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ARTICLE *in* INFORMATION COMMUNICATION AND SOCIETY · JANUARY 2015

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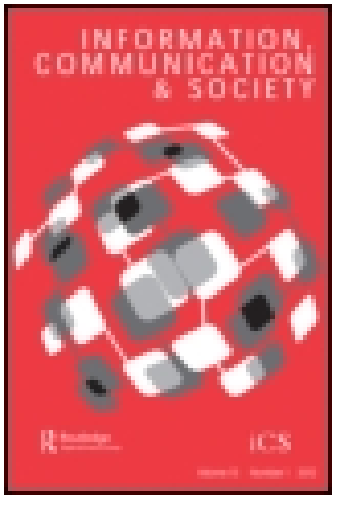

Information, Communication & Society
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rics20

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Published online: 19 Jan 2015.

Information, Communication & Society, 2015
http://dx.doi.org/10.1080/1369118X.2014.991343

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(*Received 23 April 2014; accepted 12 November 2014*)

Sociodemographic variables are held to impact Internet users' willingness and ability to productively use online media. This effect can create a 'participation divide' between distinct user groups. Recently, studies have enhanced our understanding of the participation divide by differentiating types of online content creation. They found that sociodemographics may only affect specific forms of online participation. We suggest that social cognitive theory (SCT) helps explain why and how sociodemographic variables influence different forms of online participation. Based on SCT, we analyze the mediating effect of two cognitive constructs, self-efficacy and privacy concerns, on different types of online content creation. We conduct a survey among German Internet users and apply structural equation modeling to compare three distinct theoretical models. We find that considering the mediating effects of cognitive constructs, based on SCT, improves our understanding of which sociodemographic variables affect which type of online content creation – and why.

Keywords: online participation; participation divide; social cognitive theory; content creation; social media; digital divide

1. Introduction

To an unprecedented degree, social media have made it easy for lay users to publish their musings and opinions and make them accessible to a wide audience (Blank & Reisdorf, 2012; Correa, 2010; Hargittai & Walejko, 2008; Schradie, 2011). Based on personal profiles, users can quickly connect to like-minded citizens and become members of lively communities of interest (Gil de Zúñiga, Veenstra, Vraga, & Shah, 2010; Woodly, 2007; Zhang, Johnson, Seltzer, & Bichard, 2010). These new media affordances have triggered significant research interest in what is called 'online participation': Users employing new media to create and share content with interested audiences in order to affect their social environment.

Online content creation and participatory Internet uses are held to generate social capital, providing both group- and individual-level benefits (Hargittai & Walejko, 2008; Shah, Kwak, & Holbert, 2001). Across a number of civic domains, online participation allows for the identification and coordination of communities of interest, fostering self-help and mutual support and facilitating agenda-setting efforts (Epstein, Rosenberg, Grant, & Hemenway, 2002; Livingstone & Bober, 2004; Lutz, Hoffmann, & Meckel, 2014; Sandaunet, 2008). Online participation has

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been shown to be closely associated with offline engagement – a relationship most frequently confirmed in the context of political participation (Boulianne, 2009; Towner & Dulio, 2011; Vitak et al., 2011).

Yet, studies have consistently shown that not all users benefit equally from the participatory opportunities provided by new media. Online participation and content creation require a more extensive skill set than mere consumptive Internet uses (Hargittai, 2002; Van Dijk, 2005). Digital divide research has shown that sociodemographics differentiate participatory web uses (Hargittai, 2002, 2010; Hargittai & Hinnant, 2008; Van Deursen & Van Dijk, 2011; Van Dijk, 2005; Zillien & Hargittai, 2009). Accordingly, research was quick to expand the notion of a 'digital divide' to include the socioeconomic stratification of online participation, that is, the 'participation divide' (Blank, 2013a; Blank & Reisdorf, 2012; Correa, 2010; Hargittai & Walejko, 2008; Schradie, 2011).

Recently, conflicting findings have triggered a controversy on the scope and prevalence of the 'participation divide': In a study of British Internet users, Blank (2013a) differentiated three forms of online content creation. He found that sociodemographic variables such as age, gender, or education do not necessarily affect online participation across all domains, but rather only select forms, political participation most notably. In a response, Schradie (2013) pointed to the persistence of large social inequalities when it comes to online content creation. Both authors do not disagree on the existence of a participation divide, but rather on its form and scope – which ultimately also affect evaluations of social effects.

In this study, we will turn to social cognitive theory (SCT) to provide a more nuanced understanding of why sociodemographic variables might affect online content creation – and thereby contribute to the ongoing debate on the scope of a participation divide. SCT suggests that environmental influences shape cognitive predispositions which, in turn, affect behavior (Bandura, 1977, 1986). We argue that sociodemographic variables indicate environmental influences, such as training or use experience, which shape cognitive factors driving use behavior (Frenkel, 1990; Wei, Teo, Chan, & Tan, 2011). Accordingly, cognitive factors mediate the effect of sociodemographic variables on online content creation (cf. Correa, 2010; Hargittai & Walejko, 2008, Schradie, 2013).

We will focus our analysis on the mediating role of two cognitive factors in particular: self-efficacy and privacy concerns. Both have been shown in previous studies to significantly affect the use of information and communications technology (ICT) (Compeau, Higgins, & Huff, 1999; Gefen & Straub, 1997; Venkatesh & Bala, 2008) and have been applied in digital divide research (Hsieh, Rai, & Keil, 2011). Taking the mediating role of these cognitive factors into account will allow us to better explain seemingly conflicting findings on the scope of the participation divide.

We base our analysis on a large-scale online survey conducted in Germany ($N = 1488$). Our study will apply the differentiation of online content creation proposed by Blank (2013a). In order to analyze the effect of the cognitive variables on online content creation, we compare three alternative models conducting structural equation modeling (SEM): a direct, a fully mediated, and a partially mediated model. We will show that considering the mediating role of self-efficacy and privacy concerns not only increases the explanatory power of the analysis, but it also allows for a differentiation of direct and indirect effects of sociodemographic variables on content creation, and thereby a deeper understanding of the participation divide.

2. Theoretical background

2.1. *Online content creation and participation*

While an increasing number of studies address antecedents, forms, and outcomes of online participation, the concept itself remains somewhat ill-defined (Rice & Fuller, 2013). Empirical

investigations, especially of political participation, have subsumed vastly different activities under the umbrella of online participation, such as donating money, signing e-petitions, writing e-mails to a government representative, or sharing photos (Best & Krueger, 2005; Calenda & Meijer, 2009; Di Gennaro & Dutton, 2006; Hoffman, 2012; Rojas & Puig-i-Abril, 2009; Ward, Gibson, & Lusoli, 2003).

A number of authors agree that the creation of online content constitutes a key element of online participation (Jenkins, 2006; Schradie, 2011). In fact, some consider online participation synonymous with content creation (Hargittai & Walejko, 2008). Others point out that the concept of online participation goes beyond content creation, since content creation may be strictly unidirectional in nature and address an unknown, dispersed audience. Online participation, instead, is commonly more focused on specific reference groups and more social and interactive in nature as its purpose is to engage in a public discourse and affect the social environment (Gil de Zuñiga et al., 2010; Park & Perry, 2008; Schradie, 2011).

A recent literature review of online participation, accordingly, has defined the concept as 'the creation and sharing of content on the Internet addressed at a specific audience and driven by a social purpose' (Lutz et al., 2014). Such a broad understanding of online participation is not limited to the political domain, but encompasses other civic spheres (Verba, Schlozman, & Brady, 1995), as in the case of cultural, business, or educational participation (Lutz et al., 2014). Also, online participation may lead to or be closely associated with participation in the offline world. For example, Moy, Manosevitch, Stamm, and Dunsmore (2005) found that interactive and community uses of the Internet are positively associated with offline civic engagement (cf. Dutta-Bergman, 2006).

Studies of online participation agree that participation can be distinguished from more passive or consumptive Internet uses (Hoffman, 2012). Yet, consumptive Internet uses may facilitate online participation: Bakker and de Vreese (2011) found that using the Internet for information purposes, such as news consumption, is positively associated with both online and offline participation (cf. Pasek, More, & Romer, 2009; Shah et al., 2001; Wang, 2007).

In summary, there exists a significant overlap between the concepts of online participation and content creation, in some cases rendering both indistinguishable (Schradie, 2011). Online participation is considered more resource intensive than other, more consumptive Internet uses, requiring a more extensive skill set (Hargittai, 2002; Van Dijk, 2005). It can also be considered a more capital-enhancing use of the medium (Hargittai & Walejko, 2008). This may be one reason why research interest has been migrating from the 'digital divide' to the so-called participation divide.

2.2. *From the digital divide to the participation divide*

Digital divide research suggests that offline inequalities are reproduced online. More specifically, socioeconomic differences tend to be replicated online, with socioeconomic disadvantages limiting user access to Internet and benefits from Internet use. Antecedents frequently explored in the digital divide literature include education, income, gender, and age. While early studies of the digital divide tended to focus on access to the Internet or the extent and frequency of Internet use, more recent studies began to differentiate forms of Internet use as well as the associated skill requirements:

Socioeconomic status (SES), as measured by income, occupational status, social background, or education, is a key construct in the digital divide literature. Those with high SES are held to more easily take advantage of the Internet, because they command the necessary resources (material, human, and social capital) allowing better *access* to modern ICTs (DiMaggio, Hargittai, Celeste, & Shafer, 2003; Van Dijk, 2006) – for example, broadband Internet connection,

smartphones, or tablets. They also possess the necessary *skills* to use new media (Gui & Argentin, 2011; Hargittai, 2002, 2010; Hargittai & Shafer, 2006; Van Deursen & Van Dijk, 2011).

Hargittai and Walejko (2008) found that higher social status is associated with more expressive Internet uses. Compared with low SES users, those with high SES are expected to use the Internet in more capital-enhancing ways (Hargittai & Hinnant, 2008; Zillien & Hargittai, 2009). Education and income have both been shown to positively impact online participation (Gibson, Lusoli, & Ward, 2005). Even among youth, male, higher status, and better educated citizens are more engaged online than their female, lower status, and less educated counterparts (Livingstone, Bober, & Helsper, 2005).

As for *gender*, although differences in access to the Internet have almost leveled out in many Western countries, inequalities remain (Helsper, 2010; Li & Kirkup, 2007; Ono & Zavodny, 2003). Online games or sexual content, for example, have been shown to be male-dominated uses, while online health information seems to be more popular among female users (Helsper, 2010: pp. 356–357). Studies tend to find that men are more active and eager to participate online than women (Calenda & Meijer, 2009; Di Gennaro & Dutton, 2006).

Age is found to be a strong predictor of Internet use and skills, with younger users being more active and skillful (Bridges, Appel, & Grossklags, 2012; Dahlgren, 2011; Hargittai, 2002, 2010; Jugert, Eckstein, Noack, Kuhn, & Benbow, 2013). On the other hand, the effect of age on online engagement can be moderated by the users' interest – for example, older users being more interested in political affairs (Gibson et al., 2005; Wang, 2007).

In summary, the digital divide literature provides substantial support for the notion that socioeconomics not only impact *if*, but also *how* individuals use the Internet. These findings have implications for the participatory effect of new media, as different use patterns are more or less conducive to individuals' participation in a number of civic domains. Given the provided definition of online participation, 'participation divide' can be understood as differences in the online creation and sharing of purpose-driven content with specific audiences due to socioeconomic influences. An increasing number of studies have tried to examine the participation divide, resulting in some controversy and need for further exploration.

2.3. *Differentiating participation divides*

Current findings on the antecedents of online participation are closely in line with those developed in digital divide studies. It is noteworthy, though, that many studies of the participation divide define and operationalize online participation strictly as online content creation (Correa, 2010; Hargittai & Walejko, 2008). Recently, SES has been shown to significantly affect content creation, while gender affects the type of content created by users (Hargittai & Walejko, 2008). Schradie (2011) finds that the effect of SES is even more pronounced on participatory than on consumptive Internet uses. Variables such as income and education, particularly, affect users' propensity to create and share content. Correa (2010) finds that among college students, gender, age, and race (but not SES) affect the level of online content creation. As for age, the consistent finding is that younger users are more prone to make use of the participatory forms of the Web, such as blogs (Schradie, 2012).

Previous studies – while significantly extending our understanding of the participation divide – are associated with some limitations (see Table 1): Some studies did not rely on random samples, but focused on college students alone (Correa, 2010; Hargittai & Walejko, 2008). Schradie (2011) based her analysis on a representative sample of the US population; Blank (2013a) on one of the UK population. Most studies focus on data collected in the United States (cf. Blank, 2013a). Methodologically, previous studies relied on either linear or logistic regression, alone.

Table 1. Key studies of online content creation.

Study	Hargittai and Walejko (2008)	Correa (2010)	Schradie (2011)	Blank (2013a)
Main findings	Age and online skills predict online *sharing* of creative content. *Production* of creative content also depends on SES	Psychological factors (motivation, skills) and demographics predict content creation, SES does not	SES affects user propensity to create and share content, effects differ by online activity	Differentiates types of content; the effect of SES on content creation differs by type of content (mainly political content)
Sample	First-year college students from an urban US public university ($N = 1060$)	US college students ($N = 3139$)	Pew sample representative of US population[a]	OxIS sample representative of UK population[b]
Types of content	Four types of creative content	Aggregates 10 different types of content into one measure	Focus on activities rather than content type	Differentiates political, skilled, and social and entertainment content
Method	Logistic regression, stepwise	Linear regression, stepwise	Logistic regression, stepwise	Logistic regression, stepwise

[a]The Pew Research Center's Internet and American Life Project conducts regular and nationwide surveys on US American's use of Internet and mobile technology and attitudes toward Internet-related questions. http://www.pewinternet.org/.
[b]The Oxford Internet Survey (OxIS) is a broad survey on Internet topics that is conducted biennially in the UK. http://oxis.oii.ox.ac.uk/.

Recently, Blank (2013a) pointed out a limitation of previous studies that goes to the heart of the established understanding of the participation divide: a lack of differentiation of the type or form of content produced by users. Given that content creation is such an integral element of online participation, research should take account of the complexity of the concept by taking a closer look at the content produced. In his analysis, Blank (2013a) differentiated three forms of online content creation using exploratory factor analysis: skilled content, social and entertainment content, and political content. Skilled content includes activities such as writing a blog, maintaining a website, and posting writing (or other creative content). Social and entertainment content captures the use of social network sites (SNS) for posting pictures, and uploading video or music files. Finally, political content entails disseminating political content and commenting on political/social issues.

Using logistic regressions, Blank (2013a) differentiates the antecedents of the three forms of content creation. He finds that skilled content is produced by young, technically savvy people who use multiple devices and are comfortable revealing personal information. Social status did not affect this form of content creation. Social and entertainment content is produced by young, technically skilled people of lower incomes. It is more likely to be created by nonelite users. Finally, political content is produced by well-educated users who are either students or use the Internet at work. They constitute a highly educated elite.

In other words, Blank finds that the shape and scope of the participation divide are contingent upon the type of content created by Internet users. More specifically, the positive effect of SES on content creation is limited to the political domain. The creation of social and entertainment content, instead, appears to be more of a nonelite phenomenon, with higher SES being negatively

associated with online participation. These findings and implications triggered a heated exchange on the antecedents of online participation, the prevalence of social inequalities on the Internet, and methodological challenges when addressing these issues (cf. Blank, 2013b; Schradie, 2013). Schradie (2013) notes that stronger theoretical foundations are necessary to explain the differing effects of sociodemographic variables on content creation.

We propose that our understanding of online content creation and participation divides can be enhanced, and the effect of sociodemographic variables better explained if we consider learnings from SCT. The next segment will provide a brief overview of SCT and its application to Internet use, in order to derive our research models.

2.4. *A social cognitive perspective*

In a study of US citizens' access to information and the resulting effects on political participation, Bimber (2001) found that socioeconomic variables do affect access to information, but cannot directly explain effects on participation. He suggests that 'cognitive pathways' need to be considered to understand the participatory effect of new media. SCT, particularly, has repeatedly been applied to the adoption of new communication technology and the ability of users to productively use new media. It provides a suitable approach to obtaining a more differentiated understanding of the sociodemographic antecedents of online content creation.

SCT posits that environmental factors, personal factors, and behavior form a causal model of 'triadic reciprocity'. Within this model (a) an individual's environment influences personal dispositions (such as cognitions and affect), which in turn shape its choice of environment; (b) personal dispositions influence behavior, which in turn influences these personal factors; and (c) behavior affects the environment, which in turn impacts behavior (Bandura, 1977, 1986). This framework has been applied to ICT use, showing that social and environmental factors – such as training and ICT access – impact personal dispositions, which in turn affect use behavior (Ambrose & Chiravuri, 2010; Compeau & Higgins, 1995; Wei et al., 2011).

Basing an analysis of the participation divide on SCT allows for a consideration of the mediating role of cognitive factors in the effect of sociodemographics on use behavior. According to SCT, these cognitive factors are affected by environmental influences and, in turn, significantly affect behavior. Given this relationship, SCT provides a helpful explanation of why sociodemographic variables affect the use of new media: These variables can be associated with specific environmental influences and thereby affect the development of personal dispositions (i.e. self-efficacy or privacy concerns) and ultimately behavior. Whether or not a sociodemographic variable signifies distinct environmental influences is largely dependent on exogenous factors, such as economic (i.e. access), institutional (i.e. education), technological (i.e. affordances), or cultural (i.e. discrimination) conditions. For example, the impact of gender on Internet use should depend on the cultural context, as it may have bearing on women's exposure to ICT relative to that of men (Doney & Canon, 1997; Frenkel, 1990; Wei et al., 2011).

Foremost among the cognitive factors considered in SCT is self-efficacy, users' perceptions, or judgments of their own ability to perform a specific behavior (Bandura, 1977; Compeau & Higgins, 1995). Self-efficacy has variously been shown to drive users' willingness or ability to use ICT (Compeau et al., 1999; Venkatesh & Bala, 2008; Venkatesh, Morris, Davis, & Davis, 2003). It has previously been considered in digital divide research, and has been shown to be helpful in explaining the effect of sociodemographic variables on use behavior (Hsieh et al., 2011; Wei et al., 2011). The literature provides for a number of conceptualizations of self-efficacy, such as computer self-efficacy or Internet self-efficacy – depending on the ICT considered for use (Compeau & Higgins, 1995; Compeau et al., 1999).

While self-efficacy contributes to a willingness to use ICTs as well as an open, positive, or playful attitude toward ICT, the reverse is the case for user anxiety or concerns. The more concerns regarding an ICT, the less willing individuals are to use it (Compeau et al., 1999; Venkatesh & Bala, 2008). One concern variously discussed in the information systems literature and shown to inhibit Internet use is a user's concern for privacy online (Smith, Dinev, & Xu, 2011). Both self-efficacy and concerns have been shown to be affected by sociodemographic variables. In a number of studies, younger, male, and higher SES users have reported higher levels of self-efficacy and lower levels of ICT anxiety or concerns than their older, female, and lower SES counterparts (Gefen & Straub, 1997; Venkatesh & Morris, 2000; Wei et al., 2011).

Our study sets out to contribute to the current debate on the antecedents of online content creation by analyzing the mediating role of two cognitive factors: self-efficacy and privacy concerns. Schradie (2011) acknowledges that a playful attitude toward ICT is a key driver of creative use, while user concerns inhibit content creation. She calls for a consideration of the mediating effect of these cognitive factors in participation divide research (Schradie, 2013). Previous studies have found that use skills or perceived skills moderate some effects of sociodemographic variables on content creation (Blank, 2013a; Correa, 2010; Hargittai & Walejko, 2008). Correa (2010) finds that skills have no significant effect on use behavior when perceived competence is taken into consideration. Self-efficacy goes beyond a mere estimation of use skills, as it conceptualizes a user's judgment of his or her ability to achieve certain goals given a specific skill set (Bandura, 1986; Compeau et al., 1999).

By analyzing the mediating role of self-efficacy and privacy concerns, we hope to contribute to the understanding of why certain sociodemographic variables affect specific types of online content creation, while others do not.

2.5. *Research models*

We will show that the consideration of cognitive factors contributes to our understanding of online content creation by comparing and analyzing three models. These models are based on Blank's (2013a) typology of online content creation. In all the three models, we consider age, gender, and education as independent sociodemographic variables (cf. Blank, 2013a; Correa, 2010; Hargittai & Walejko, 2008; Schradie, 2011). As discussed in the previous segment, we also consider two cognitive variables: self-efficacy and privacy concerns. Figures 1–3 show the competing research models of this article. The first model most closely corresponds to the (full) regression models used in previous studies. Here, the cognitive constructs are included as additional independent variables.

Since we employ SEM as opposed to regression analyses, we are able to more closely examine the mediating role of the two cognitive factors: Accordingly, the second model conceptualizes the cognitive constructs as mediators, as suggested by SCT as well as some previous studies (Blank, 2013a; Schradie, 2013). In order to gauge the mediating role of the cognitive factors, it – somewhat boldly – assumes that the effects of the sociodemographic variables are *fully mediated* by the cognitive concepts. Considering this model will allow us to compare the model fit and explanatory power of the unmediated and the fully mediate models.

Finally, the third, partially mediated model allows for examining the direct effects of the sociodemographic variables. Since it not only takes the mediating effect of both the cognitive concepts into consideration, but also allows for further effects not captured by these mediators, we expect this model to display the highest goodness of fit – superior to the first and second models.

As to the mediating effects, we propose that age, gender, and education affect self-efficacy and privacy concerns with younger, male, and highly educated users reporting higher self-efficacy and lower privacy concerns (Gefen & Straub, 1997; Venkatesh & Morris, 2000; Wei et al., 2011). We

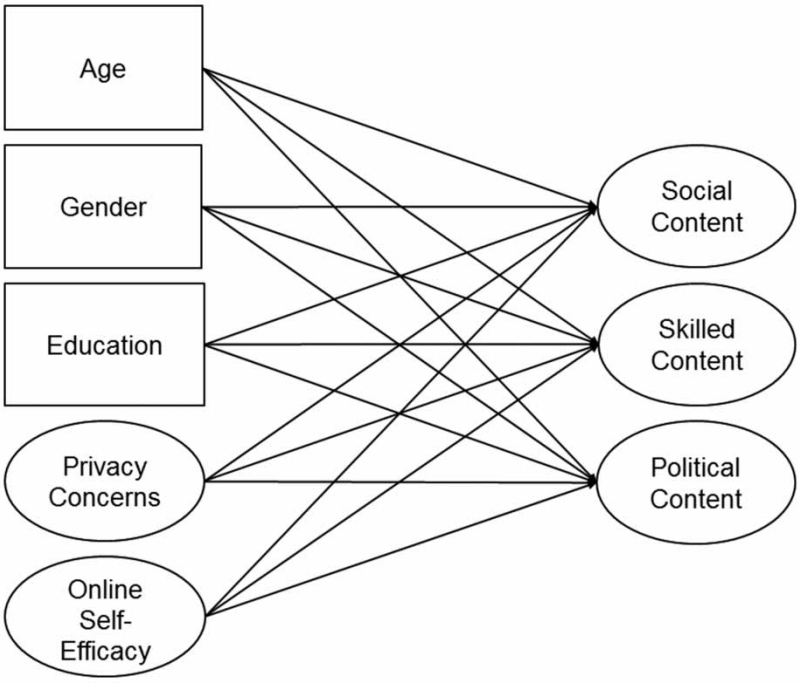

Figure 1. Only direct model.

further propose that self-efficacy positively affects the creation of all three forms of online content, while privacy concerns negatively affect content creation. Self-efficacy has previously been shown to reduce privacy concerns, so we will also take account of this effect (Compeau et al., 1999). Finally, we will control for an effect of age and gender on education. The former accounts for education expansion, that is, the fact that today, young people tend to attend

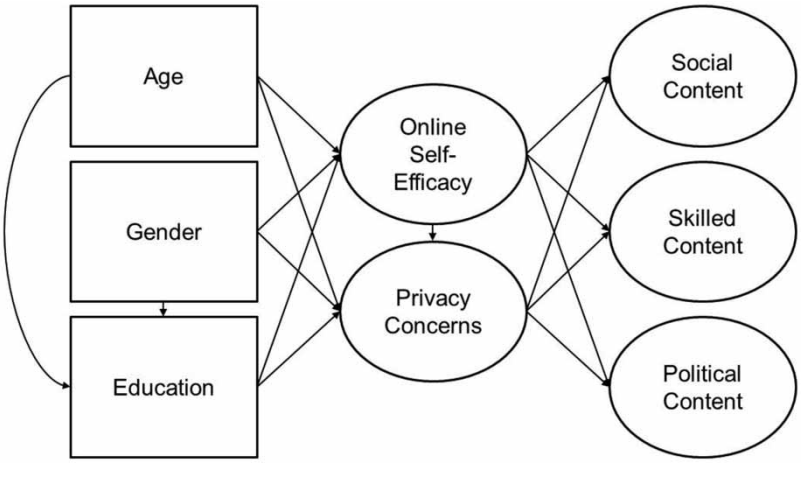

Figure 2. Fully mediated model.

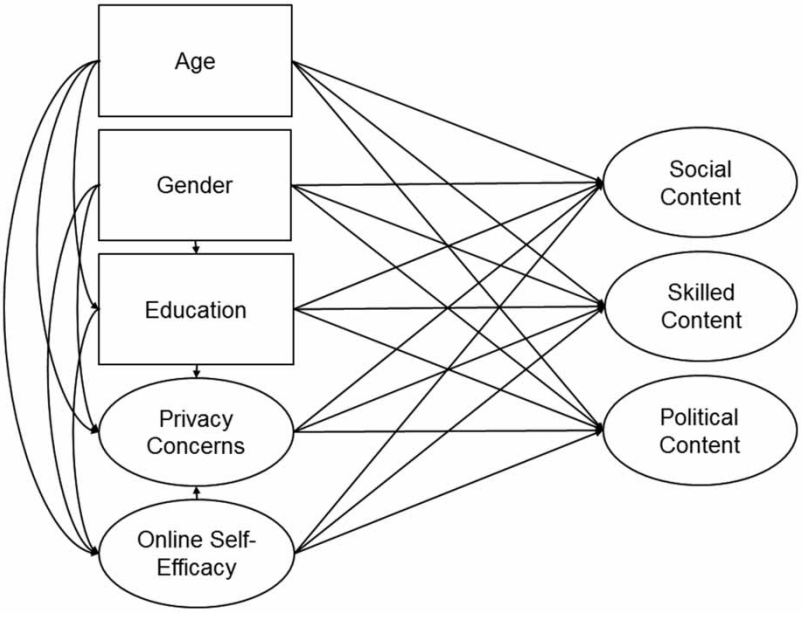

Figure 3. Partially mediated model.

school longer and face a wider variety of educational options, while the latter attempts to capture different educational paths between men and women.

3. Methodology

3.1. *Data and measures*

The survey sample was recruited from a pool of German Internet users demographically representative of the German adult population, provided by a leading market research institute. During August 2013, 4089 users were invited to participate in the survey by e-mail. Participants were offered a small monetary incentive. A total of 1488 users responded (response rate 36%). The overall sample composition is summarized in Table 2. A gender, age, and regional distribution composition of the sample representative of the German general population was ensured by defining quotas on these attributes. Income and marital status were not assessed in the survey, but respondents were asked whether they had children and which occupational field they were in. Table 2 displays the distribution of these variables.

As to choosing Germany as the context of our analysis, we recognize that online participation is dependent on the social and cultural context (Calenda & Meijer, 2009; George, 2005). Yet, little research has been directed at sociocultural contextual influences on online participation. Most studies have focused on the US population with few country-by-country comparisons (cf. Blank, 2013a; Correa, 2010; Hargittai & Walejko, 2008; Schradie, 2011). We find that Germany does not differ much in overall Internet access and use from other Western countries (EUROSTAT, 2013). In terms of civic engagement and political participation, Germany also closely resembles other European countries: Online political participation in Germany is limited to a small proportion of the population, whereas various forms of offline participation are more prevalent (Emmer, Wolling, & Vowe, 2012). Social and entertainment-oriented uses of the Internet enjoy greater popularity than online political participation (ARD/ZDF, 2013).

Table 2. Demographic structure of the sample.

Variable	Category	*N*	%	Missings
Age	18–29 years	231	16.9	
	30–39 years	201	14.1	
	40–49 years	301	19.8	
	50–59 years	271	17.7	
	60 years and above	484	31.5	
	Total	1488	100	0
Gender	Female	746	51.1	
	Male	742	48.9	
	Total	1488	100	0
Education	Primary	195	13.2	
	Secondary	797	53.8	
	Tertiary	490	33.0	
	Total	1482	100	6
Children	Yes	873	59.8	
	No	587	40.2	
	Total	1460	100	28
Occupational Field	In school	94	6.3	
	Agriculture/mining	7	0.5	
	Automobile/aviation/navigation	29	2.0	
	Construction/infrastructure	45	3.0	
	Consulting/law	38	2.6	
	ICT/electronic devices	87	5.9	
	Energy/environment/recycling	24	1.6	
	Finance/insurance/real estate	60	4.0	
	Health care/social care	116	7.8	
	Wholesale and retailing	83	5.6	
	Communication/media	8	0.5	
	Machine engineering	31	2.1	
	Medicine/pharma/chemistry	29	2.0	
	Food & drinks	12	0.8	
	Public service	179	12.1	
	Tourism/hospitality/culture/sports	33	2.2	
	Transport/logistics	38	2.6	
	Other	570	38.4	
	Total	1483	100	5

Compared those of the United States, German citizens tend to use the Internet for political purposes somewhat less frequently (Köcher & Bruttel, 2011; Smith, 2013).

The questionnaire addressed the participants' media consumption, Internet use, online participation, and several questions on offline civic engagement and political participation. We measured participants' online self-efficacy based on three items, each addressing their judgments of their own ability to publish different forms of content online. This measure was based on previous measures and focused on online tools that allow for content creation (cf. Compeau et al., 1999; Venkatesh & Bala, 2008; Venkatesh et al., 2003). Privacy concerns were measured with three items from Malhotra, Kim, and Agarwal's (2004) global information privacy concern measure.

The measures of the three types of online content creation were derived from Blank's (2013a) typology. Skilled content creation encompasses publishing texts and comments on the Internet and commenting on the writings of others. Social and entertainment content creation covers the use of SNS and the posting of photos or videos online. Political content creation covers

not only commenting on political issues, but also participating in political discussions online. Our measure of political content creation, therefore, is somewhat broader than that proposed by Blank (2013a). The wording of all items is reported in Appendix 1.

3.2. *Methods*

We relied on SEM to address the research questions. In contrast to normal regression analysis, SEM can address indirect effects and latent variables. Furthermore, it takes into account measurement errors in the specification of latent constructs and gives out global goodness-of-fit measures, such as RMSEA (root mean square error of approximation), SRMR (standardized root mean square residual), CFI (comparative fit index), and TLI (Tucker–Lewis index), to allow for model comparisons. Previous studies on online content creation relied either on (stepwise) logistic regression (Blank, 2013a; Hargittai & Walejko, 2008; Schradie, 2011) or linear regression (Correa, 2010), complicating the test for indirect effects.

We used MPlus Statistical Software (Version 7) to carry out the analyses, relying on robust maximum-likelihood estimation to account for non-normality and other sources of distortion, such as heteroscedasticity and non-normal distribution of error terms (Byrne, 2012). The complete measurement model of all latent constructs is reported in Appendix 2. It satisfies the necessary conditions (Bollen, 1989; Netemeyer, Bearden, & Sharma, 2003); that is, it has convergent and discriminant validity (Fornell & Larcker, 1981; see Appendix 3). The only exceptions are the AVE (average variance extracted) of privacy concerns, which falls slightly short of the threshold value, and the correlation between skilled and social and entertainment content. We opted for retaining the privacy concerns measure with three items because it is derived from a well-tested scale. Given the large (squared) correlation between skilled content on the one hand and social and entertainment content on the other hand, discriminant validity cannot be assumed for these two constructs. We chose to retain the three categories, though, because of conceptual reasons and to replicate Blank's (2013a) typology of online content.

4. Results and discussion

Overall, participants report only little enthusiasm for creating content online. Only about 10% create skilled content often or very often. About half of the sample never publishes texts on the Internet, or comments or discusses in online communities. For social and entertainment content, these numbers are markedly higher. On average, users are active on SNS and online media platforms several times a month. Yet, over three-thirds of the German online population never or only rarely post pictures or videos. Finally, political content creation is even less common than the other types considered. Both the average values and the relative frequencies point to low participation rates.

Figure 4 shows the results of the first, direct model. This model most closely resembles the analysis of previous studies, and, indeed, we find results closely in line with those reported by Blank (2013a). We find that older users are less likely to publish skilled and social and entertainment content, while there is no significant effect for political content – presumably because the higher activity levels of younger users are offset by the higher political interest of older users. While Blank (2013a) did not find any effect of gender on content production, we find that political content is less likely to be produced by female users. The only direct effect of education on content production is a negative effect on social and entertainment content production, replicating Blank's (2013a) finding in this regard. We find that self-efficacy drives all three types of content creation, while privacy concerns reduce the production of social and entertainment and, surprisingly, weakly increases that of political content, while not affecting skilled content creation.

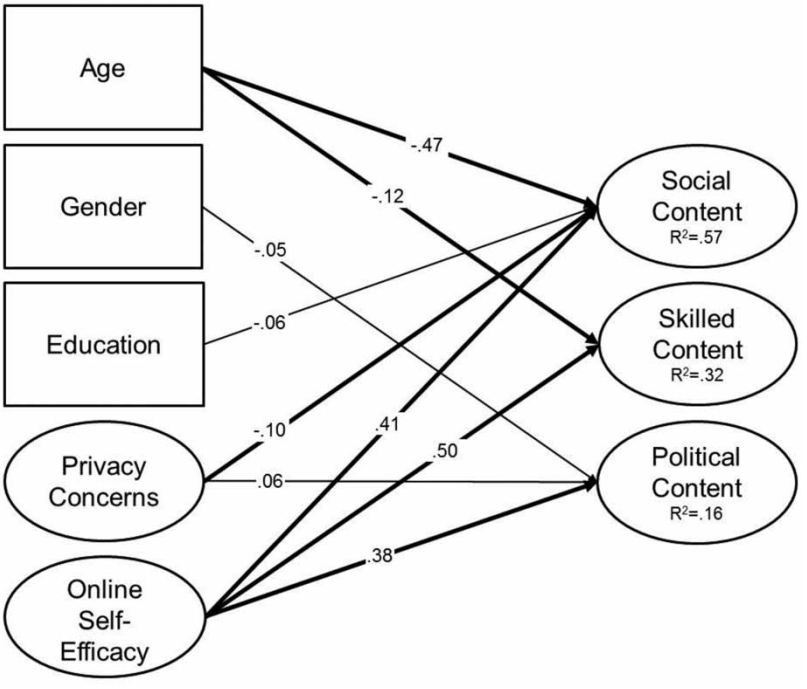

Figure 4. Only direct model, significant effects only (thin line $p < .05$, fat line $p < .001$).

The fully mediated model (Figure 5) shows strong effects of self-efficacy on all three types of content production and a negative effect of privacy concerns on social and entertainment content production only. As to the effects of the sociodemographic variables on the cognitive factors, we find that self-efficacy is markedly higher for younger users, and also significantly higher for male and highly educated users. At the same time, older users report higher levels of privacy concerns. These findings are in line with previous studies of self-efficacy (Gefen & Straub, 1997; Venkatesh & Morris, 2000; Wei et al., 2011). In fact, the limited effect of privacy concerns on actual use behavior has been observed in previous studies, too (Compeau et al., 1999). We also find that the level of education is lower for older and female users. Overall, our findings confirm the proposition derived from SCT that sociodemographic variables indicate distinct learning experiences that affect ICT attitudes and use behavior.

Figure 6 shows the partially mediated model. This model presents the most complex and refined description of the direct and indirect effects of sociodemographic variables on online content production. When considering the mediating effect of the cognitive factors, we still find significant direct effects of age and education: younger users are more likely and highly educated users are less likely to create social and entertainment and skilled content. We do not find a direct effect of gender on content creation. Also, political content creation is not directly affected by any of the sociodemographic variables. Self-efficacy, again, strongly and significantly drives all three types of content creation, while privacy concerns negatively affect social and entertainment content creation.

Again, privacy concerns are positively associated with political content creation. Since the only sociodemographic antecedent of privacy concerns is age, we would again argue that age is associated with political interest which drives political content creation. Another possible explanation for the somewhat counterintuitive effect of privacy concerns might reside in the

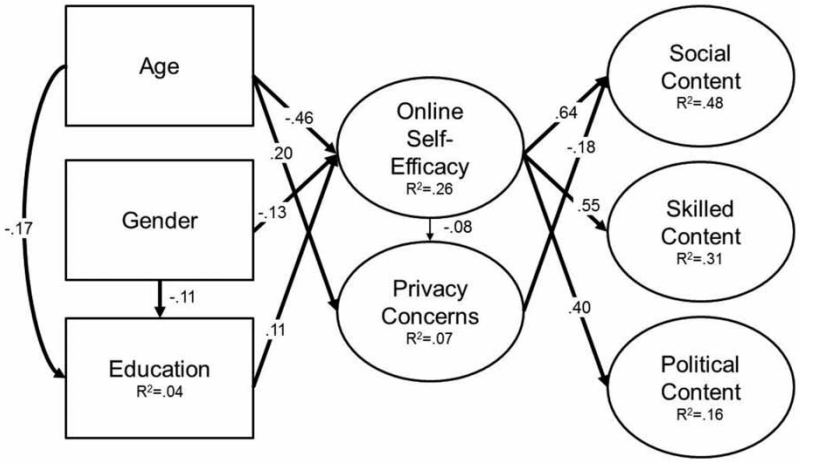

Figure 5. Fully mediated model, significant effects only (thin line $p < .05$, fat line $p < .001$).

fact that privacy protection constitutes a politically contested topic; thereby, politically interested users may be more critical in regard to their online privacy protection. Privacy concerns also show a negative effect on social and entertainment content creation in the partially mediated model.

Again, we find that the effect of sociodemographic variables is clearly mediated by cognitive factors, as suggested by SCT. We find that younger users report significantly higher levels of online self-efficacy. Education also contributes to self-efficacy, with older and female users reporting lower educational levels. Female users report significantly lower levels of self-efficacy, which cannot be explained by differing educational levels alone.

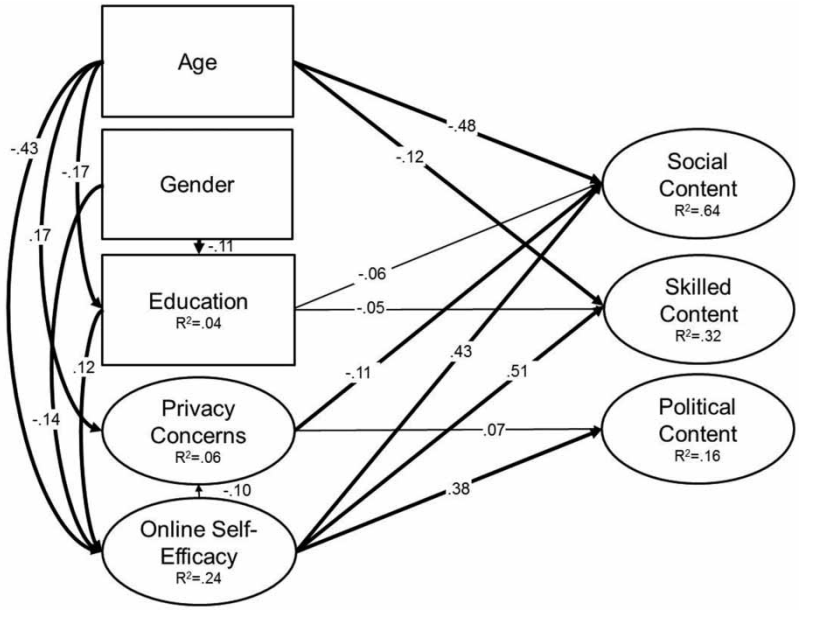

Figure 6. Partially mediated model, significant effects only (thin line $p < .05$, fat line $p < .001$).

Table 3. Goodness-of-fit model comparison.

	Model 1: direct	Model 2: indirect	Model 3: direct and indirect
χ^2	737	924	633
df	130	135	126
CFI	0.95	0.94	0.96
TLI	0.94	0.92	0.95
RMSEA	0.06	0.06	0.05
SRMR	0.04	0.05	0.04
AIC	69,925	70,123	69,818
BIC	70,333	70,503	70,249

Notes: $N = 1488$.
AIC, Akaike information criterion; BIC, Bayesian information criterion.

Looking at the explained variances in all the three models, we find some noteworthy tendencies. Model 3 exhibits the highest R^2 for social and entertainment and skilled content creation, with Model 1 showing better results than Model 2. R^2 for political content creation is quite low, overall, indicating that there are other important drivers for this form of participation not captured by the models. Also, this value barely varies across models. R^2 for social and entertainment content creation varies most across the models. These findings demonstrate that it is important to consider both direct and indirect effects of sociodemographic variables on content creation. We also find that the sociodemographic antecedents explain a substantial part in the variance of online self-efficacy, a finding that marks the prevalence of a digital divide, even in 2013 and in a developed country like Germany.

Finally, Table 3 shows the goodness-of-fit values for the three models. Model 3 performs best and exceeds the threshold value specified in the literature for SEM goodness-of-fit measures (Hu & Bentler, 1999). Model 1 performs better than Model 2 with a similar number of degrees of freedom. However, given that Model 2 is based on the assumption that the effects of sociodemographic variables on content creation are fully mediated by cognitive factors, it performs quite well – almost as well as Model 1. This result shows the importance of taking indirect effects into account when exploring the participation divide. It also speaks in favor of extending the methodology applied to the issue beyond regression models alone.

5. Conclusion

5.1. *Summary and implications*

Our findings contribute to the current debate on the scope of the so-called participation divide by highlighting the mediating role of cognitive factors, allowing for a more differentiated understanding of why and how sociodemographic variables affect online content creation. Derived from SCT, our analysis focuses on two cognitive factors, in particular online self-efficacy and privacy concerns.

In line with previous calls for a consideration of 'cognitive pathways' in the analysis of online participation (Bimber, 2001), we find that the two analyzed cognitive factors significantly affect online content creation. Online self-efficacy, especially, has a strong, positive impact on the creation of social, skilled, and political content. The effect of online privacy concerns is less pronounced, showing a weak negative effect on the creation of social content, and a weak positive effect on the creation of political content. The latter might be explained by privacy concerns being more pronounced among older Internet users who are more interested in politics, or with political interest increasing the awareness of online privacy risks. Overall, we find that the

limited effect of privacy concerns on use behavior is in line with previous findings (Compeau et al., 1999).

Analyzing the mediating role of the two cognitive factors does allow for a more nuanced understanding of the participation divide: SCT implies that sociodemographic variables may indicate environmental influences, such as access or training. These influences shape cognitive dispositions, which in turn affect use behavior. We find that online self-efficacy decreases with age, increases with education, and is more pronounced among male users. These findings hold even when controlling for the fact that older, female users exhibit lower levels of educational attainment. Given the strong positive effect of online self-efficacy on all three forms of content creation, our analysis contributes to a theoretical explanation for why previous studies found younger, educated, and male users to be more active creators of online content (Correa, 2010; Hargittai & Walejko, 2008; Schradie, 2011).

As our analysis differentiates direct and indirect effects of sociodemographic variables on content creation, we are able to contribute to the current debate on the scope of the participation divide: By basing our study on the differentiation of content creation suggested by Blank (2013a), we find that established findings do apply even if types of content creation are differentiated – counter to the suggestion that sociodemographic variables might only affect specific types of content production. Self-efficacy is a key driver of all forms of content creation, and it clearly differs by age, gender, and education. Thus, a participation divide exists for all types of content creation.

Also, we are able to confirm a key finding of Blank (2013a): There is a significant negative effect of education on the production of social and entertainment and skilled content, even after taking age and indirect education effects into consideration. Thereby, education is in fact negatively associated with some types of content creation. We interpret this finding as highly educated users being less interested in online interactions, especially for social or entertainment purposes. This effect holds even though highly educated users report higher self-efficacy, which generally drives content production on the Internet.

Some important implications can be derived from the insights gained by considering the mediating role of cognitive factors, based on SCT: We do find evidence for persisting social inequalities when it comes to online content creation (cf. Schradie, 2013). Age and education clearly affect user self-efficacy, and thereby content creation. Ensuring access and training opportunities might help ameliorate these differences as they have been shown to affect user self-efficacy. It is noteworthy that gender also impacts self-efficacy. Additionally, we find a compounding indirect effect with female users reporting lower educational levels. These findings indicate a need for further examinations of gender differences in socialization experiences, especially as they pertain to the use of and familiarity with new media.

Differentiating the forms of content creation reveals that previous research might have overestimated the scope of the participation divide by focusing heavily on political content creation (Lutz et al., 2014). Yet younger, less educated users appear more prone to create and share social and skilled content. Of course, our analysis sheds little light on the question of whether there are distinct user groups, continuously engaging in distinct social domains – or whether there may be a dynamic component at play, with experiences gained in one domain being transferred to another over time. In other words, could younger, less educated users gain use experience and increase their self-efficacy by creating social or skilled content, ultimately facilitating the creation of other content, such as political? Of course, this question is related to a normative evaluation of different types of content creation: Should we consider the creation of political content more valuable or desirable than the creation of skilled or social content?

Finally, it is noteworthy that the predominant sociodemographic effect on content creation is that of age – both a direct effect and one mediated through cognitive factors. Thereby, our analysis

shows that the participation divide is largely caused by an age gap in online content creation. We find that younger users are clearly more geared toward interactive, social, and entertainment uses of the Internet, and they report significantly higher levels of online participation. This effect remains strong even after taking self-efficacy and educational attainment into consideration. We would conclude that a better understanding of the specific socio-technical socialization of younger Internet users should provide a bigger contribution to our understanding of the participation divide than analyzing the effect of users' SES.

5.2. *Limitations and suggestions for future research*

This research has some limitations, which limit its scope and provide avenues for future research. First, the study is based on an online survey; participants were recruited through e-mail invitations. Self-selection unavoidably affects user participation in these kinds of survey. We tried to counter this effect by defining quotas on critical sociodemographic variables. Also, the chosen method excludes the segment of the population without Internet access (in Germany about 15%). Thus, our results are only generalizable to the online population and not the overall population. Future research could also consider offliners to compare their profiles with online participants and online nonparticipants.

Second, some authors have noted that online participation depends on the social and cultural context (Calenda & Meijer, 2009; George, 2005). Our study was conducted among German Internet users, which might have an effect on its findings. We find that the German online population is very similar to that of other Western countries, both in access to the Internet, use frequency, and preference for online participation. Our findings, accordingly, appear to be closely in line with those derived from US or UK studies. Yet, more research into the sociocultural determinants of online participation would certainly be helpful to facilitate cross-national comparative analyses.

Third, the collected data only cover one point in time. Thus, inferences across time are not possible and the issue of isolating different causal effects (e.g. of the cognitive constructs on content creation) remains. Future research on online content creation, especially the migration across various forms of online creation, could use panel designs to describe and explain changes over time. Fourth, additional explanatory factors should be included in the research model. Future studies might include broader indicators of users' social and cultural background, such as income and ethnicity.

Fifth, additional forms of online content could be considered in future research. We replicated Blank's (2013a) typology to add to a cumulative research agenda on online content creation. However, other forms of content not originally considered by Blank (2013a) should not be neglected. This includes health-related content or educational content. Sixth and finally, we had to rely on self-reported data. Such data are subject to challenges such as memory bias and social desirability. Online participation research should, therefore, combine different data sources, including observational data.

Overall, this study contributes to the research of online content creation by solidifying its theoretical basis, expanding its geographical scope, and advancing the applied methodology. Yet, it also demonstrates that research into the participation divide is still relatively recent and provides ample opportunities for further investigation.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix 1. Questionnaire

Construct	Item	Wording (Scale)
Skilled Content Creation (SCC)	SCC1	*I comment on content that other people have published.*
	SCC2	*I publish my own texts and comments on the Internet.*
	SCC3	*I actively participate in discussions in online communities.*
Social and Entertainment Content Creation (ECC)	ECC1	*Social network sites (e.g. Facebook, XING).*
	ECC2	*Media platforms (e.g. Youtube, Flickr).*
	ECC3	*I share on the Web photos and videos I have created.*
Political Content Creation (PCC)	PCC1	*I like and share political content on the Internet.*
	PCC2	*I publish commentaries about political topics on the Internet.*
	PCC3	*I try to persuade others online to become politically active.*
	PCC4	*I actively participate in a political online group or online community*
Privacy Concerns (PC)	PC1	*All things considered, the Internet could cause serious privacy risks.*
	PC2	*Compared to others, I am more sensitive about the way online services handle my personal information.*
	PC3	*To me, it is the most important thing to protect my privacy from online services.*
Online Self-efficacy (OSE)		*How well do you think you are able to ...*
	OSE1	*... publish information on a blog or on Twitter?*
	OSE2	*... publish a video on the Internet (e.g. on Youtube)?*
	OSE3	*... create or edit an article on Wikipedia?*

Appendix 2. Measurement model of the latent constructs

Construct	Item	Standardized loading	R^2	α	CR	AVE
Skilled Content Creation (SCC)	SCC1	.89	.80	.89	.89	.74
	SCC2	.88	.78			
	SCC3	.80	.64			
Entertainment Content Creation (ECC)	ECC1	.70	.48	.71	.79	.55
	ECC2	.68	.46			
	ECC3	.84	.52			
Political Content Creation	PCC1	.77	.60	.91	.91	.72
	PCC2	.93	.87			
	PCC3	.87	.75			
	PCC4	.82	.67			
Privacy Concerns (PC)	PCC1	.52	.27	.72	.78	0.47
	PCC2	.75	.57			
	PCC3	.76	.58			
Online Self-efficacy (OSE)	OSE1	.86	.74	.88	.88	.71
	OSE2	.89	.79			
	OSE3	.77	.60			
Criterion		≥ 0.5	≥ 0.4	≥ 0.7	≥ 0.6	≥ 0.5

Note: CR, composite reliability.

Appendix 3. Fornell–Larcker criteria of the latent constructs (discriminant validity)

	No. of items	AVE	SCC	ECC	PCC	PC
SCC	3	.74				
ECC	3	.55	.83			
PCC	4	.72	.47	.38		
PC	3	.47	.02	.07	.00	
OSE	3	.71	.30	.42	.14	.03

Note: Squared correlations between constructs.