traditionalists* (8.8%).

Background characteristics of older internet user clusters

Eight background characteristics were associated significantly with clusters of older Internet users: Sex, marital status, children, education, income, place of residence, age, health, and nationality

Table 3. Background characteristics of Internet user clusters.

Variable	Innovative traditionalists	Entertainment seekers	Selective content consumers	Eclectic media users
Sex				
Man	51.7	45.9	59.5	49.7
Woman	48.3	54.1	40.5	50.3
Marital status				
Single, divorced, widowed	23.9	32.4	25.9	27.1
Married	76.1	67.6	74.1	72.9
Children				
None	40.7	32.0	46.3	39.4
One or more	59.3	68.0	53.7	60.6
Education				
Lower than academic	62.2	72.1	54.3	63.0
Academic	37.8	27.9	45.7	37.0
Income				
Above average	52.3	31.7	45.7	37.7
Similar or below average	47.7	68.3	54.3	62.3
Place of residence				
Big city (incl. suburbs)	50.7	43.3	48.6	45.0
Town or small city	30.1	33.7	33.9	34.3
Country village	15.3	20.7	13.8	16.9
Farm/home in countryside	3.9	2.3	3.8	3.9
Country				
Austria	12.6	6.7	19.8	60.9
Canada	9.8	9.7	33.9	46.6
Denmark	4	10.2	34.9	50.9
Israel	6.9	19.1	24.2	49.8
Netherlands	8.3	47.2	13.6	30.8
Romania	2.5	13.3	27.4	56.7
Spain	17.2	12.7	26.2	44
Age (mean)	67.4	67.1 ^b	68.0 ^a	67.8 ^a
	[66.7, 68.0]	[66.6, 67.5]	[67.6, 68.4]	[67.5, 68.1]
Health (mean)	7.2 ^a	6.7 ^b	7.3 ^a	7.2 ^a
	[7.0, 7.4]	[6.6, 6.9]	[7.2, 7.4]	[7.1, 7.3]

Note. Data represent % of the sample and were weighted by country. Weighted N = 4798, Actual N = 8980. Chi-squared statistics were significant ($p < 0.01$) for all attribute category cross-tabulations. Health and age were tested using one-way ANOVA and were significant ($p < 0.01$). (a) (b) (c) (d) mark significant ($p < 0.05$) differences between groups according to LSD Post-Hoc tests. 95% Confidence intervals are in parentheses.

Table 4. Leisure preferences of Internet user clusters (in %).

Leisure preferences	Innovative traditionalists	Entertainment seekers	Selective content consumers	Eclectic media users
Watch TV	50.6 ¹	54.8 ¹	49.8 ¹	49.5 ¹
Read books, newspapers or magazines***	41.2 ²	31.2 ³	41.6 ²	45.3 ²
Call friends/family on the phone	26.2	25.9	25.4	27.4 ³
Visit friends/family**	29.4 ³	23.8	22.2	27.2
Visit websites***	24.9	20.9	28.2 ³	20.2
Listen to radio**	20.2	14.9	19.2	21.7
Use social network services***	19.3	40.8 ²	14.7	12.7
Write emails to friends/family**	17.7	12.5	18.6	15.1
Send SMS to friends/family	12.4	14.3	12.6	10.9
Listen to music on CD, MP3, or similar***	11.4	4.7	8.3	6.4
Watch video or DVD***	7.7	5.7	9.8	4.3
Chat online with friends/family***	7.5	8.3	4.8	3.8

Note. Data was weighted by country. Weighted N = 4798, Actual N = 8980. Significance was tested using chi-square cross-tabulation. (1), (2), (3) mark the three most preferred leisure activities for each cluster. *p < 0.05, **p < 0.01, ***p < 0.001.

(Table 3). *Innovative traditionalists* were likely to be married (76.1%), report an above average income (52.3%), and live in Austria (12.6%) or Spain (17.2%). They were also characterised as the most urban cluster of the sample population, with more than half this group residing in a big city or a suburb. Compared with other groups, the *entertainment seekers* were more likely to be female (54.1%), single, divorced or widowed (32%), have children (68.0%), reside in a country village (20.7%), and live in Israel (19.1%) or especially the Netherlands (47.2%). Although they were significantly younger than other groups (Mean = 67.1), the *entertainment seekers* were significantly less satisfied with their health (Mean = 6.7). With regard to their socioeconomic status, *entertainment seekers* reported lower levels of education than the samples' average (72.1%) and were more likely to earn an average or below average income (68.3%).

Similar to the *innovative traditionalists*, the *selective content consumers* were more likely to report a higher-than-average income (45.7%). They were further characterised by having the highest rates of individuals with academic education (45.7%), a majority of men (59.5%), living in Canada (33.9%) or Denmark (34.9%), and not having children (46.3%), even though the majority (74.1%) was married. The *eclectic media users*' characteristics resembled those of the sample as a whole.

Analysis of the clusters' leisure preferences (Table 4) revealed that watching TV was the most preferred leisure activity for all identified clusters. Other activities mentioned, however, reflected significant differences between the clusters. The *innovative traditionalists* were more likely to favour reading printed books, newspapers, and magazines, as well as visiting friends or family. *Entertainment seekers* showed a significantly higher preference for using SNS and *selective content consumers* displayed an above-average penchant for visiting websites. Leisure preferences of *eclectic users* were similar to the sample's average, with the highest preferences accorded to watching TV, reading, and phoning friends and family.

Differences in life satisfaction among the clusters

The one-way ANOVA test showed a significant difference in life satisfaction between clusters: The *entertainment seekers* reported significantly lower satisfaction with life than the *innovative traditionalists* and the *selective content users*, whereas *eclectic media users* showed no significant differences in life satisfaction compared to the other clusters. These findings suggested that different media-based leisure repertoires might lead to differences in life satisfaction among older Internet users. Such differences, however, could also result from users' background characteristics.

To control for such background variables, we conducted a multiple linear regression analysis that simultaneously explored the associations between user clusters (with *entertainment seekers* as

Table 5. Clusters and background variables associated with SWB: A linear regression.

Variable	Category	Unstandardised coefficients (B)	Standardised coefficients	
			SE	Beta
Constant		2.23	0.25	
Cluster ^a	Innovative traditionalists	0.05	0.08	.01
	Selective content consumers	-0.09	0.06	-.02
	Eclectic media users	-0.13	0.06	-.04*
Sex (woman)		0.07	0.04	.02
Marital status (married)		0.33	0.04	.09***
Children (one or more)		0.05	0.04	.02
Education (academic)		-0.03	0.04	-.01
Income (above average)		0.035	0.04	.10***
Place of residence ^b	Town or smaller village	0.07	0.04	.02
	Country village	0.06	0.05	.01
	Farm/home in countryside	0.10	0.09	.01
Age		0.02	0.01	.08***
Health		0.49	0.01	.54***
Country ^c	Austria	0.03	0.09	.01
	Canada	0.04	0.08	.01
	Denmark	0.39	0.11	.06***
	Netherlands	0.22	0.11	.03*
	Romania	0.15	0.10	.02
	Spain	-0.09	0.09	-.02

Note. N = 8980. Listwise case deletion. $R^2 = 0.34$; $F = 169.56$. ^aRef.: Entertainment seekers. ^bRef.: City/suburbs. ^cRef.: Israel. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

a reference), their background, and life satisfaction (Table 5). Six of the analysed socioeconomic background variables associated significantly and positively with life satisfaction: Being married, higher income, older age, better health, and living in Denmark or the Netherlands. Health was the most dominant factor in the regression model, with an effect size larger than that of all other sociodemographic variables and cluster memberships.

In contrast to the one-way ANOVA results, the regression analysis did not point to any cluster reporting greater satisfaction with life than did the *entertainment seekers*. Hence, the explanation for lower life satisfaction lies in life circumstances (predominantly marital status, lower income, and poorer health) and not involvement in media-based activities. Moreover, results indicated that after controlling for background characteristics, it was actually being an *eclectic media user* that associated significantly with lower levels of life satisfaction.

Discussion

The three pathways towards a better understanding of the association between digital leisure and SWB (Gallistl & Nimrod, 2019) proved highly useful in this multinational study of older adults' engagement in media-based leisure activities. The findings arising from following the first two principles, namely the simultaneous exploration of various online leisure activities and the concurrent examination of online and offline leisure activities, showed how media-based leisure activities are interlinked, hence supporting the relevance of media convergence (Jenkins, 2006) in the media-based leisure repertoires of older Internet users. Whereas activities were either offline or online for five of the seven factors, for the remaining two (*time fillers*, *video on demand*) offline and online activities were mixed, demonstrating that they are not disparate elements of older adults' media-based leisure repertoires. This finding is in line with the conceptualisation of online leisure as an extension of offline activity (Nimrod & Adoni, 2012) as well as with our argument that media-based leisure activities should not be considered based on medium type (offline or online) but rather the purpose they serve (Gallistl & Nimrod, 2019).

The application of the third principle – differentiation among subgroups of older Internet users – revealed four clusters of older Internet users according to their media-based leisure

repertoires. Three clusters were characterised by selective media use, guided by clear preference for media type (*innovative traditionalists*), function (*entertainment seekers*), or content (*selective content consumers*), along with one cluster showing patterns of random use (*eclectic media users*). These clusters differed significantly in their sociodemographic backgrounds, with the *innovative traditionalists* and *selective consumers* more likely to be affluent older men and *entertainment seekers* more likely to be older women experiencing challenging conditions such as lower socioeconomic status, poorer health, and lack of spouse.

In contrast to numerous studies claiming that intense Internet use in later life is associated with being male, enjoying a high socioeconomic status, and good health (e.g., Choi & DiNitto, 2013b; Seifert & Schelling, 2016), the *entertainment seekers* reported the highest total online media use time. Hence, the present study may point to a new trend according to which disadvantages in later life are transferred into new media environments: Once disadvantaged groups are fully integrated into using new technologies, their use patterns differ significantly from those of more privileged groups. This finding echoes patterns found in studies of traditional mass media use, demonstrating that more constraints to leisure result in greater media use (Nimrod & Adoni, 2006).

The clusters also differed significantly in their cultural background, supporting the literature that questions culture-specific understanding of Internet use (Büchi, Just, & Latzer, 2016). While older adults in more traditional countries like Austria, Romania, or Spain were more likely to be *innovative traditionalists* or *eclectic* in their use of new media, residents of countries with more liberal regimes (especially the Netherlands) centred on entertainment. These differences may be explained by variations in values and norms, as well as by level of media literacy. The more liberal countries might have developed more infrastructure to ensure older adults' digital inclusion, leading to more advanced use patterns. These explanations, however, are hypotheses and call for further exploration.

As could be expected according to the likelihood of distressing living conditions, the *entertainment seekers* reported the lowest satisfaction with life. After controlling for background characteristics, however, it was actually the *eclectic media user* feature that predicted significantly lower levels of life satisfaction. This finding underscores the significant advantage of selectivity in media use, in accordance with the uses and gratifications theory (Blumer & Katz, 1974; Papacharissi & Rubin, 2000; Rafaeli et al., 2004; Rosengren et al., 1985), as it shows that the benefits older adults receive from media use originate in selective exposure to specific media and content based on the psychosocial needs they seek to satisfy. The present cross-sectional study therefore presents some evidence that groups with selective involvement in media-based leisure activities report higher life satisfaction.

Moreover, as the SWB of the *entertainment seekers* was similar to that of the *innovative traditionalists* and *selective content consumers* once we controlled for background characteristics, the present study suggests that selective media use may compensate somewhat for distressing conditions in later life and confirms the balancing mechanism we recently suggested (Gallistl & Nimrod, 2019), as well as previous research (e.g. Fernández-Ballesteros, Zamarrón, & Ruiz, 2001; Nimrod, 2007) indicating that certain leisure activities may balance the impact of negative events and losses associated with ageing. To a certain extent, this study also supports Nimrod and Shrira (2016) perception of leisure as a resource for resilience in old age.

Furthermore, results call for the further development of the functional approach to the study of Internet use and SWB in later life (Lifshitz et al., 2018). Probing the leisure function, this study showed that the association between online activities and wellbeing does not depend on their function alone, but also on their interaction with offline activities and users' background. Hence, within each function of Internet use (i.e., *interpersonal communication, information, task performance, and leisure*) there may be various repertoires of activities, of which some may be more beneficial to older adults than others. Their contribution may also vary among users according to each individual's characteristics and circumstances.

Overall, this study adds to the growing body of literature on digital leisure, suggesting diminished boundaries between offline and online leisure activities in later life. As offline and online media-based activities mix and complement each other, studying digital leisure without considering involvement

in offline activities might hinder important insights. Furthermore, the study shed more light on older adults, who until recently were relatively neglected in the leisure field's discourse around digital leisure compared to younger age-groups (Hebblethwaite, 2016). Findings indicate that this audience is not homogeneous but rather made of distinct segments characterised by different involvement in offline and online leisure activities, as well as background characteristics and SWB. Hence, studies of digital leisure in later life should not only take usage and non-usage of new technologies into account, but also explore how the technologies are used in leisure and to what extent their use contributes to the emergence of diverse media-based leisure repertoires within the older population.

Limitations and future research

The approach applied in this study enabled responses to key questions concerning media-based leisure among current older audiences. Nevertheless, the study had several limitations, including the cross-sectional nature of data which does not allow to analyse causalities and the lack of data concerning genres of media content consumed, attitudes, and benefits. In fact, the data presented here cannot even assert that the media-based activities were actually pursued for leisure. Although this study focused on activities that are typically associated with leisure (e.g., reading, gaming) while excluding other activities (e.g., emails), the inclusion criteria was based on the authors' judgement rather than the respondents' subjective experiences. Moreover, data in the present study did not differentiate between various digital devices (e.g., computers, tablets, and smartphones), locations (e.g., at home, while travelling), forms (e.g., according to complexity level) or usage patterns (e.g., with others or alone) of the various activities. Playing massive multiplayer online games in the living room using a big screen, for example, may provide a significantly different experience than playing Sudoku on the phone while waiting for a doctor's appointment.

Furthermore, the present study relied on self-reported media consumption that may have been inaccurate, as well as on a single-item SWB indicator that may be less precise than multiple-item measures. Readers should also keep in mind the relatively small Beta and low significance level ($p < 0.05$) of the association between being an *eclectic media user* and higher SWB, which was found in the linear regression model. They should note, however, that all other reported associations were significant at a high level ($p < 0.01$). Lastly, as the study was limited to a Western context one should not apply its findings to non-Western cultures.

Future research should examine media-based leisure repertoires of older adults in additional cultural contexts, use more accurate measures of media use and SWB, relate to both media platforms, use patterns and types of content, and explore associations among various media uses and seniors' attitudes, the benefits they gain from such use, and their wellbeing. They should also consider older users' experiences of various media-based activities as leisure more closely and question if and how the shift from offline to online leisure environments changes the subjective experience of leisure.

Additional studies should explore other online functions (*interpersonal communication, information, and task performance*) according to the principles applied in the present study. Most importantly, they should aim to gather and analyse longitudinal data to fully explore the causal associations between different online functions and SWB. Deepening the investigation into each of the four online functions and their association with SWB may not only enhance our knowledge regarding the benefits of digital leisure in later life, but also promote our understanding of better ways to age.

Disclosure statement

Vera Gallistl and Galit Nimrod state that there are no financial interest or benefit that has arisen from this research.

Data availability statement

The data that support the findings of this study are available from Galit Nimrod upon reasonable request. Email ID: gnimrod@bgu.ac.il

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References

- Anderson, M., & Perrin, A. (2017). Tech adoption climbs among older adults. Retrieved from <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>
- Berner, J., Rennemark, M., Jogr eus, C., & Berglund, J. (2012). Distribution of personality, individual characteristics and internet usage in Swedish older adults. *Ageing & Mental Health*, 16(1), 119–126.
- Bleakley, C. M., Charles, D., Porter-Armstrong, A., McNeill, M. D. J., McDonough, S. M., & McCormack, B. (2015). Gaming for health: A systematic review of the physical and cognitive effects of interactive computer games in older adults. *Journal of Applied Gerontology*, 34(3), NP166–NP189.
- Blumer, J., & Katz, E. (Eds.). (1974). *The uses of mass communications*. London, UK: Sage.
- Brewer, R., & Piper, A. M. (2016). Tell it like it really is: A case online content creation and sharing among older adult bloggers. *Proceedings of the 34th Annual Conference on Human Factors in Computing Systems*, 5529–5542. San Jose Convention Center, San Jose, CA, May 7–12. doi: 10.1145/2858036.2858379
- B uchi, M., Just, N., & Latzer, M. (2016). Modeling the second-level digital divide: A five-country study of social differences in internet use. *New Media & Society*, 18(11), 2703–2722.
- Chen, K., & Chan, A. (2011). A review of technology acceptance by older adults. *Gerontechnology*, 10, 1. doi: 10.4017/gt.2011.10.01.000.00
- Chen, Y. R., & Schulz, P. J. (2016). The effect of information communication technology interventions on reducing social isolation in the elderly: A systematic review. *Journal of Medical Internet Research*, 18(1), e18.
- Choi, M., Kong, S., & Jung, D. (2012). Computer and internet interventions for loneliness and depression in older adults: A meta-analysis. *Healthcare Informatics Research*, 18(3), 191–198.
- Choi, N. G., & DiNitto, D. M. (2013a). Internet use among older adults: Association with health needs, psychological capital, and social capital. *Journal of Medical Internet Research*, 15(5), e97.
- Choi, N. G., & DiNitto, D. M. (2013b). The digital divide among low-income homebound older adults: Internet use patterns, e-health literacy, and attitudes toward computer/Internet use. *Journal of Medical Internet Research*, 15(5), e93.
- Damant, J., Knapp, M., Freddolino, P., & Lombard, D. (2016). Effects of digital engagement on the quality of life of older people. *Health & Social Care in the Community*, 25(6), 1679–1703.
- Depp, C. A., Schkade, D. A., Thompson, W. K., & Jeste, D. V. (2010). Age, affective experience, and Television use. *American Journal of Preventive Medicine*, 39, 173–178.
- Fern andez-Ballesteros, R., Zamarr on, M. D., & Ruiz, M.  . (2001). The contribution of socio-demographic and psychosocial factors to life satisfaction. *Ageing & Society*, 21(1), 25–43.
- Forsman, A. K., & Nordmyr, J. (2017). Psychosocial links between internet use and mental health in later life: A systematic review of quantitative and qualitative evidence. *Journal of Applied Gerontology*, 36(12), 1471–1518.

- Friemel, T. N. (2016). The digital divide has grown old: Determinants of a digital divide among seniors. *New Media & Society*, 18(2), 313–331.
- Fulton, C. (2009). Quid pro quo: information sharing in leisure activities. *Library Trends*, 57(4), 753–768. doi: 10.1353/lib.0.0056
- Gallistl, V., & Nimrod, G. (2019). Online leisure and wellbeing in later life. In S. Sayago (Ed.), *Perspectives of human-computer interaction research with older people* (pp. 139–155). Wiesbaden, Germany: Springer Human-Computer Interaction Series.
- Genoe, R., Kulczycki, C., Marston, H., Freeman, S., Musselwhite, C., & Rutherford, H. (2018). E-leisure and older adults: Findings from an international exploratory study. *Therapeutic Recreation Journal*, 52(1), 1–18.
- Hargittai, E., & Dobransky, K. (2017). Old dogs, new clicks: Digital inequality in skills and uses among older adults. *Canadian Journal of Communication*, 42(2), 195–212.
- Hasebrink, U., & Domeyer, H. (2012). Media repertoires as patterns of behaviour and as meaningful practices: A multimethod approach to media use in converging media environments. *Participations: Journal of Audience & Reception Studies*, 9, 757–779.
- Hebblethwaite, S. (2016). The (in)visibility of older adults in digital leisure cultures. In S. Carnicelli, D. McGillivray, & G. McPherson (Eds.), *Digital Leisure Cultures: Critical perspectives* (pp. 106–118). London and New York: Routledge.
- Ivan, L., & Hebblethwaite, S. (2016). Grannies on the net: Grandmothers' experiences of Facebook in family communication. *Romanian Journal of Communication and Public Relations*, 18(1), 11–25.
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York and London: New York University Press.
- Jensen, K. B., & Helles, R. (2015). Audiences across media. A comparative agenda for future research on media audiences. *International Journal of Communication*, 9, 291–298.
- Kaufman, D., Sauv e, L., Renaud, L., Sixsmith, A., & Mortenson, B. (2016). Older adults' digital gameplay. *Simulation & Gaming*, 47(4), 465–489.
- Khosravi, P., Rezvani, A., & Wiewiora, A. (2016). The impact of technology on older adults' social isolation. *Computers in Human Behavior*, 63(C), 594–603.
- Kim, S. J. (2016). A repertoire approach to cross-platform media use behavior. *New Media & Society*, 18, 353–372.
- Kolland, F., Wanka, A., & Gallistl, V. (2014).  altere generationen und ihre kompetenzen. In *Schl sselkompetenzen von erwachsenen – vertiefende analysen der PIAAC-erhebung 2011/12* (pp. 206–222). Wien: Statistik Austria.
- Lifshitz, R., Nimrod, G., & Bachner, Y. G. (2018). Internet use and well-being in later life: A functional approach. *Aging & Mental Health*, 22(1), 85–91.
- Matthews, K., & Nazroo, J. (2015). Understanding digital engagement in later life. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/495105/FullReport-UnderstandingDigitalEngagementinLaterLife.docx.pdf
- Nimrod, G. (2007). Retirees' leisure: Activities, benefits, and their contribution to life satisfaction. *Leisure Studies*, 26(1), 65–80.
- Nimrod, G. (2014). The benefits of and constraints to participation in seniors' online communities. *Leisure Studies*, 33(3), 247–266.
- Nimrod, G., & Adoni, H. (2006). Leisure-styles and life satisfaction among recent retirees in Israel. *Ageing & Society*, 26(4), 607–630.
- Nimrod, G., & Adoni, H. (2012). Conceptualizing e-leisure. *Loisir Et Soci et /Society and Leisure*, 35(1), 31–56.
- Nimrod, G., & Shrira, A. (2016). The paradox of leisure in later life. *The Journals of Gerontology Series B Psychological Sciences and Social Sciences*, 71(1), 106–111.
- Organisation for Economic Cooperation and Development (2017). OECD digital economy outlook 2017. Retrieved from http://www.oecd-ilibrary.org/science-and-technology/oecd-digital-economy-outlook-2017_9789264276284-en;jsessionid=5nbn6fmksr718.x-oecd-live-03
- Osmanovic, S., & Pecchioni, L. (2015). Beyond entertainment: Motivations and outcomes of video game playing by older adults and their younger family members. *Games and Culture*, 11(1–2), 130–149.
- Papacharissi, Z., & Rubin, A. M. (2000). Predictors of Internet use. *Journal of Broadcasting & Electronic Media*, 44(2), 175–196.
- Rafaeli, S., Ravid, G., & Soroka, V. (2004). De-lurking in virtual communities: A social communication network approach to measuring the effects of social and cultural capital. *Proceedings of the 37th Annual Hawaii International Conference on System Sciences*, doi: 10.1109/HICSS.2004.1265478
- Rosengren, K. E., Palmgreen, P., & Wenner, L. (Eds.). (1985). *Media gratification research: Current perspectives*. Beverly Hills, CA: Sage.
- Schultz, C. S., & McKeown, J. K. (2018). Introduction to the special issue: Toward “digital leisure studies”. *Leisure Sciences*, 40(4), 223–238.
- Schulz, R., Wahl, H.-W., Matthews, J. T, Dabbs, A. D. V, Beach, S. R, & Czaja, S. J. (2015). Advancing the aging and technology agenda in gerontology. *The Gerontologist*, 55, 724–734. doi: 10.1093/geront/gnu071

- Seifert, A., & Schelling, H. R. (2016). Old and offline? Findings on the use of the internet by people aged 65 years and older in Switzerland. *Zeitschrift Für Gerontologie Und Geriatrie*, 49(7), 619–625.
- Silk, M., Millington, B., Rich, E., & Bush, A. (2016). (Re-)thinking digital leisure. *Leisure Studies*, 35(6), 712–723.
- Sinclair, T. J., & Grieve, R. (2017). Facebook as a source of social connectedness in older adults. *Computers in Human Behavior*, 66(C), 363–369.
- Sintas, J., de Francisco, L., & Álvarez, E. (2015). The Nature of Leisure Revisited. *Journal of Leisure Research*, 44(1), 79–101.
- Tabachnik, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed. ed.). Boston, MA: Pearson.
- Toril, P., Reales, J. M., & Ballesteros, S. (2014). Video game training enhances cognition of older adults: A meta-analytic study. *Psychology and Aging*, 29(3), 706–716.
- United Nations (2017). World population prospects: Key findings and advance tables. Retrieved from https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_KeyFindings.pdf
- Valtchanov, B. L., & Parry, D. C. (2016). “I like my peeps”: Diversifying the net generation’s digital leisure. *Leisure Sciences*, 39(4), 336–354.
- Van Deursen, A. J., & Van Dijk, J. A. (2014). The digital divide shifts to differences in usage. *New Media & Society*, 16, 507–526.