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Marco Gui [*], *Marco Fasoli* [**] *and Roberto Carradore* [***]

Authors' information

[*]Department of Sociology and Social Research, University of Milano-Bicocca, Italy.
[**] Department of Sociology and Social Research, University of Milano-Bicocca, Italy.
[***] Department of Sociology and Social Research, University of Milano-Bicocca, Italy.

Contact authors' email addresses

[*] marco.gui@unimib.it
[**] marco.fasoli@unimib.it
[***] roberto.carradore@unimib.it

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"Digital Well-Being". Developing a New Theoretical Tool For Media Literacy Research

Marco Gui[*]*, Marco Fasoli*[**] *and Roberto Carradore*[***]

Abstract: In this paper we show that a new problem is arising for users of digital media, who deal with an overabundant flow of information and social relationship options throughout the day. They increasingly need specific skills to channel digital stimuli towards personal goals and benefit, avoiding excessive multi-tasking, fragmentation of daily time and overconsumption of new media. We argue that these side effects are starting to represent a menace for people's well-being. We show that existing frameworks of digital skills do not explicitly consider abilities to cope with communication overabundance. We also recognise that this question is not merely one of individual skills since the use of digital media is framed within social norms and expectations about what is "good" in the digital environment. Drawing from an interdisciplinary body of literature on the concept of "well-being", we offer a definition of "digital well-being" as a state obtainable not only by the individual through his/her personal "digital well-being skills", but also as a characteristic of a community whose norms, values and expectations contribute to its members' comfort, safety, satisfaction and fulfilment. In the concluding section, we show the fruitfulness of the concepts of "digital well-being" and "digital well-being skills" for interdisciplinary social research and policy.

Keywords: digital well-being, well-being, digital skills, overconsumption

[*] Department of Sociology and Social Research, University of Milano-Bicocca, Italy. E-mail: marco.gui@unimib.it

[**] Department of Sociology and Social Research, University of Milano-Bicocca, Italy. E-mail: marco.fasoli@unimib.it

[***] Department of Sociology and Social Research, University of Milano-Bicocca, Italy. E-mail: roberto.carradore@unimib.it

Introduction

Over the last 15 years, the concept of "digital skills" has continuously broadened following the development of new digital technologies and applications. Also, we have witnessed to a theoretical expansion of what is considered "media literacy". In the 80s and 90s, digital skills were mainly referred to as technical skills, needed to work with computer hardware and software (Van Dijk, 2005). This approach was clear, for example, in the first version of the European Computer Driving Licence (ECDL). With the diffusion of the World Wide Web, increasingly filled with all kinds of content, the ability to search, select and filter information rapidly emerged as a new competence for the freshly born digital world. In this phase, when the internet was often described as the biggest library in the world, the dimension of "informational skills" (Van Dijk, 2005, Gui & Argentin, 2011) or "information literacy" (Eshet Alkali, 2004) rapidly emerged. Then, as the web developed from what is known as web 1.0 to web 2.0, skills related to communication and sharing online (Hargittai, 2007; Van Dijk & Deursen, 2014a), in other words "participation" in the digital world (Jenkins, 2006), acquired centrality. Moreover, skills to produce multimedia content also attracted the attention of scholars, especially after the widespread diffusion of portable devices and social media sharing practices: scholars focused more and more on "reproduction literacy" (Eshet Alkali, 2004), also referred to as "content creation skills" (Ferrari, 2013) or "creative skills" (Van Dijk & Van Deursen, 2014a). Finally, a few studies have considered what are known as "strategic skills", i.e. the skills to use digital media and their content for users' professional or personal goals (Van Deursen & Van Dijk, 2014), to solve specific problems (Ferrari, 2013) or to actually transform their contexts and lives (Martin & Grudziecki, 2006). In this same issue, through a quick-scan analysis of thirteen of the most influential digital skills frameworks, Iordache, Mariën & Baelden (2017) effectively identify six main categories of digital skills currently considered in the literature: operational, technical and formal, information/cognition, digital communication, digital content creation and strategic skills.

In this paper, we argue that a new dimension of digital skills is arising as a result of the massive diffusion of mobile connectivity and of the consequent availability of an overabundant number of information and social relationship options in daily life. This dimension is related to the ability of coping with the side effects of "permanent communication overabundance"

(Gui, 2014), "information overconsumption" (Johnson, 2012) or "information overload" (Levitin, 2014). In particular, users increasingly need specific abilities to manage digital stimuli so that they can be efficiently channelled towards personal goals and subjective well-being, avoiding excessive multi-tasking, fragmentation of daily time and overconsumption of new media. Such skills are acquiring centrality in the public debate, as shown by recent publications focused on the side-effects of digital media (Johnson, 2012; Rheingold, 2014; Gui, 2014; Spitzer, 2016; Turkle, 2012, 2015). However, this dimension has thus far been left out of digital skills frameworks and – more in general – of media literacy studies.

We first present scientific evidence showing how daily users of digital media (especially of portable and connected devices) face problems in managing their time, interpersonal relations, and work, due to the overabundant options available, the great quantity of sources and the speed of information flows. We also show that these problems are increasingly becoming a threat to our quality of life. Consequently, we argue that the ability to cope with communication overabundance represents a new area of digital skills. Drawing from an interdisciplinary literature on the concept of "well-being" and from a few existing attempts to identify a "digital well-being" (Beetham, 2015; Nansen, Chakraborty, Gibbs, MacDougall, & Vetere, 2012), we define these skills as "digital well-being skills". We discuss why this dimension needs to be considered a real competence and not just a general capacity for self-control. We argue that it needs to be explicitly identified as a 21st century skill and, more in particular, a digital skill, and therefore become part of media-education practices.

At the same time, we argue that a discussion of digital well-being that remains confined to the individual dimension can be blind to the pressures individuals face from the social environments to perform well in digital environments. Sometimes, overconsumption can be due to such pressures more than to a lack of specific skills by the individual. Furthermore, it is not sufficient for social research to take the physiological aspect of digital well-being for granted. Although we need to refer to scientific evidence showing the flipside of digital media use at a cognitive, psychological and social level, we nonetheless need to put "digital well-being skills" into a cultural frame of reference. In fact, "digital well-being" is a digital extension of general well-being values of specific groups of individuals. Indeed, the concept of well-being is culturally structured, so it depends on values and norms within a specific social environment. In this way, we finally propose a definition of

"digital well-being", which considers both the individual skills level and the culturally established values and norms within which those skills are framed. Moreover, we discuss how to operationalise both the concept of digital well-being skills and of digital well-being norms, identifying their usefulness for research. Finally, we outline some of the implications of the development of these concepts for sociology, media research, education and policies concerning the diffusion of a critical use of new media.

Digital overconsumption and multi-tasking: a literature review

In this first paragraph, we review the most relevant scientific evidence concerning problems in the management of connected digital devices in people's daily life. These problems are particularly pressing for people whose daily lives are engaged with digital media. Within the extensive literature discussing this issue, it is possible to distinguish between two main thematic concerns. A number of studies focus their attention on "overconsumption", also referring to studies about "television overconsumption" (see for example Frey, Benesch & Stutzer, 2007), and analyse how and why people feel they are consuming more than they would like to. Another issue is that of multi-tasking, which is more specific to digital media and identifies the condition of a continuous switching between different focuses of attention. In actual digital media consumption, these two problems occur simultaneously and are inextricably linked. Nonetheless, it is possible to distinguish between them for analytical purposes. We therefore present each problem separately drawing on each literature.

Digital overconsumption

In recent years, internet users have begun to complain about their inability to spend the amount of time they decided to spend online. The literature has examined "internet addiction" or "problematic internet use", which have been intended as pathological conditions affecting a small niche of digital media users (Christakis, Moreno, Jelenchick, Myaing & Zhou, 2011; Grant, Potenza, Weinstein & Gorelick, 2010). However, beyond a pathological dimension, more and more studies show that the majority of internet users suffer from problems in managing communication overabundance both in the workplace and in personal life. Referring to English internet users, a recent OFCOM report (OFCOM, 2016) highlights how half (49%) of them

admit that "on a daily basis, they spend longer than they intend browsing the internet, while four in ten (37%) said the same about social media" (OFCOM 2016, p. 32). Internet users seem to be aware of negative outcomes of digital overconsumption: when asked whether specific aspects of their work or personal life suffer as a result of their spending too much time online, nearly half (48%) of respondents said that they had neglected housework, had missed out on sleep or were tired the next day (47%). This percentage rises to 72% among 16-24 year-olds (OFCOM, 2016, pp. 32-33). In Italian secondary schools, excessive internet and videogame use is the first concern among teachers about the flipside of extra-school use of digital media by their students (Giusti, Gui, Micheli & Parma, 2015). In her last book, Sherry Turkle (2015) warns about the loss of conversation capabilities in young people that she links to the growing use of messages and mediated communication. Through a big number of qualitative interviews, she not only finds a lack of attention in face-to-face relationships due to the presence of a smartphone, but also highlights that the elimination of space for solitude caused by intense digital consumption is detrimental to the quality of life of smartphone users in the long run. Confirmations of this finding arrive from quantitative research as well: Rotondi, Stanca & Tomasuolo (2017), analysing data coming from a representative sample of Italian individuals, show how time spent with friends is worth less, in terms of subjective well-being and satisfaction, for individuals who use a smartphone.

These difficulties in the management of information and communication are also noticed in the workplace. Tarafdar, D'Arcy, Turel & Gupta (2015) report the results of several studies on the difficulty in the management of digital communication among employees. They show how digital technology overconsumption emerges in many organisations, with employees suffering from constant and needless IT use, finding it difficult to stop using technology, whether or not it is required, neglecting daily job duties because of being on the Internet. In this case, it seems that information overload pushes users to switch their attention between different streams of information, induced by the worry of a potential loss of relevant information. Article 55 of a recent law in France ("Loi Travail"), approved in August 2016, forces companies with more than 50 employees to negotiate with internal trade unions the ways and amount of time employees are online. The law draws from a study (Mettling, 2015) which shows that only a quarter of managers interviewed actually stopped email and work communications

during their leisure time. These behaviours prove how digital stimuli have become very attractive and difficult to resist or limit.

Digital multi-tasking

Recent research also draws attention to issues connected to the fragmentation of attention typical of digital consumption. Indeed, the way in which new media manage our attention seems a key issue of this discussion, particularly with reference to habits of multi-tasking.

New media modify our attentional behaviours mainly in two ways. First, a distinctive feature of digital media is the multi-windows design: the possibility they offer of opening several folders and programs at the same time. This possibility pushes us to switch our attention between many activities in short periods of time. For instance, we browse the internet skipping from one window to the other, with several programs and documents simultaneously open in our tool bar. Thus, through its multi-windows design new media could induce us to practice multi-tasking, but cognitive sciences agree in considering this behaviour as being responsible for a sharp drop in our cognitive performances (Ophir, Nass & Wagner, 2009; Gorlick, 2009). Consequently, multi-tasking can be detrimental in educational environments (Lepp, Barkley & Karpinski, 2014; Wood et al., 2012) and in certain circumstances, as in the case of driving, it implies relevant increases in safety risks (Tison, Chaudhary & Cosgrove, 2011). On the other hand, staying focused on a task for an appropriate length of time appears to be essential for learning (Rosen et al., 2012, 2013). Secondly, sometimes new media interrupt us while we are engaged in solving demanding cognitive tasks. It happens when we hear notifications or calls from our smartphone while we are engaged in another task. Even in this case, the interruptions caused by the sound of the devices appear to be potentially detrimental for our cognitive performances (Stothart, Mitchum & Yehnert, 2015). The sheer bulk of notifications we receive every day could foster the habit of interrupting ourselves or of frequent multi-tasking (Ophir, Nass & Wagner, 2009; Wang & Tchernev, 2012), and this in turn could interfere with the ability of focusing on the same issue for long periods of time.

"Technostress" can be the result of these behaviours (Lee et al., 2014). Lepp Barkley & Karpinski (2014, p. 344) discuss several scientific studies in support of the existence of a positive relationship between cellular phone use and anxiety (Beranuy, Oberst, Carbonell & Chamarro, 2009; Bianchi & Phillips, 2005; Ha, Chin, Park, Ryu & Yu, 2008; Lu et al., 2011). We need

to develop a conscious approach about the management of our attention and new educational responses (Fasoli, 2016). As Tarafdar et al. (2015) effectively argues, "we may be entering an era in which human frailties begin to slow down progress from digital technologies".

"Digital well-being": towards a theoretical tool

As we have outlined in the previous paragraphs, the awareness of problems in managing digital communication overabundance is starting to rise. However, these problems have never been considered explicitly either by the digital skills literature or by social science, more in general. In this paragraph we aim at providing elements useful for building a theoretical definition of "digital well-being skills" and "digital well-being". We will divide our discussion into two main dimensions which – as stated in the introduction – are complementary for a full understanding of the problem at stake: the individual skills dimension and the socio-cultural level.

The individual dimension: digital well-being skills

So far, references to the ability of neutralising the side effects of digital communication present in the most cited digital skills frameworks are only implicit. The first version of the European framework DIGCOMP (Ferrari, 2013), for example, includes an area called "protecting health", focusing on the "health-risks related with the use of technology in terms of threats to physical and psychological well-being" (Ferrari, 2013, p. 30). In the second version of the framework, DIGCOMP 2.0 (Vuorikari, Punie, Gomez & Van Den Brande, 2016), the concept of well-being acquires relevance and is explicitly mentioned in the label of the area which now is titled "Protecting health and well-being". Furthermore, both Ferrari (2013) and Vuorikari et al. (2016) focus on "problem-solving skills" as the ability to use technology creatively to solve unknown questions. On the other hand, van Dijk (2005) and Van Deursen (Van Deursen & Van Dijk, 2014a) talk about "strategic skills", assuming that focusing on personal goals is something particularly difficult while using the internet. According to the authors, "strategic internet skills" include the capacity to use digital media to attain specific benefits. A similar assumption seems to be shared also by Van Deursen et al. (2014), who discusses the ability of cherry-picking our personal contacts into our social network as part of digital communication skills (see Iordache, Mariën

& Baelden, 2017 for a systematic analysis of these frameworks). In all these cases, a specific ability to focus on something while browsing the internet seems to constitute an increasingly relevant part of digital competence.

One could object that self-control has always been an important dimension of every human activity, being it linked more to subjects' moral characteristics than to any kind of competence. We answer that the current complexity of the media environment puts this problem beyond a simple deficiency in self-control. Obviously, before digitalisation self-control was already a key predictor of success in intellectual activities (Mischel et al., 2011). However, we are witnessing an unprecedented multifunctionality of our communication tools, due to which users are continually forced to select stimuli and activities to be processed, while limiting inputs coming from possible others. We argue that, irrespective of users' characteristics, the digital media environment systematically pushes them towards fast and non-linear information and communication consumption. This environment is not neutral to our possibility to engage in satisfactory communication experiences. Technology through its affordances nudges subjects towards specific behaviours (see Latour, 1994; Brey, 2014; Heersmink, 2015; for a discussion about the neutrality of technology). The patterns of stimuli and individual responses are so complex and specific in digital media that we need specific skills to maintain not only a good level of productivity but also a well-being in such an environment. Achieving this goal is possible only when a new set of knowledge, cognitive attitudes and operational skills is employed. Here's why the specificity of digital communication brings technology-specific problems of self-control and choice to an unprecedented level.

What are these specificities that make a reflection on "digital well-being skills" so urgent? We consider the following characteristics of digital environments:

i) the overabundance of possible choices,
ii) the easiness to switch from one focus to another,
iii) the economic exploitation of human attention,
iv) the convergence of different activities in the same device,
v) the persistence of the above conditions throughout the day.

The combination of these characteristics constitutes an unprecedented cognitive and emotional environment. As Tarafdar et al. (2015, p. 61) write: "the very qualities that make IT useful — reliability, portability, user-friendliness and fast processing — may also be undermining employee

productivity, innovation and well-being". We argue that massive use of portable media and always-on connectivity require a theoretical shift in digital skills studies. These new facets of "digital skills" point out that those who possess good informational, social, and creation digital skills can still suffer the effects of communication overconsumption.

We define "digital well-being skills" as a set of skills needed to manage the side effects of digital communication overabundance. In particular, digital well-being skills can be identified as the skills to achieve strategic attention focusing in daily life and to avoid the stress caused by the overwhelming flow of information, minimising wastes of time and attention on irrelevant activities in the subject's perception. To do this, digital stimuli should be managed to that they can be i) efficiently filtered and ii) finalised towards personal goals and well-being.

Digital well-being skills are both *attentional* and *strategic* or *meta-cognitive* skills. Attentional skills are cognitive skills required for maintaining our focus on specific issues for sufficient lapses of time, without getting interrupted. On the other side, also strategic or meta-cognitive skills are needed. Insofar as the internet stimuli – and in particular communication stimuli– are gratifying (Turkle, 2015), sometimes we need to learn how to postpone them by employing "pre-commitment strategies" (Elster, 2000; Paglieri, 2014). These are meta-cognitive strategies that envisage "constraints that an agent imposes on himself for the sake of some expected benefit to himself" (Elster, 2000, p. 4). For instance, knowing that we tend to interrupt ourselves to browse the internet even when we should be focused on a single task, and knowing that these interruptions cause us stress and reduce the quality of our work, we may push us to employ software (e.g. Freedom) that blocks access to the internet for a certain period of time. Putting our cellphone in silent mode to reduce interruptions in specific moments of the day is a different – simpler –pre-commitment strategy. In the first, case, by means of attentional skills we protect ourselves from our inner tendency to distraction, while in the second case through our meta cognitive skills we try to limit the interruptions from the external world.

It is important to notice that a degree of technical skills is also needed to implement meta-cognitive strategies into settings on one's own devices. For instance, knowing how to mute instant messaging chat groups or how to turn on the Facebook timeline review (thus preventing the uncontrolled publication of personal content) are technical skills that are key for reducing the amount of notifications and avoiding the possibility of being tagged in

unwanted content. Finally, it is important to have some knowledge about how web 2.0 and social networks work, especially in order to understand when and how to employ the technical and strategic skills mentioned above.

The social dimension

Notwithstanding the need for individuals to develop digital well-being skills, a "good" use of digital media is neither a question confinable to individual skills, nor it is limited to medical or psychological issues.

Firstly, we must consider the role of digital professionals in designing online environments, and their social responsibility in encouraging or discouraging practices of well-being. Indeed, in the digital content industry messages are often specifically and scientifically designed to attract users' attention (Tandoc, 2014)[1]. As the ethical designer Tristan Harris said some years ago during an interview, "Much as a user might need to exercise willpower, responsibility and self-control, and that's great, we also have to acknowledge the other side of the street". Big tech companies, in Harris opinion "have 100 of the smartest statisticians and computer scientists, who went to top schools, whose job it is to break your willpower" (Schulson, 2015, p. 1). Taking the issue of well-being seriously means to account for the psycho-physiological effects of a particular digital architecture. A minimalistic architecture (like the Google homepage), a page full of links and banners and a social network structured for sharing private information have different impact on users. It is a question not confined to ergonomics or customer satisfaction, but it is about the acquisition of the social responsibility for building safe digital places for individuals with and without well-developed "digital well-being skills".

A second essential point that extends the notion of digital well-being beyond the individual considers the conflicts between personal well-being needs and other social values connected to the use of digital media. If values of instantaneity, performativity and multi-tasking are in force in our digital life, tensions will emerge between personal-care needs and needs of social inclusion. In the development from what was known as "web 1.0" to "web 2.0", there has been a loss of priority for the value "privacy" and an increase in priority for "visibility", "transparency" and "exposure" (Cohen, 2008). A conflict between these expectations and individuals' well-being often

[1] On the contradictory relationship between content attractiveness and users' satisfaction in television consumption, see Stanca et al. (2013).

emerges in young people's interactions through digital media (see Turkle, 2015). For example, boys and girls who try to avoid the pressure to be available online at all times may suffer from peculiar socio-digital sanctions (Mai, Freudenthaler, Schneider & Vorderer, 2015). From this perspective, it emerges that digital well-being is a condition which is highly affected by group values. These can either protect or expose them to the flipside effects of digital media. A historical example of digital group well-being is "netiquette" in forums and chats, and, in particular, the flood and spam control by online group moderators.

A third and final aspect regards the same connotation of "well-being" within and outside of the digital environment. We need to establish the connection of the "physiological" level with the socio-cultural meaning of what is considered a "well-being". In particular, we have to consider the role of our cultural bias (traditions, morals, norms and values), which orient specific patterns of behaviour (Douglas, 2011). When we consider the issue of "digital well-being" we have to include the social frame of the people examined, their socio-cognitive pattern and the place of well-being values in it. In this way, we can observe the extension of well-being's values and norms (including the scientific knowledge about it) to the digital world and how this extension may feedback to the conception of general/human well-being. For instance, the perception of duties about self-care could change between different cultural environments.

These brief considerations aim to extend the focus from an individualistic perspective to a social one, from a mere question of personal skills to a double-layered issue. Digital well-being in this way becomes a condition which is pursued by the individual through his or her personal digital well-being skills, but also a characteristic of groups whose norms and values may contribute to a greater or lesser extent to its members' comfort, safety, satisfaction and fulfilment when they use digital media.

A definition of "digital well-being"

As far as we know, the term "digital well-being has so far been used in two studies. Nansen et al. (2012) use this term within an ethnographic study of children's online use, "in an effort to bridge some differences between health and inclusion-oriented frameworks" (Nansen et al. 2012, p. 3). According to the authors "by situating online risk within a concept of wellbeing we are able to take account of the increasingly important mediating role played by the internet for children's interpersonal

relationships, education, play and social development" (Nansen et al. 2012, p. 3). The label has been also employed in a report by Beetham (2015). The author refers to "the potential risks of digital engagement as well as the potential benefits" (p. 15) of students and school staff. Beetham lists several issues of different nature that are potentially detrimental for digital wellbeing. For instance, she mentions the inability of students to recognize when online behaviours are illegal; the responsibility of universities to ensure equality access for all staff and students, the stress connected to digital working and digital-related health issues. Drawing on these two first mentions, here we aim to provide a more structured definition.

We define "digital well-being" as a state where subjective well-being is maintained in an environment characterized by digital communication overabundance. Within a condition of digital well-being, individuals are able to channel digital media usage towards a sense of comfort, safety, satisfaction and fulfilment. As we have seen above, this condition is favoured both by specific individuals' skills and by the socio-cultural context they live in. We argue that "digital well-being" is a growing contributor to the general well-being of a subject, both in its hedonic and eudaimonic dimension (Ryan & Deci, 2001). Indeed, digital well-being pertains not only to the attainment of gratifications and minimisation of collateral effects of digital media use (hedonic dimension) but also concerns the ability to use these technologies to give meaning to one's activities and realise one's own potential in life (eudaimonic dimension). Therefore, in the short term and at a more superficial level, digital well-being can merely indicate a condition where "technostress" and other physiological inconveniences connected with the use of new media are controlled and gratifications new media offer are exploited. Instead, in the long term and at a deeper level of analysis, being able to channel digital media towards individuals' personal and professional goals becomes relevant for a full self-realisation in life (Ryff & Singer, 2013). Certainly we are aware that "traditional" digital skills as much as ICT and internet access heavily contribute to subjective well-being. However, with the term "digital well-being" we refer to this specific condition where individuals are able to cope with the flipside effects of digital media while using them to obtain a wide range of benefits.

As it has been noticed, the rise of interest in well-being issues appears to be connected to the culture of surplus, when material prosperity has been already acquired (see for example Ryan, 2001, p. 142). It has also been noticed how eating disorders and communication overconsumption present

similar dynamics due to supply having quickly become overabundant in both fields (Johnson, 2012; Gui, 2014). We argue that the concept of digital well-being is emerging now when, as never before, the overabundance of communication stimuli represents a surplus which turns out difficult to manage.

The relevance of "digital well-being" for social research and policy

The growing amount of time we spend in front of a screen (eMarketer, 2016) makes the way we manage digital media a key variable for our quality of life. The possibility to build social capital, to pursue professional goals, to get quality education and also to experience gratifying interpersonal relationships all growingly depend on our use of digital tools, in some cases on our limitation of their use. This condition brings digital well-being to get more and more intertwined with traditional issues in social research.

This is the case for social inequality. There is evidence that problems in managing communication overabundance are more frequent among socials segments with fewer socio-cultural resources. Van Deursen & Van Dijk (2014b) have shown that low educated users of the Internet are staying online longer than highly educated users in their spare time. Analysing data on the totality of high-school students in a northern Italian region (Valle D'Aosta), Gui (2016) shows how the pervasiveness of smartphones during the most significant moments of the day in terms of education and health (school time, family dinner, night-time sleep) is higher in the most disadvantaged segment of students' population. This problem could represent a new, paradoxical, form of digital and social inequality. In the light of emerging data, socially disadvantaged users are consuming more, not less, digital communication. Therefore, it is necessary to reflect on digital over-consumption within the theory of digital inequality, analysing if the greater pervasiveness of digital consumption that is found in the less advantaged segments can be deepening existing social inequality. Gui (2014) argues that the same pattern observed in eating problems, with poorer and less cultured people suffering more from eating disorders, could also be manifesting itself in the field of communication. As "digital skills" has been considered by sociologists as a condition for social inclusion and one of the components of "digital inequality" (Hargittai, 2002; Van Dijk, 2005; Van Deursen & van Dijk, 2014a), we argue that being able to neutralise the flipsides of communication

overabundance should be considered a new dimension of digital competence and therefore related to social inclusion.

One could legitimately ask how this concept can be operationalised into indicators and variables. We argue that "digital well-being" can be observed through both subjective and objective indicators. As regards the first type, indicators could focus on perceptions of being stressed, of not being able to manage digital media as one wishes, of how people think they are able to attain their daily goals through media, to what extent they feel they spend too much time on the internet or on specific applications. This is the path followed by surveys such as Ofcom (2016), but also academic studies (Lutz, Ranzini & Meckel, 2014). On the other hand, data automatically gathered by our devices could help us obtain more objective measures of digital well-being. In this category of indicators, we could think about the fragmentation of time, daily time for in-depth activities and the role of smartphones during crucial moments of our daily life. Possible variables include the number of switches from one application to another per day/ hour (see for example Yeykelis, Cummings & Reeves, 2014), number of emails checked per hour, smartphone checking habits (Reid & Thomas, 2017). Specific software (e.g. RescueTime or ManicTime) can be used to capture data on such variables.

A third source of data on digital well-being skills could come from direct observation or self-report of specific practices that are considered "healthy" or "good" in the literature, from a physiological point of view. Following is a possible list of some of these habits and activities:

- strategically selecting contacts and information channels to follow,
- distinguishing communications that need urgent response from those that can be postponed,
- managing filters and lists in the mail box by separating the less relevant communications from those that are urgent,
- organising relevant information found in the web by using bookmarks and reference managers or digital archives,
- using applications that reduce distractions (advertising or social) and which facilitate concentration (e.g. Adblock, readability, antisocial),
- activating the journal control settings and tag control in SNS in order to avoid the possibility of publication of unwanted content by third parties,
- in the event of disconnection (either chosen or imposed) notifying your contacts that you are unavailable via an automated message,

- knowing how to change the Instant Messaging app settings to eliminate sound notifications for group chats,
- exiting from a group chat when you recognise it as irrelevant or unpleasant.

However, as we have seen above, we need to extend our consideration of these indicators to the social dimension as well. In particular, we consider the emergence of digital group well-being skills, values and norms as shared capacity to prevent conflicts between personal and collective interests and to promote integration and acknowledgment of every member. We could consider the following practices as examples of possible indicators of this kind:

- using netiquette codes, with human moderators or bots,
- opening arenas of discussion about the problems of digital usage (from cyber-bullying to Internet addiction),
- reducing instant collective communications to a certain time range (evening or week-end),
- involving members in the co-production of structures and contents of the social community,
- giving public attention to evidence regarding health and well-being, commenting scientific research and promoting group self-reflection.

This last point is essential in order to examine the evolution of a digital well-being culture, in terms of the development of awareness and care about people's quality of life when engaged online. This bottom-up innovation may slacken the push for performance and multi-tasking and, therefore, question the current socio-cultural pattern.

Recognising "digital well-being" as part of digital competence has also profound implications for learning institutions. In particular, we argue that skills to manage communication overabundance should become part of the education system. While the development of digital skills has been hitherto understood primarily as the development of skills to technically operate technologies (or as skills to teach with digital media), now it seems an important task for the school system to develop skills to limit and to channel this use. Schools can be major players in the socialisation to a critical and balanced use of the media in daily life, even outside school time. As seen before, this kind of intervention will be more and more central in combating social inequality.

Moreover, our theoretical proposal may be useful for researchers in that: 1) it identifies the relationship between digital skills and quality of life more directly, and 2) opens up a new interdisciplinary field of research where cognitive science, sociology, anthropology, psychology, educational science but also medicine can fruitfully cooperate. Future research will need to better describe the risks to well-being related to the use of connected devices, clarify the relationship between digital well-being skills and social characteristics, identify good practice in facing digital overabundance and analyse the role of schools and other learning institutions in the development of such skills. This new research area will also have to study how values and norms concerning the daily use of media are legitimated. Finally, social research in digital well-being will also have to drive policies in order to not only disseminate knowledge about "clinical" flipsides of the use of ICTs but also to "nudge" towards a cultural reflexivity about what is good in the digital environment.

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