

Internet Use and Volunteering: Relationships and Differences Across Age and Applications

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Abstract The internet plays an important part in our daily lives. In this paper, we ask whether internet use is negatively related to civic life when focusing specifically on formal volunteering. Furthermore, we account for group-specific and activity-specific internet effects. Using a representative population sample of Switzerland, we show that internet use decreases the probability of undertaking voluntary work. This result is qualified in two respects: First, we find that the negative relationship between internet use and volunteering is more powerful among young people than older adults who are more likely to volunteer when they use the internet. Second, the use of social networking sites seems to mitigate the negative influence of internet use on volunteering.

Keywords Internet · Social media · Age · Volunteering · Voluntary organisations · Social networking sites

Introduction

The internet plays an important part in our daily lives and activities such as using social networking sites (SNS), online shopping or e-mail are routine activities for many citizens.¹ Nevertheless, in the wake of the emergence of digital media, several scholars have warned about the possible negative consequences for traditional social

interactions (DiMaggio et al. 2001; Nie and Erbring 2002). They argue that internet use leads to social isolation, as every minute spent on digital media cannot be spent with (offline) contacts such as family members, friends or club members. Initial studies seemed to confirm these concerns (Nie and Erbring 2002).

Many authors have since qualified these results and argued that internet use cannot be investigated as a single entity, but rather that different forms of internet use have different effects (Hooghe and Oser 2015; Quinn 2016). In this respect, more recent studies concluded that internet use in general and SNS in particular have a positive impact on social relations and participation both off- and online (Ellison et al. 2007; de Zúñiga et al. 2012; Pénard and Poussing 2010). Here, it is maintained that people who use the internet intensify their relationships and find new and maintain old relationships across distances (Ellison et al. 2007, 2011). Using the internet is therefore regarded as an interactive and not isolating activity.

It is here that this investigation begins. Many studies have investigated the effect of internet usage on interpersonal relationships (Ellison et al. 2007; Phua et al. 2017), participation (off- and online) and other societal and individual outcomes such as trust, life satisfaction or loneliness (Bouchillon 2014; Stepanikova et al. 2010; van Ingen and Matzat 2018). However, to date, little to no research has focused on volunteering as part of civic life. Therefore, we ask whether internet use is negatively related to civic life when focusing specifically on formal voluntary work. According to Bekkers (2008, p. 641), “volunteerism refers

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to a broad range of activities that benefit another person, group, or cause and that are carried out by individuals by their own choice and without pay”. A common distinction is made between formal and informal volunteering (Bekkers 2008). Formal voluntary work is carried out within an organisational context such as a club or association. Informal volunteering refers to activities such as helping and supporting friends, neighbours, acquaintances and relatives (outside of one’s own household) that take place directly between the people involved and outside of any formally organised structure. We focus our study on formal volunteering. We argue that formal volunteering is characterised by a commitment of time and energy as well as a regularity and expectedness of social exchange, making it more vulnerable to displacement by time spent on digital media (Wilson 2000, 2012). However, internet use does not affect everyone in the same way and thus we investigate whether the age of respondents moderates the relationship between internet use and formal volunteering. Moreover, social media use is hypothesised to have a positive effect on formal volunteering due to its communicative and interactive nature compared to solely entertaining internet applications.

Our analysis goes beyond the existing research in three respects. First, we focus on whether people are more or less likely to volunteer their time and energy to help others, thus scrutinising one important aspect of the social fabric, namely associational voluntary activity (Putnam 2000). Second, as digitalisation and internet use do not affect everyone in the same way, it is reasonable to believe that the effect internet use has on formal volunteering is also not uniform. Group-specific internet effects will therefore be modelled. Third, we distinguish the activities internet users perform by investigating whether social media users experience different internet effects than non-users.

Using a representative population sample of Switzerland, we show that internet use decreases the probability of undertaking voluntary work as there is a trade-off between being online (e.g. for shopping, chatting, searching for information or watching Netflix) and volunteering (offline). However, this result is qualified in two respects: First, we find that the negative relationship between internet use and volunteering is more powerful among young people than for older adults who are more likely to volunteer when they use the internet. Second, the use of SNS seems to mitigate the negative influence of internet use on volunteering.

The layout of the paper is as follows: Sect. 2 defines and conceptualises voluntary work before discussing the relationship between internet use and volunteering. Section 3 describes our data and methods, and Sect. 4 presents our empirical results. A discussion of the major findings concludes the paper.

Theory and Hypotheses

Volunteerism encompasses a vast array of quite disparate activities (Bekkers 2008; Smith 1981; Wilson 2000). Within the realm of the research on volunteering, one can distinguish between three accounts of what it really is (Rochester et al. 2010). While some scholars see volunteering as *unpaid help* within a non-profit organisation situated mainly in the fields of social welfare and care, others see it more as a kind of *activism* within a civil society perspective that is rooted in self-help and mutual aid to ameliorate quality of life and living conditions (Rochester et al. 2010). A third viewpoint regards volunteering as a form of *serious leisure* which can include different forms of casual and project-based volunteering, from cooking for churches to organising cultural or sports events (Rochester et al. 2010). In any case, volunteering is generally understood to mean a freely chosen activity in which time is spent to benefit another person, group or organisation without expectation of financial reward (Wilson 2000, p. 215). This can include formal activity undertaken through public, private and voluntary organisations as well as informal help/assistance. Despite being a free choice, volunteering in an organisation involves some form of obligation and moral coercion (Rochester et al. 2010). Moreover, formal volunteering demands some commitment of time and effort (Wilson 2000, p. 216). In this respect, Putnam (2001, p. 45), for example, notes that “people who give blood, give money, and have volunteered their time are people who are more connected”.

The amount of literature on the effects of internet use on social interactions has grown rapidly in recent years (Appel et al. 2014; Hooghe and Oser 2015). According to a dystopian view—mainly developed in the late 1990s and early 2000s—one could argue that internet use decreases social interactions offline. Putnam (2000, p. 246) found that electronic media, especially watching television and its electronic cousin, the internet, are equally responsible for the decline in social capital and social relations in the USA. As watching TV (or surfing the internet) is considered an individual and non-interactive activity, every minute that is spent on these electronic media displaces offline meetings with family and friends or voluntary work (Nie and Erbring 2002). In the aftermath, several studies confirmed this perspective and provided evidence that internet users have less social contact, volunteer less and feel lonelier and less satisfied with their lives. Nie and Erbring (2002), for example, found that people who spend more than ten hours on the internet report a 15 per cent decrease in social activities. Moreover, referring to panel time-diary data, Stepanikova et al. (2010) suggest that overall internet use increases feelings of loneliness and reduces life satisfaction

for respondents. In addition, information, which was previously provided through social relations, is now easily available from the internet, thus decreasing the informational role of offline social relationships. Moreover, internet applications promote a privatisation of the individual world in which people avoid further contact with the hostile outside world (Warner 2010). With respect to formal volunteering, we argue that this form of social connectedness is time intensive (Wilson 2000). More importantly, formal volunteering includes a significant commitment to the organisation through which the voluntary work is provided, especially when compared to other social interactions, such as meeting with friends to play cards. Although formal volunteering does not include coercion, obligations to commit play an important role (Rochester et al. 2010). Organisational rules lead to a certain rigidity that might prompt members to commit themselves to their tasks. This kind of institutionalisation does not apply to leisure or recreational activities as no mechanisms capable of imposing sanctions are established in such settings. For example, formal volunteering as a referee for a football tournament is not as flexible as informal gatherings with colleagues or spontaneous help with the groceries for a sick neighbour (Rochester et al. 2010). In this respect, when looking at amount of disposable time, formal volunteering and internet use have to be regarded as competitors. Leisure time is limited, and the more time people spend on the internet, the less time they have for time-intensive voluntary work, which involves significant personal investment and commitment. Therefore, we follow the arguments of Putnam (2000) and Nie and Erbring (2002) that internet use displaces social interactions offline. Our first hypothesis can be stated as follows:

Hypothesis 1 The more time people spend on the internet, the less likely they are undertaking formal voluntary work.

Despite the hypothesised negative effect, it could be assumed that internet use does not uniformly affect the volunteering of various social groups. Research on voluntary work, for example, has identified age as an important driver (Musick and Wilson 2008; Wilson 2000) People are more likely to volunteer as they get older. There is clear peak of volunteering rates in middle age (Wilson 2012). Yet, at a certain age the likelihood of volunteering decreases as older people may have health problems or less contact with other volunteers. On the other hand, people who volunteered before retirement are more likely to continue to do so (Wilson 2012).² Furthermore, many older

adults use volunteering as a substitute for paid employment after retirement (Hank and Stuck 2008; Mutchler et al. 2003). Overall, older people still commit time and energy in volunteerism especially in religious organisations, sometimes even more so than younger volunteers (Morrow-Howell 2010; Rochester et al. 2010; Tang et al. 2010).

In addition, recent research has shown that age groups differ with regard to internet use. Specifically, among the younger generation, a huge amount of time is spent on various forms of web-based activities, and there is some concern that this time is no longer available for social activities (Boulianne 2009, 2015; Sinkkonen et al. 2014). Older adults are particularly disadvantaged when it comes to internet use (Friemel 2016; Lee et al. 2011). “New” technologies are often categorised within a narrative of disempowerment for older people as they lack the skills to use them for good (Hill et al. 2015). However, the internet may also provide benefits for different age groups and can be regarded as a tool for empowerment (Hill et al. 2015). Older people using the internet could overcome coordination problems for organising voluntary work (Mukherjee 2011). According to Wagner et al. (2010), despite mostly using the internet for the same reasons as younger people, older adults put specific emphasis on using the internet for social support and communication (Erickson and Johnson 2011; Thayer and Ray 2006). Furthermore, internet use is increasingly seen as a tool to mobilise and re-connect older people with their social surroundings and contacts by providing health information, learning opportunities and communication infrastructure (Selwyn et al. 2003). Recently, Ackermann and Manatschal (2018) show that internet use can mobilise people who are normally less likely to volunteer. Though this argument is mainly focussed on younger adults, the benefits of mobilisation of the internet are not restricted to digital natives.

Organisations that provide their members with the communicative infrastructure of the internet could mobilise older members more easily if they also use the internet. Although the merits of internet communication and mobilisation are not restricted to older adults, younger people are less likely to do voluntary work and are mainly motivated by egocentric reasons such as positive externalities for their curriculum vitae (Freitag et al. 2016). In contrast, older people are often intrinsically motivated (Freitag et al. 2016). Their motivation is driven by the desire to help others and is more internalised (Freitag et al. 2016; Hank and Stuck 2008). Nevertheless, older people also see reciprocity as a motivational factor. For one, they might want to give back to others, but also hope to receive support in case they need it in the future (Ehlers et al. 2011; Manatschal and Freitag 2014). Therefore, we argue that the internet is used as an instrument to overcome informational and mobilisation barriers for older adults to volunteer

² A report on elderly volunteering in Europe indicates that the potential of older people has to be acknowledged to encourage them to volunteer (Ehlers et al. 2011).

(Ehlers et al. 2011; Mukherjee 2011). We assume that the effect of internet use on undertaking voluntary work varies with the age of the individual. Hypothesis 2 is thus stated as follows:

Hypothesis 2 With increasing age, people who use the internet are more likely to volunteer.

The internet offers many different forms of applications that also differ with regard to their potential for social interaction. While watching Netflix resembles classic television, SNS offer the potential for interaction and communication with others to maintain or develop relationships. Therefore, in order to assess the impact of internet use on volunteering, it is important to evaluate the precise activity respondents perform. While some internet activities are associated with social outcomes, others are not (Quinn 2016, p. 587). Since for a vast majority of individuals the internet is mainly a source of entertainment, it is assumed that this kind of social media use will not encourage volunteering (Hooghe and Oser 2015, p. 1179). However, as much as the internet fosters communication between individuals, it should facilitate volunteering, as people are better connected and more easily mobilised. In this utopian view, it is argued that TV and many forms of internet use differ in a fundamental way: While watching TV is indeed an activity without interaction with others, the internet and especially SNS and chats offer the possibility for interaction (Hooghe and Oser 2015; Pénard and Poussing 2010). This assumed interaction is crucial as it leads to the conclusion that internet use is no longer an isolating but an interactive activity that provides benefits in terms of information embedded in these online relationships (Amichai-Hamburger and Hayat 2011; Boulianne 2015; Ellison et al. 2007; de Zúñiga et al. 2017). In this respect, SNS such as Facebook not only seem to foster online relationships but also offline contact, transforming latent into weak or even strong ties (Ellison et al. 2007, 2011). Phua et al. (2017) investigated different social networking platforms and found that Twitter users have on average higher bridging social capital, while Snapchat users have more bonding social capital. Altogether, both platforms are positively linked to social interactions and relationships. The internet and SNS in particular can be used to obtain help from others but also to provide help for others, on- and offline. Furthermore, voluntary work can be provided on these platforms more efficiently. Communication and information acquisition via the internet is easier and faster than via face-to-face interactions, thus reducing opportunity costs. Similarly, people or organisations who need volunteers can look for them on social media platforms which can be an efficient mobilisation tool (Hwang and Kim 2015; Tufekci and Wilson 2012). Therefore, we argue that internet use is not an isolating but rather an

interactive activity, allowing for faster communication and easier exchange of information. This, in turn, can also lead to better mobilisation and organisation of voluntary work. Consequently, our third hypothesis can be stated as follows:

Hypothesis 3 The negative relationship between internet use and volunteering diminishes when people use the internet for interactive activities.

Data and Method

In the remainder of the article, the relationships presented above will be empirically tested. The individual level data stem from the 18th wave of the Swiss Household Panel (SHP) 2016 (Tillmann et al. 2016). We use a representative population sample, allowing us to draw broader conclusions than the studies based on convenience samples. Those often include students as the sample population as they are more easily accessible. The SHP includes around 14,000 respondents from the German-, French- and Italian-speaking regions of Switzerland. Individuals were randomly chosen and interviewed with mixed methods. We excluded respondents with missing values, especially regarding certain questions on internet use as they only appear in this wave. Our final sample contains 7770 respondents.³ Unfortunately, the question on internet use reduces the sample as all respondents who do not use the internet are excluded and there are some respondents who are not able to give an accurate estimate of their internet use. Furthermore, splitting the sample into SNS users and non-users naturally reduces our sample size. However, our samples at hand are still representative when compared to the full sample.

The dependent variable, *formal volunteering*, is captured with the following question: “Do you have honorary or voluntary activities within an association, an organisation or an institution?” The possible responses were “yes” (0) or “no” (1). Approximately 37 per cent of respondents reported that they volunteer. Our sample captures a mixture of the different perspectives on volunteering and thus accounts for the complexity and variation of volunteering experiences in the literature (Rochester et al. 2010, p. 15). However, it has to be acknowledged that our sample does not allow us to disentangle the different kinds of volunteering referring to the three perspectives (unpaid work, activism and serious leisure) presented above.⁴ Our main

³ As internet measures were only included in the 18th wave of the SHP, we do not have panel data but only a cross-sectional sample.

⁴ It has to be noted that the questionnaire does not differentiate between offline and online volunteering. We therefore cannot make any inferences about online volunteering (Ackermann and Manatschal 2018).

independent variable is operationalised with two indicators regarding the frequency of internet use. Regular internet use was recorded by asking respondents: “How frequently do you practise the following activities? (internet)”. We created a dummy with a value of 1 if an individual used the internet “daily or almost daily” (otherwise = 0). In addition, we estimate internet use with the question “How many hours or minutes daily do you usually spend online? The self-reported daily internet use should give a more precise measure of internet use. Membership of a SNS is measured by the following question: “Do you have an account on a social network site such as Facebook, Twitter, MySpace or LinkedIn?”.

We include a number of variables discussed in the literature to control for other potential determinants of volunteering and to address the non-random exposure to internet use. Education and income are included as socioeconomic status is said to positively influence the probability of doing voluntary work. Duration of residency is included as the longer people live at the same location, the more integrated they are in the community and the more likely they are to volunteer (Rotolo et al. 2010). The age of the respondent is included as research shows a close relationship between the life phase (age) and volunteering (Musick and Wilson 2008). Gender of the respondent is also included, as well as Swiss citizenship and language as research shows that both are influential determinants for volunteering (in Switzerland) (Freitag and Ackermann 2016).

As our dependent variable is binary, we are not able to estimate linear regression models that are based on ordinary least squares (OLS) estimations as important assumptions are violated (Long and Freese 2014). Estimations based on OLS would produce biased estimates and thus lead to problematic inferences. To account for our data structure, we use logistic regression models, as they are well suited to our data. Our individual observations are nested within households and are thus not independent from each other. To ensure a correct estimation of the standard errors, we use standard errors clustered around the households to account for the potential dependence of our observations.

Empirical Analysis

Within this section, we analyse the effect of internet use on formal volunteering. Table 1 displays the results of the logistic regression models. We estimated two different models. We want to highlight several important characteristics of the results. Primarily, daily internet use decreases the likelihood of volunteering within an organisation or association and the effect is significant (model

Table 1 Logistic regression on formal voluntary work for daily internet use and internet use in minutes and their interaction with age

DV: formal voluntary work	Model 1a	Model 1b
Daily internet use	– 0.774*** (0.174)	–
Daily internet use × age	0.017*** (0.003)	–
Internet use per day in minutes	–	– 0.014* (0.005)
Internet use per day in minutes × age	–	0.000~ (0.000)
Age	0.061*** (0.009)	0.051*** (0.014)
Age (squared)	– 0.001*** (0.000)	– 0.001*** (0.000)
Years of education	0.056*** (0.009)	0.06*** (0.012)
Personal income (logged)	– 0.115*** (0.029)	– 0.162*** (0.044)
Male	0.314*** (0.05)	0.325*** (0.073)
German-speaking	0.543*** (0.063)	0.517*** (0.089)
Italian-speaking	0.148 (0.157)	0.318 (0.232)
Swiss citizen	0.234** (0.086)	0.217~ (0.129)
Time lived at current residence	0.01*** (0.002)	0.013*** (0.003)
Constant	– 1.824*** (0.337)	– 1.165* (0.493)
Observations	7770	3801

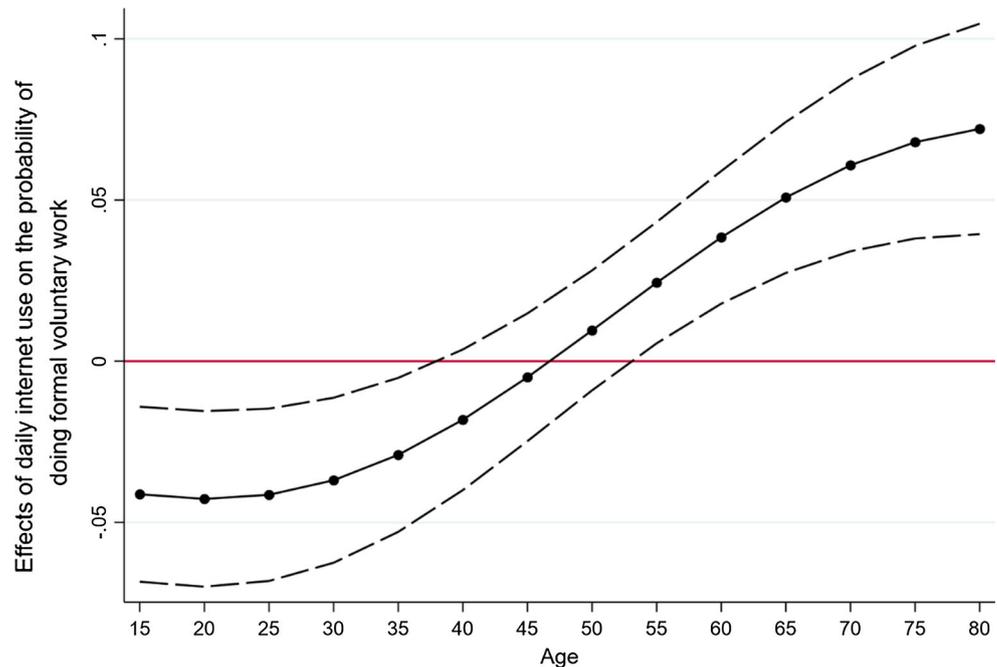
Clustered standard errors in parentheses: ~ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Reference category (RC) for daily internet use: no daily internet use; RC for male: female; RC for German- and Italian-speaking: French-speaking; RC for Swiss citizen: non-Swiss citizen

The bold values highlight the significance of the coefficients

1a). In addition, including a measure on the minutes of internet use per day shows that the more time people spend on the internet, the less likely they are to undertake voluntary work (model 1b). According to these results, internet use appears to have a decreasing effect on the willingness to help other people in an organisation. However, internet use does not uniformly affect the population’s civic engagement. Testing hypothesis 2 and the group-specific effect with regard to the age of the respondent, we include an interaction between our internet measures and age. With regard to both models, the interaction terms between daily internet use and age are positive and

Fig. 1 Conditional marginal effect of daily internet use on formal voluntary work for varying age of respondents



significant. This supports our assumption that internet use is positively related to voluntary work with increasing age. Figures 1 and 2 illustrate the conditional marginal effect of daily internet use on the probability of volunteering depending on age. The confidence intervals illustrate the conditions under which internet use influences volunteering significantly.

Regarding Fig. 1, respondents younger than 38 years who use the internet on a daily basis are less likely to volunteer within an institutionalised context. However, people older than 55 years who use the internet daily are significantly more likely to volunteer. This indicates that an advanced age may cancel out the negative effect of internet use. Although the effect is rather modest, Fig. 2 supports the assumptions of age moderating the relationship between internet use (in minutes) and formal volunteering in this respect.⁵

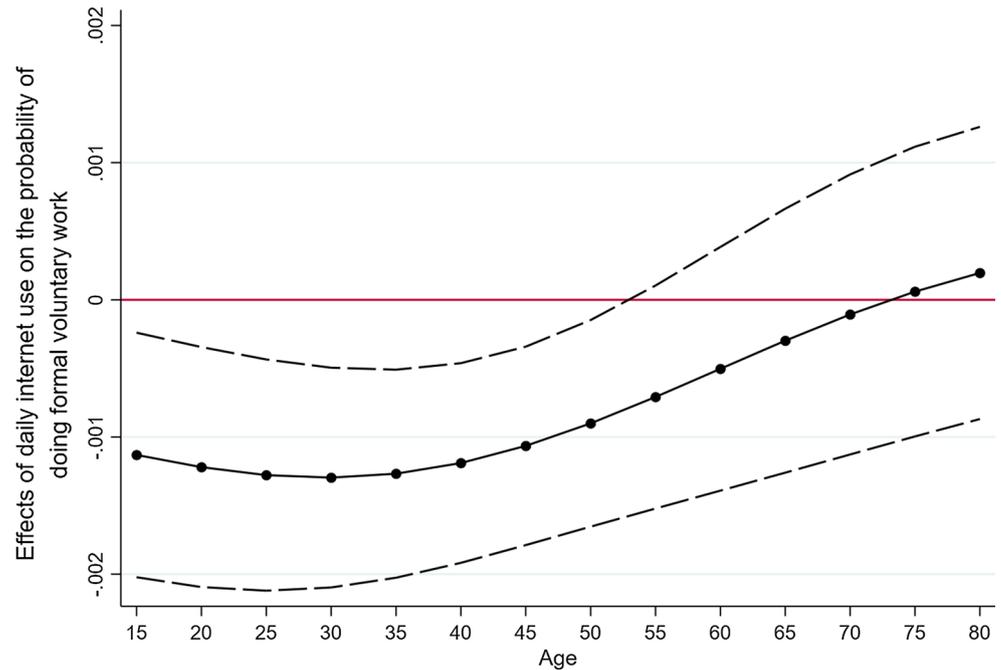
Turning to our control variables, the results are mainly in line with the literature (Gundelach et al. 2010; Low et al. 2007; Smith 1994; Wilson 2000, 2012). People who are better educated are more likely to volunteer. Personal income does exhibit a negative effect, which is somewhat surprising. Men are more likely to volunteer than women. Compared to French-speaking respondents, German-speaking respondents are more likely to volunteer, while Italian-speaking respondents are less likely. Swiss citizens are more likely to volunteer than immigrants. Lastly, people who live longer at their current residence have a

higher probability of volunteering (Rotolo et al. 2010). An interesting result emerges in relation to the age of respondents. Older people are more likely to volunteer than younger people, yet this relationship is not linear but rather follows an inverted u-shaped function and people in the oldest segment are less likely to volunteer.

In hypothesis 3, we suggested that the specific kind of internet activities matter for the effect on formal volunteering. Therefore, the impact of internet use should be contingent upon the specific activity that an individual executes online. In this vein, recent research suggests that SNS play a special role when it comes to the social implications of the internet (Ellison et al. 2007; Phua et al. 2017). To account for the special role of SNS, we re-estimated models 1a and 1b for members and non-members of SNS separately. Table 2 presents the results of the models 2a–d. Model 2a displays the influence of daily internet use (and its interaction with age) for people who are *not* a member of a SNS such as Facebook, Twitter or LinkedIn. The estimations reveal that people who use the internet daily and are not a member of a SNS are less likely to volunteer. Further, this effect varies with age, i.e. the effect of this form of daily internet use is negative for younger and positive for older respondents. Model 2b shows the same model only for people who *are* a member of a SNS. Even though the coefficients point in the same direction as in the previous model, they are statistically insignificant. Seemingly, people who are a member of a SNS and use the internet mostly in an interactive way do not experience a significant negative effect of more frequent internet use. This is supported by models 2c and 2d. Respondents who

⁵ Interaction with education, gender, nationality and duration of residence do not show significant results, neither for SNS sample splits nor for the full sample.

Fig. 2 Conditional marginal effect of internet use in minutes on formal voluntary work for varying age of respondents



are *not* a member of a SNS show a lower probability to volunteer in organisations depending on their age. Again, the coefficients for members are insignificant. It seems that the communicative and interactive nature of these platforms helps to mitigate the negative effects of internet use on the willingness to volunteer. This finding supports the special role that many researchers attribute to these platforms when it comes to the social implications of new digital media. To sum up: for young people who do not use social internet platforms but rather use the internet for entertainment purposes, high web-time is linked to a limited willingness to volunteer.

Discussion

In this study, we advanced the literature by investigating the effects of internet use on formal voluntary work, which has been mainly neglected in the literature. Following the argument of displacement, we argued that internet use should have a negative effect on volunteering. Moreover, due to the regularity and commitment required, volunteerism is prone to displacement by internet activities (Nie and Erbring 2002). Using a representative population sample of Switzerland, our results indicate that internet use, indeed, seems to have a negative influence on voluntary work. Yet the link between internet use and volunteering varies with the age of respondents. While younger adults are less likely to volunteer the more they use the internet, older adults are more likely to volunteer if they use the internet. It seems that the internet is an effective

tool for providing contacts and exchanging information to a committed age group. Older adults are intrinsically motivated to volunteer, and the internet helps them to overcome barriers such as decreased social contact or limited mobility. Moreover, older adults often hope for reciprocity, either because they want to give back for help they received or because they hope to receive help in the future when they need it (Ehlers et al. 2011). Using the internet could overcome barriers that are not rooted in the motivation to volunteer but rather in the physical ability. In this vein, “a targeted use of technology (telephone, internet) expands the fields of activity for older volunteers with poor health” (Ehlers et al. 2011, p. 47). While younger adults might regard internet activities as an alternative to volunteering, older adults seem to use the internet to overcome obstacles that prevent them from volunteering. In other words: in relation to formal volunteering, the new technology isolates the young while connecting older adults. In addition, we only find a negative relationship between internet use and volunteering for those respondents who are not members of a SNS such as Facebook, Twitter or LinkedIn. Members of these mostly interactive internet platforms do not experience a negative internet effect. This relates to the importance and idiosyncrasy of SNS that has been prominent in the literature (Ellison et al. 2007, 2011; Phua et al. 2017). Thus, different forms of internet use have different effects on social interactions.

Though our results seem to contradict many contributions in the recent literature, this can be explained by the focus of our investigation. We evaluated voluntary work as it has been mainly neglected in the literature on the effects

Table 2 Logistic regression on voluntary work for daily internet use and internet use in minutes and their interaction with age for members and non-members of SNS

DV: formal voluntary work	Model 2a	Model 2b	Model 2c	Model 2d
Daily internet use	– 0.919** (0.311)	– 0.397 (0.253)	–	–
Daily internet use × age	0.016** (0.005)	0.007 (0.005)	–	–
Internet use per day in minutes	–	–	– 0.032* (0.014)	– 0.009 (0.006)
Internet use per day in minutes × age	–	–	0.001* (0.000)	0.000 (0.000)
Age	0.055*** (0.016)	0.037* (0.015)	0.058* (0.023)	0.039~ (0.021)
Age (squared)	– 0.001*** (0.000)	– 0.000* (0.000)	– 0.001*** (0.000)	– 0.000~ (0.000)
Years of education	0.062*** (0.014)	0.053*** (0.012)	0.078*** (0.018)	0.043* (0.017)
Personal income (logged)	– 0.153** (0.048)	– 0.05 (0.04)	– 0.208** (0.064)	– 0.113~ (0.062)
Male	0.227** (0.082)	0.356*** (0.0712)	0.293** (0.104)	0.371*** (0.105)
German-speaking	0.563*** (0.1)	0.528*** (0.085)	0.545*** (0.125)	0.483*** (0.125)
Italian-speaking	0.166 (0.271)	0.179 (0.211)	0.234 (0.321)	0.432 (0.322)
Swiss citizen	0.210 (0.138)	0.280* (0.123)	0.117 (0.179)	0.315~ (0.184)
Time lived at current residence	0.013*** (0.003)	0.012*** (0.003)	0.013*** (0.003)	0.014*** (0.004)
Constant	– 1.325* (0.586)	– 2.264*** (0.453)	– 0.833 (0.831)	– 1.361* (0.662)
Sample	No Member	SNS Member	No Member	SNS Member
Observations	3056	3635	2003	1796

Clustered standard errors in parentheses: ~ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Reference category (RC) for daily internet use: no daily internet use; RC for male: female; RC for German- and Italian-speaking: French-speaking; RC for Swiss citizen: non-Swiss citizen

The bold values highlight the significance of the coefficients

of internet use. Voluntary work is more vulnerable to displacement as it is characterised by high levels of commitment and personal investment as well as regularity of social interactions. Volunteering within an association also requires expectedness and rigidity with regard to commitment and involvement. In addition, volunteering may lead to potential benefits in the future. Thus, it is conceivable that for young people especially, these not immediately perceptible pay-offs allow them to switch to online activities.

Our research has pointed out the importance of group-specific aspects investigating the relationship between internet use and social relationships, in our case voluntary work. Internet use has different effects on people of different ages, and thus future research should account for

these potential influences (Ackermann and Manatschal 2018). This seems even more important as many studies thus far use student samples, which do not allow for the accounting of age effects that our study has uncovered. Therefore, it seems advisable to investigate whether alternative socio-demographic factors influence the relationship between internet use and social relations. Our findings regarding different effects for (non)-membership on internet platforms and different internet user habits should be investigated. It is important to know whether people see the internet and its different applications as an extension of TV, i.e. mainly as a source of entertainment and information, or whether they spend most of their internet time communicating and interacting with others (Best and Krueger 2006). Future research should also go beyond our

approach to divide the sample and investigate the membership of SNS in more detail. It could possibly illuminate the purpose that users see in these platforms (see Ellison et al. 2011). Therefore, the purpose of internet and social media use has to be investigated. As with general internet activity, people use SNS for different purposes and these are assumed to have different effects on social relationships. Increasingly, people use mobile phones for their internet activity. Our data does not allow us to investigate the difference between mobile phone internet use and computer-based internet use. However, it might be interesting for future research to distinguish between both forms as they could have different implications for social interactions, with computer internet use being more isolating than mobile phone internet use. Furthermore, different forms of volunteering have to be acknowledged, especially as online volunteering is seen as a new form of civic engagement (Ackermann and Manatschal 2018). While younger adults may not volunteer offline, they could do so online, therefore displacing offline interactions with online interactions. Moreover, our research question and data do not distinguish between different forms of voluntary work. Consequently, we are not able to draw conclusions on how internet use affects different forms and perspectives of volunteering as put forward by Rochester et al. (2010). Therefore, it remains unclear whether our relationships hold for all three types of volunteering (unpaid work, activism, serious leisure). Future research should tap into this line and investigate whether different forms of volunteering are affected differently by internet use.

Our conclusion begs the question of the precise causal relationship between internet use and civic engagement. Some claim that internet use stimulates volunteering, while others argue that social participation enlarges the networks, thus promoting the use of new technologies for communication. It is therefore difficult to disentangle the possible causal directions. Because of the cross-sectional nature of our data, it remains impossible to evaluate the causal relationships between variables. A stricter test of causal relationships requires longitudinal data, yet these data are not yet available for our research question. It has to be noted, however, that our aim was not to make causal

claims, but to uncover some interesting relationships that might be causal in nature and have to be investigated further. To date, little evidence is available to allow cross-country comparisons. We focus only on Switzerland, and it is unclear how our findings relate to other nations. Thus, the general problem of how to comparatively approach the present findings beyond the Swiss case remains. According to the late Stein Rokkan (1970), however, Switzerland can be thought of as a microcosm of Europe because of its cultural, linguistic, religious and regional diversity. Rokkan recommended that anyone wishing to study the dynamics of European politics should immerse themselves in the study of Switzerland. In addition, Switzerland has been described as being composed of three groups that “stand with their backs to each other” Steiner (2001, p. 145). Conclusions drawn from empirical analyses in Switzerland are likely to be valid for other countries or cultural contexts in Europe as well.

Although we control for selection on observable characteristics, another problem concerns the use of different samples as well as our age effect with regard to a possible selection bias. The positive effect of internet use for older respondents might stem from some respondents who are highly educated, financially well off and thus in general more likely to use the internet and to volunteer (Wagner et al. 2010). The same may be true for the effects of SNS, as the positive effects are possibly a result of those individuals who are more likely to volunteer anyway but are also a member of a SNS. Nevertheless, in view of the increasing ageing of society and the mounting relevance of the internet, the results of this study can give us cause for hope.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Appendix: Variables, Operationalisation, Descriptive Statistics and Source

See Table 3.

Table 3 Summary statistics for all variables

	Operationalisation	Mean	Std. dev.	Min	Max
Formal voluntary work	“Do you have honorary or voluntary activities within an association, an organisation or an institution?”	.38	.49	0	1
Daily internet use	How frequently do you practise the following activities (internet)? Every day, at least once a week, at least once a month, less than once a month or never.	.58	.49	0	1
Internet use in minutes	How many hours or minutes daily do you usually spend online?	24.59	17.73	0	210
Membership of SNS	Do you have an account on a social network site such as Facebook, Twitter, MySpace or LinkedIn?	.55	.5	0	1
Years of education	Years of education based on ISCED classification	11.84	4.92	0	21
Personal income	Yearly total net personal income in Swiss Francs	62,031	55,657	100	1,504,000
Gender	Sex of respondent: dichotomous variable: 0 = female; 1 = male	.48	.5	0	1
Swiss citizen	Nationality of respondent: dichotomous variable: 0 = Foreign; 1 = Swiss	.9	.30	0	1
Age	Age of respondent in year of interview	43.64	23.22	0	101
Language (categorical)	Language of the interview	1.79	.52	1	3
French-speaking (1)		.26	.44		
German-speaking (2)		.68	.47		
Italian-speaking (3)		.05	.22		
Time lived at current place	Constructed: 2017—since when do you live at (the name of current place of residence is displayed)?	23.49	17.78	0	97
Social networking site	Which SNS do you use most?	1.95	1.96	1	6
Facebook (1)		.77	.42		
LinkedIn (2)		.08	.28		
Google + (3)		.005	.07		
Twitter (4)		.02	.14		
Xing (5)		.01	.12		
Other (6)		.1	.3		

Source: 18th wave of the Swiss Household Panel (SHP) 2016; Tillmann et al. (2016)

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