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Social participation among older adults in Belgium's Flanders region: exploring the roles of both new and old media usage

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ABSTRACT

The media usage of older adults aged 60 and above in the twenty-first century information society is gaining increasing research attention. This research investigates the association between two important aspects in later life, media usage and social participation, among 36,282 home-dwelling adults aged 60 and above in over 138 municipalities of Belgium's Flanders region. The data are collected through a participatory research method, in which older adults are recruited and trained as research volunteers. Media is categorised into new media (Internet) and traditional/old media (newspaper, TV, community newsletter), while social participation is divided into formal and informal participation. The results of hierarchical linear regression and logistic binary regression analysis show that reading the community newsletter, reading the newspaper, and Internet usage are positively correlated with formal and informal social participation, whereas watching TV shows a negative correlation with both participation forms. Finally, the implications of the association between older adults' traditional media usage and social participation are discussed.

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Media usage; new media; old media; social participation; older adults

Introduction

Today's world faces two drastic demographic changes. First, population ageing is occurring almost everywhere. The United Nations (2015) estimates that the number of people aged at least 60 years will be more than double from 2015 (901 million) to 2050 (nearly 2.1 billion). Second, the number of Internet users is increasing rapidly with the arrival of the information age (Eurostat, 2011, 2017; Kubey, 1997), enabling the general public to access vast quantities of information. In Europe alone, the Internet user population already exceeds 615 million, representing penetration of 73.49%: nearly five times that of 2000 (Internet Live World Stats, 2017). Among them, older adults are recognised to be the fastest growing population of Internet users (Organisation for Economic Co-operation and Development (OECD), 2015).

To meet the challenges of an ageing society, such topics as older adults' participation are attracting increasing research interest. Older adults' social participation is recognised

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as an integral and indispensable part of active and healthy ageing (World Health Organization (WHO), 2002, 2015), having a positive effect on older adults' physical and mental health (Bourassa, Memel, Woolverton, & Sbarra, 2017; Chen & Janke, 2012; Kanamori et al., 2014; Takagi, Kondo, & Kawachi, 2013), and constituting an important intervention goal for health professionals (Levasseur, Richard, Gauvin, & Raymond, 2010). The key aim of the WHO's initiative on Active and Healthy Ageing is for older people to continually participate in 'social, economic, cultural, spiritual and civic affairs', not just 'being physically active or participating in the labour market' (WHO, 2002, pp. 12). The beneficial role of broader social participation has been confirmed in prior research. For example, greater participation in cultural activities was found to reduce the mortality risk for older adults (Agahi & Parker, 2008), and frequent involvement in informal and formal social leisure activities has been associated with less cognitive impairment and fewer depressive symptoms (Janke, Nimrod, & Kleiber, 2008).

Media usage and exposure can create opportunities for social participation (Choi & Shin, 2017) in several ways. It can, for example, inform people about existing participation opportunities (Kang & Kwak, 2003). New media, such as the Internet, has also been found to help older people connect to the outside world, gain social support, engage in activities of interest, and boost their confidence (Chen & Schulz, 2016). A study by Juznic, Blazic, Mercun, Plestenjak, and Majcenovic (2006) discovered that older adults in Slovenia are interested in and capable of learning how to use information and communications technology (ICT) and mastering Internet skills. However, despite the potential benefits and older adults' interest and capability, there exists a grey digital divide (Millward, 2003). In today's digital age, older adults are lagging behind in terms of user proportion and the range of reasons for using technology. In the OECD area in 2014, only 49% of people aged 60 or over used the Internet in 2014, against 95% of 16–25-year-olds (OECD, 2015). Moreover, while older users mainly use the Internet for emails and information seeking, younger users also play online games, frequent message boards, and shop (Morris, Goodman, & Brading, 2007).

This work aims to identify the links between older adults' media use and their social participation by using a large quantitative dataset ($N = 36,282$) from the Belgian Ageing Studies (BAS) project. Despite their increasing use of the Internet, traditionalism still predominates older adults' media usage (Nimrod, 2017). They continue to rely on traditional media, such as newspapers and TV, as their main information sources, in contrast to their younger cohorts. This paper, therefore, proposes that when studying the relationship between media usage and social participation, older adults' reliance on traditional media, such as TV, newspapers, and community newsletters, should not be ignored.

Literature review

Old (traditional) and new media usage

Since affordable newspaper became prevalent in the 1850s (Meggs, 1998), modes of human communication have made significant advances, most notably with the emergence of TV in the 1960s (Abramson, 2003) and the birth of the Internet in the 1980s. The coming of new media technology enabled all citizens, formerly the passive audience of

traditional media sources, to share or communicate information with anyone else able to access the Internet and receive instant feedback (Gillmor, 2004).

Empowering older adults by improving their information literacy has gained increasing prominence in European-level policy-making, as demonstrated by the following three developments. First, the Prague Declaration in 2003 established information literacy – defined as a set of skills to access and process information through media usage – as important for all sectors of society. Being information poor may lead to exclusion from social activities (Horton, 2006). Second, in 2007, the European Commission formulated an action plan on ICT and ageing, aiming to increase older adults' information literacy to help them improve their quality of life, stay healthier, and live independently for longer (European Commission, 2007). Third, the EU's Horizon 2020 programme, targeting solutions for demographic challenges through innovative research, acknowledges the possible opportunities brought by new ICT to promote an age-friendly society (European Commission, 2014).

Positive results are found in studies reviewing the association between different media usage and social participation. According to a study conducted in the Midwest metropolitan area of the US, newspapers with a tendency to highlight civic and community values can help build social connections among readers (Jeffres, Lee, Neuendorf, & Atkin, 2007). In a cross-sectional study of adults (aged 18–65) in the US, Hooghe (2002) observes that a moderate amount of TV viewing is not negatively associated with social participation levels. The interactivity inherent in new media technology can facilitate people's social participation as it greatly reduces information costs; moreover, social media platforms provide convenient ways for people to communicate with acquaintances or complete strangers (Boulianne, 2009).

New media usage fosters a sense of independence and is associated with greater social connectivity, increased levels of perceived social support, lower levels of loneliness and depression, and a more optimistic overall attitude towards the process of ageing (Dickinson & Hill, 2007; Fokkema & Knipscheer, 2007; White et al., 2002). New media channels are recognised as sources of information used to meet others interested in the same offline activities (Nimrod, 2014).

Internet usage has also been found to enhance older adults' social inclusion. The Internet helps older adults to learn new things and make new friends, which is claimed to have positive effects on their social lives (Blažun, Saranto, Kokol, & Vošner, 2012). The Internet has also been found to alleviate older adults' social isolation through four mechanisms: connecting to the outside world, gaining social support, engaging in activities of interest, and boosting confidence (Chen & Schulz, 2016).

Social participation and social gerontology

Theories concerning older adults' social participation have progressed through several phases: disengagement in the 1960s, successful ageing and productive ageing in the 1980s, and critical gerontology from the onset of this century. From a psychological perspective, disengagement theory (Cumming & Henry, 1961) posits that older adults with declining health will gradually withdraw from social relationships and participation as they anticipate approaching death. Successful ageing, on the other hand (Pfeiffer, 1974; Rowe & Kahn, 1987), argues that maintaining social activities in later life is the key to

avoiding disengagement from society. The 1980s also witnessed the concept of productive ageing, which values the activities of older adults that produce goods and services that would otherwise have to be paid for (Morgan, 1986).

In 2002, and reinforced more recently, the WHO (2002, 2015) proposed the principles of active and healthy ageing, emphasising the health benefits for older adults of staying socially active in later life, and advocating social participation as an important part of realising the goal of active and healthy ageing. On the other hand, critical gerontologists question the validity of social participation under the framework of active ageing (Martinson & Minkler, 2006; Minkler & Holstein, 2008). They argue that older adults are a heterogeneous group of people who can choose how to spend their later life based on past life experiences and individual preferences. For older adults who engaged in physically demanding careers in their earlier lives, refraining from active participation in social activities can be a preferable route to active ageing.

Research questions and aims

This research aims to establish the relation between media usage and social participation in the daily lives of older adults in Belgium's Flanders region. Media usage is broadly defined in two categories: new media (Internet) usage and traditional media (TV, newspaper, and community newsletter) usage. Social participation is also defined in two categories: informal and formal participation. Formal participation relates to 'codified or prearranged structures' (Barry, Wilkinson, Gollan, & Kalfa, 2014, pp. 534; Litwin & Eaton, 2016) and, in this paper, describes participation through membership of an organised association; conversely, informal participation refers to day-to-day activities initiated by older people themselves, without an organisation. Consequently, the paper aims to answer the following research questions:

1. What is the profile of older adults' social participation and media usage?
2. Is there a relationship between (new and traditional) media usage and (informal and formal) social participation amongst older adults?

Method

Data collection

The paper uses secondary data from the BAS project, which conducted a standardised survey among home-dwelling older adults ($N = 36,282$) aged 60 and above in over 138 cities and towns of the Flanders region. This study has gained the approval protocol from the ethical committee of Vrije Universiteit Brussel (B.U.N. 143201111521). The BAS research team collected data from 2008 to 2014. A structured questionnaire was used to research older adults' personal characteristics (i.e., gender, age, and living arrangements), socio-economic status (i.e., income and education), health and mental well-being, social participation, and media use (i.e., TV, newspapers, Internet, and community newsletters). The project aimed to promote older adults' active ageing from a community-based perspective.

The project adopted a participatory peer-research method (De Donder et al., 2014) to engage older adults in the research process: for instance, volunteers among the older adults

were themselves recruited to investigate their peers in the municipality after proper training. This enabled a relatively high questionnaire completion rate of between 65% and 85%, depending on the municipality.

Sample

Proportional stratification sampling with regard to gender and age (60–69, 70–79, and 80 and over) was used to form a sample representative of the population in each municipality (De Donder et al., 2014). The sample comprised 54.4% females (45.6% males), with an average age of 71.7 years. In total, 92.8% of respondents had lived in their respective community for over 10 years, and 70.8% lived with a partner. In terms of monthly household income, 16.7% received €500–900, while 36.4% received €1000–1499. Regarding the highest education received by interviewees, 32.4% completed primary education, 47.7% secondary education, 10.1% higher education, and 4.1% university education.

Dependent variables: social participation

The dependent variable of social participation is operationalised by two key elements: informal social participation and formal social participation.

Informal social participation was measured by the number of different social or leisure activities in which a respondent engages at least once a month. Respondents were presented with a list of 14 activities (e.g., walking, visiting restaurants, and shopping) and asked to rate their frequency of engaging in this informal activity (0 = never or seldom; 1 = at least once a month to weekly). Subsequently, one variable of informal participation was computed by adding up the activities in which respondents engage at least monthly to weekly, creating a variable ranging from 0 to 10.

As regards formal social participation, respondents were asked whether they were a member of any of 20 listed organisations, including, for example, older people's associations, sports organisations, women's associations, and charity organisations. Older adults were considered to participate formally in social activities if they were a member of at least one social, cultural, or political association (0 = no memberships, 1 = membership).

Independent variables: media usage

Traditional media (TV, newspapers, and community newsletters) usage and new media (Internet) usage were the independent variables. Respondents were asked the duration of their TV watching (expressed in hours per week), their frequency of newspaper reading (1 = never, 2 = less than once per week, 3 = weekly, 4 = daily), and their habit of consulting a community newsletter (1 = no, 2 = yes). A 5-point Likert scale was used to measure older adults' Internet use (1 = never, 2 = less than once a week, 3 = weekly, 4 = daily, 5 = several times a day).

Control variables

This paper includes personal characteristics (age, gender, marital status, physical and mental health) and socio-economic status (income and education) as control variables.

Physical health (Cronbach's $\alpha = 0.897$) is measured by the physical functioning dimension of the SF-20 (Kempen, 1992), a short-form general health survey. The survey asked respondents whether their health prevents them from participating in six activities: 1. very demanding activities like lifting up heavy objects, etc.; 2. less demanding activities (e.g., carrying shopping bags); 3. walking up a hill or stairs; 4. bending down, lifting up, or bending over; 5. going for a short walk; and 6. eating, dressing, taking a shower/bath, or going to the toilet. Being hampered due to physical health is coded as 1, and not hampered as 2. Physical health is measured by the sum of above six items, ranging from 6 to 12. A higher score indicates better physical health.

Mental health (Cronbach's $\alpha = 0.878$) is measured by whether a respondent agreed to the following six statements (Stewart, Hays, & Ware, 1988): 1. I have trouble sleeping and often lay awake due to troubles; 2. I feel unhappy and depressed; 3. I feel like I'm losing my self-confidence; 4. I feel like I can't cope with problems; 5. I feel under constant pressure; and 6. I feel like I'm not worth anything anymore. A 4-point Likert scale is used to measure each response (1 = not at all, 2 = not more than usual, 3 = more than usual, 4 = considerably more than usual). A higher score represents greater psychological pressure and lower mental health.

Socio-economic status is measured by the respondent's income and education. Respondents were asked into which range their monthly household income falls: €500–999, €1000–1499, €1500–1999, €2000–2499, €2500–3999, €4000–4999, and \geq €5000). Concerning their education, they were asked about their highest level of education completed.

Data analysis

The data analysis process involved four stages. In the first stage, frequency analysis of respondents' characteristics was performed. Second, bivariate analysis was used to explore the correlations between the expected independent variables (individual characteristics, traditional media usage, and new media usage) and dependent variables (informal social participation and formal social participation). The Pearson correlation was adopted to examine these correlations (Field, 2009).

Third, when a correlation was found, multicollinearity analysis was executed to rule out the possibility of multicollinearity among predictors ($VIF > 2.0$). After elimination of correlated predictors, the final predictors were categorised into the following independent variable blocks: personal characteristics, socio-economic status, traditional media, and new media. Finally, in the fourth stage, a blockwise hierarchical regression method was adopted to determine the relative predictive power of each independent variable for the dependent variable of informal participation. As regards formal participation, binary logistic regression was used to measure the predictive weight of the four block independent variables.

Results

General profile of formal and informal social participation and media usage among older adults

Table 1 presents the frequency distributions of the dependent variables: informal social participation and formal social participation. In terms of informal participation,

Table 1. Informal and formal social participation frequency distribution.

Top 10 informal activities		Top 10 formal organisation memberships	
Participate more than once a week			
Going for a walk or cycling	62.8%	Association for older adults	23.6%
Gardening	53.4%	Sports association or club (including walking, playing chess, etc.)	14.3%
Visiting bars or restaurants	49.7%	Trade union	12.6%
Reading books	43.4%	Women's association	12.5%
Shopping for pleasure	43.3%	Organisation for helping those in need	12.0%
Travelling	34.0%	Political association or party	8.9%
House repairs	33.0%	Hobby club	7.8%
Doing odd jobs or handiwork	27.1%	Association for (amateur) artists	7.1%
Card or board games	24.1%	Red Cross, Flemish Cross, etc.	6.6%
Other sports activity	16.0%	Family association	6.1%

respondents reported 14 popular activities in which they participated: most popular were walking or cycling in spare time (62.8%), followed by gardening (53.4%), and visiting bars or restaurants (49.7%). It should be noted that in the BAS questionnaire, walking or cycling was specifically posed as a leisure time activity, rather than simply referring to transportation mode. The sampled older adults participated in an average of 4.21 informal activities ($SD = 2.45$).

The variable of formal participation represents older adults' commitment to a formally established organisation or organised activity: associations for older adults (23.6%), sports organisations (14.3%), and employers' unions (12.6%) were reported as the respondents' top three forms of formal participation. Conversely, the three least popular forms of formal participation among the respondents are associations for (amateur) artists (7.1%), the Red Cross (6.6%), and family associations (6.1%).

In terms of media usage, 82% read newspapers at least once a week and 77.1% consult their community newsletter (respondents were not asked on the frequency of community newsletter reading in the BAS questionnaire); in sharp contrast, only 28.42% use the Internet at least weekly, comprising 6.80% using the Internet several times a day, 15.97% daily, and 5.65% weekly. A significant majority of the surveyed older adults (68.26%) report never using the Internet. Additionally, older people watched TV for an average duration of 3.79 hours ($SD = 1.49$) per day.

Bivariate and multicollinearity analysis

The bivariate analysis (Pearson correlation analysis) showed that both new media (Internet) usage and traditional media (TV, newspapers, and community newsletters) usage were significantly correlated with informal and formal social participation. While Internet usage, newspaper reading, and community newsletter reading were each positively correlated with both dependent variables, TV watching hours demonstrated a negative correlation with both dependent variables. Concerns over multicollinearity were dismissed as the outcomes for the VIF value of collinearity statistics were all below 2.0.

Logistic binary regression results for formal social participation

Table 2 shows the binary logistic regression results for formal participation. Both traditional and new media usage are correlated with older adults' formal social participation.

Table 2. Logistic binary regression of formal participation.

	Block 1			Block 2			Block 3			Block 4		
	β	SE	EXP(β)	β	SE	EXP(β)	β	SE	EXP(β)	β	SE	EXP(β)
<i>Personal characteristics</i>												
Age	-0.019	0.005***	0.981	-0.016	0.005***	0.984	-0.016	0.005***	0.984	-0.012	0.005**	0.988
Gender (female)	-0.073	0.076*	0.93	-0.036	0.077	0.964	-0.031	0.077	0.97	-0.004	0.078	0.996
Marital status	-0.022	0.08	0.978	-0.131	0.084*	0.877	-0.154	0.085**	0.858	-0.133	0.085*	0.876
Length of residence	0.009	0.002***	1.009	0.01	0.002***	1.01	0.009	0.002***	1.009	0.01	0.002***	1.01
Mental health	-0.078	0.083*	0.925	-0.085	0.083*	0.919	-0.079	0.084*	0.924	-0.073	0.084*	0.929
Physical health	0.025	0.01**	1.025	0.02	0.01**	1.02	0.013	0.01*	1.013	0.012	0.01*	1.012
<i>Socio-economic status</i>												
Household income				0.214	0.044***	1.239	0.167	0.045***	1.182	0.134	0.046***	1.144
Education level				0.041	0.014***	1.042	0.03	0.014**	1.03	0.021	0.015*	1.021
<i>Traditional media</i>												
TV							-0.118	0.024***	0.889	-0.111	0.024***	0.895
Community newsletter							0.451	0.091***	1.57	0.431	0.092***	1.539
Newspaper							0.076	0.032**	1.079	0.07	0.033**	1.073
<i>New media</i>												
Internet										0.101	0.028***	1.106
<i>Nagelkerke R square</i>		2.2%			3.8%			6.3%			6.8%	

* $p < .5$.** $p < .1$.*** $p < .01$.

This model accounts for 6.8% of the total variation. Regarding traditional media use, reading community newsletters and newspapers are two positive factors, indicating that older adults who more frequently read newspapers and community newsletters are more likely to be members of an association.

A one-unit change in the independent variable of community newsletter reading (EXP $\beta = 1.539$, $p = .000$) increased the odds of being a member by a factor of around 1.5, indicating that the more frequently people read community newsletters, the more likely (1.5 times) they are to be an association member. Newspaper reading (EXP $\beta = 1.073$, $p = .000$) also shows a positive correlation. On the contrary, TV watching hours (EXP $\beta = 0.895$, $p = .000$) demonstrates a significant negative correlation with formal social participation: respondents with a one-unit increase in TV watching duration were about 10% less likely to be a member of a formal association. As regards the relationship with new media, increased Internet usage (EXP $\beta = 1.106$, $p = .000$) is associated with a greater likelihood of formal social participation.

Regarding the control variables, income is positively correlated with formal participation, indicating that older adults with higher income are about 1.14 times (EXP $\beta = 1.144$, $p = .000$) more likely to participate in formally organised associations. Length of residence in the community (EXP $\beta = 1.01$, $p = .004$) and age (EXP $\beta = 0.988$, $p = .028$) are two further predictors of formal participation: for example, a 10-year increase in the period a respondent has lived in the community increased the odds of formal participation by 10%.

Hierarchical linear regression of informal participation

Table 3 shows the results of a hierarchical linear regression of informal social participation. The regression model explains 24.2% of the total variation. Ten independent variables stand out as predictors for the dependent variables. Among them, TV watching hours ($\beta = -.103$, $p = .000$) is negatively correlated with informal participation, meaning that extended TV watching is correlated with lower informal social participation. On the other hand, community newsletter ($\beta = .71$, $p = .000$) and newspaper ($\beta = .117$, $p = .000$) reading show positive correlations, demonstrating that older adults with the habit of consulting community newsletters and/or reading newspapers with greater frequency are more likely to participate in informal social activities. New media (Internet) usage ($\beta = .276$, $p = .000$) also shows a positive correlation with informal participation.

As regards personal characteristics, two control variables (age and physical health) are correlated with informal participation. For example, age ($\beta = -.045$, $p = .000$) demonstrates a negative correlation, meaning that as older adults' age increases, they are less likely to participate in informal activities. Concerning socio-economic status, income ($\beta = .26$, $p = .000$) shows a positive correlation, indicating that older adults with more financial resources available are also more likely to participate in informal activities. Education level ($\beta = .027$, $p = .054$) is also positively correlated with informal participation.

Discussion

In recent years, older adults' media usage and social participation have been gaining increasing attention from both communication and social gerontology researchers

Table 3. Hierarchical linear regression of informal participation.

	Block 1			Block2			Block 3			Block 4		
	β	SE β	t-value	β	SE β	t-value	β	SE β	t-value	β	SE β	t-value
<i>Personal characteristics</i>												
Age	-0.064	-0.219***	-12.164	-0.058	-0.197***	-11.093	5.232	-0.196***	-11.271	-0.045	-0.154***	-8.739
Gender (female)	-0.156	-0.033**	-1.984	-0.085	-0.018*	-1.097	-0.058	-0.016*	-1.012	-0.004	-0.001	-0.056
Marital status	0.118	0.024*	1.414	-0.096	-0.019*	-1.134	-0.077	-0.027*	-1.604	-0.073	-0.015*	-0.887
Length of residence	0.001	0.014*	0.816	0.002	0.024*	1.455	-0.134	0.012*	0.728	0.002	0.017*	1.086
Mental health	-0.066	-0.012*	-0.756	-0.071	-0.013*	-0.833	0.001	-0.011*	-0.724	-0.042	-0.008	-0.509
Physical health	0.141	0.242***	13.741	0.131	0.225***	12.949	-0.06	0.209***	12.19	0.12	0.205***	12.174
<i>Socio-economic status</i>												
Household income				0.431	0.165***	9.852	0.352	0.135***	8.085	0.26	0.1***	5.941
Education level				0.069	0.079***	4.876	0.052	0.06***	3.755	0.027	0.031**	1.925
<i>Traditional media</i>												
TV							-0.124	-0.082***	-5.289	-0.103	-0.068***	-4.46
Community newsletter							0.771	0.131***	8.363	0.71	0.121***	7.808
Newspaper							0.136	0.067***	4.19	0.117	0.057***	3.653
<i>New media</i>												
Internet										0.276	0.176***	10.342
<i>Adjusted R²</i>		15.3%			18.7%			21.8%			24.2%	

* $p < .05$.** $p < .01$.*** $p < .001$.

(Boulianne, 2015; Tirado-Morueta, Hernando-Gómez, & Aguaded-Gomez, 2016). While most studies have focused on older adults' new media usage and the digital divide (Cuervo & Menéndez, 2006; Millward, 2003), this study also considers the parallel domain of older adults' traditional media usage and explores its association with social participation.

Responding to the first research question, the results corroborate previous research findings (Kim, 2002; Nimrod, 2017) by showing that traditional media usage also continues to predominate in Belgium's Flanders region. Older people are more inclined to use traditional media, such as TV, newspaper, and radio, rather than new communication modes. Among the study's respondents, 82.2% of older adults read newspapers at least weekly and 77.1% consult community newsletters in their later life.

This study contributes to existing research by overcoming a key shortcoming of prior studies, which define participation as an abstract concept that is difficult to measure (Arnstein, 1969). In an attempt to use an inclusive definition, this study groups social participation into formal and informal activities, based on whether an activity is initiated by an individual or a formally organised entity. A repertoire of older adults' social participation activities is thereby established. This study's respondents report engaging in one or more of fourteen informal social activities and being a member of one or more of twenty formally established associations. Over half of the surveyed older adults reported going for a walk or cycling at least weekly. Gardening is also a popular informal activity among them, with 53.4% engaging in it more than once a week. As regard formal participation, older adults in the Flanders region show most enthusiasm for older adult associations.

On the second research question, concerning the association between media usage and social participation among older adults, different relationship patterns have been discovered. In terms of informal participation, community newsletter and newspaper reading are shown to be positively correlated with informal participation, while TV watching hours is negatively associated with this participation category. Income and education level are two further important predictors, which is, to some extent, in line with the socio-economic model (Fowler, 2006).

Internet usage is positively linked with informal participation, which corroborates previous studies lauding the coming of the new media age and its beneficial effect on off-line social activities (Nimrod, 2014). This finding also accords with those of previous interventional studies in other European countries, such as Slovenia and Finland (Blažun et al., 2012). However, the findings of previous research might lack persuasive power due to their relatively small sample sizes, ranging from fewer than 10 people to a few hundred (Chen & Schulz, 2016). Nevertheless, this study complements previous research and reinforces the conclusion of new media usage's positive role in older adults' social participation by using big data analysis ($N = 36,282$) and taking into account control variables, such as subjects' personal characteristics and socio-economic status.

In terms of formal participation, community newsletter and newspaper reading each demonstrates a positive association, in accordance with the prior research finding that newspapers tend to highlight civic and community values, resulting in strengthened social connections (Jeffres et al., 2007). In this sense, as community newsletters typically focus more on local affairs (compared to newspapers), reading them might even be more beneficial for establishing shared community values and encouraging community-level participation. The positive association between length of residence in a community and formal participation supports previous studies' findings of a positive effect of residence

length and level of connectedness in the community on participation (Kang & Kwak, 2003; Kim & Ball-Rokeach, 2006).

TV viewing, on the other hand, demonstrates a negative association with formal participation, contradicting the claims of previous research that TV programs can increase people's social capital, and, in turn, positively influence their social participation, by portraying the realist world as a positive one in which viewers can often expect happy endings (Moy & Scheufele, 2000). A possible explanation is that this study only measures TV viewing in terms of watching duration. The content of TV programmes watched is also crucial: for example, use of local TV news has been found to promote community-level participation (Kang & Kwak, 2003). This inconsistency might also arise from the fact that, among older adults, TV viewing is found to be risk factor for both cognitive and physical impairment (Da Ronch et al., 2015; Rogerson et al., 2016; Smith & Hamer, 2014). The average daily viewing time of 3.79 hours reported in the survey might also reduce the amount of time that older people can otherwise allocate for social participation: previous research indicates that social participation and volunteering levels are inversely related to TV watching (Van Cauwenberg et al., 2014).

In this study, new media usage is positively correlated with formal social participation, confirming the previous research finding of Boulianne (2015). Whether the effect of this new media usage on formal social participation is transformative or causal needs to be investigated through longitudinal research. Nevertheless, while considerable resources and efforts have been dedicated to increasing older adults' digital inclusion, their ongoing preference for old/traditional media should not be ignored. Relevant local or national departments devoted to increasing older adults' social involvement should utilise the positive linkage between newspaper and community newsletter reading and social participation.

Overall, the research strongly reveals the associations between both new and old media literacy and social participation among society's ageing population. However, some limitations of the study should be noted. First, the independent variable of traditional media is not inclusive, as listening to the radio was omitted from the sources of acquiring information. This could be a potentially interesting factor to investigate, as US research has found radio exposure to increase people's political participation (de Rooij & Green, 2017). Second, the paper does not elucidate which kinds of Internet usage patterns – e.g., browsing social network websites, emailing family and friends, or using Skype with friends – positively influence older adults' social participation. To further explore the significant positive connections between community newsletter and newspaper reading and formal participation, questions probing what types of information in newspapers motivate higher levels of formal social participation should be posed in further research.

Conclusions

This work explores the correlations between two important aspects of today's ageing society: older adults' social participation and media usage. New media usage is already attracting increasing research attention (Boulianne, 2009; Choi & Shin, 2017; Ihm & Hsieh, 2015; Mosca & Quaranta, 2016; Quinn, 2016), as it is expected to provide new opportunities and platforms for facilitating social participation. However, the undeniable preference of older adults for traditional media forms (Nimrod, 2017) still persists.

Therefore, this study expands the existing research (Charness, 2004; Chen & Schulz, 2016; Juznic et al., 2006) by including older adults' usage of traditional media – specifically TV, newspapers, and community newsletters – and explores the relationship between each of them and social participation.

Concerning formal participation, both traditional and new media usage demonstrate outstanding associations. Traditional media usage of community newsletters shows a positive connection, while TV viewing is negatively correlated with formal participation. New media (Internet) usage also demonstrates a positive association with formal participation.

Additionally, among Flanders' older adults, both forms of media usage are also correlated with informal social participation. The association patterns are similar to those between media usage and formal social participation. TV watching hours is discovered to be negatively correlated with informal participation, while newspaper and community newsletter reading are positively correlated. Finally, the Internet also shows a positive correlation with informal participation.

It would be helpful for researchers and policy-makers not to forget the roles of newspapers and community newsletters in promoting older adults' social participation, especially as their beneficial roles have also been found in previous research (Arcoverde et al., 2008; Chen & Janke, 2012; Kanamori et al., 2014; Roh et al., 2015; Zhang & Zhang, 2015). Including older people in our ever-digitalised world and removing structural barriers to their social participation are key policy focuses on building an inclusive society. However, in the process of attaining these goals, it is also crucial to take advantage of older adults traditional media usage.

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