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From digital skills to digital repertoires: towards a more inclusive conceptualisation of technology use in an ageing society

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Introduction

Current literature on digital society often refers to digital skills as key in creating advantages and opportunities – or, conversely, disadvantages and inequalities (Hüsing et al. 2015; Kiss 2017). The concept of a 'digital divide' has been built on the idea that there are differences in usage and skills between certain groups of people, with those more affected by related vulnerability being women, older people and those with lower levels of education and/or lower incomes (van Deursen & van Dijk 2010; 2011). In such rhetoric, older people are normally portrayed as lacking digital skills or access to the latest communication technologies (see Ivan and Loos 2023).

To offer a deeper analysis of the 'digital skills' concept in the context of digitalisation today, this chapter argues instead for use of the term 'digital repertoire'. This concept, which describes the everyday practices of technology use, is more inclusive and brings nuance to the understanding of the way in which different social groups form part of the technological ecology (Edgerly et al. 2018; Peters et al. 2022). This in turn expands on the analysis offered by the dominant 'digital skills' concept by describing the relation between people and technology, predominant in today's global context of competition, fluid labour markets and digital transformations. The Covid-19 pandemic has also accentuated the prominence of the concept of 'digital skills' and blocked

attempts to critique it; in the unprecedented situation created by the health crisis, digital prerequisites proved to be an important element in survival (Antonopoulou et al. 2021; Garcia et al. 2021).

Subsequently, the chapter draws attention to how the concept of digital skills has been measured. Traditionally self-assessment and performance tests, a metric that evaluates people's readiness for the future labour market, have been used. In this way, the term raises serious concerns about the normativity and linearity of the 'digital skills' concept, as well as its potential to reinforce a range of prejudices, including ageism, in describing the digital competencies of older adults. Furthermore, the concept of twenty-first-century digital skills is presented in the chapter as a non-linear and less reductionist way of measuring people's digital skills. It includes a broader perspective of the role of digital transformations in people's lives.

Finally, this chapter departs from a behaviourist approach ('more is better') to a functionalist perspective (based on the role played by different technologies in people's lives) by discussing the value of using 'digital repertoires'. As noted above, this concept serves to reveal the ways in which people navigate digital realities today, including the norms and conventions of digital interactions. The concept of digital repertoires allows not only for the investigation of individual digital use, but also for the co-use, supported use, non-use and discontinued use of digital technologies.

Investigating digital repertoires through ethnographic and narrative research (Hänninen et al. 2021a), as well as the use of longitudinal and cross-cultural data (see Ivan and Nimrod 2021), offers a focus on digital practices. This chapter also puts forward the argument that repertoires evolve through time, place and available technologies. It concludes by considering the role of digital repertoires for policy-making, providing an in-depth exploration of current digital realities.

Dominant role of digital skills in digital society discourse

The rise of the network society (Castells 2010 [1996]; 2014) accentuates the process of individuation and shapes a global culture organised around computer-mediated communication. The information age and the rapid integration of information and communication technologies (ICT) create an imperative to discuss and measure people's digital skills. As digital technology has become an integral part of both our personal and professional lives, having a transformative effect over the past 15 to

20 years, people necessarily have developed new skills. Moreover, public rhetoric emphasises that individuals should 'look for and develop' these new types of skills (Kiss 2017, 3) to be successful as workers and citizens.

Generally speaking, decision-makers and public bodies have imposed a hegemonic view on the concept of digital skills. For example, a report on digital skills in the EU labour market explicitly states that:

> Everybody will need to have at least basic digital skills to live, work, learn and participate in society, and a digitally skilled workforce will need to be present in the labour market to avoid skill gaps or skills mismatches (Kiss 2017, 3).

While digital technology is required in nearly every kind of job, the overall concern is that some people will be left behind, at risk of becoming marginalised or a burden to society (Hüsing et al. 2015). In addition, digital skills are perceived as important prerequisites from the point of view of competitiveness: societies, lifestyles and individuals who are better at acquiring advanced digital skills in response to the demands of the current digital transformations will secure their place at the top of global competition (Ovanessoff and Purdy 2011).

The overarching status of digital skills draws from the digitalisations of society in general, and of working life in particular. It forces a Cartesian representation of digital reality, in which the gap between 'haves' and 'have nots' is continuously highlighted (van Deursen and van Dijk 2011), compelling individuals to conform to a standardised list of skills (see, for example, ECDL Certification – an IT certification programme for basic computer skills recognised worldwide).[1] As a result, governments and international bodies urge that such skills are measured, showing differences between social groups (European Commission, *COM 2010/245*). The idea of 'digital skills' as a prerequisite for employment is illustrated by data showing that more than 90 per cent of current jobs require some level of digital skills (Feijao 2021). Even in the context of advanced rates of unemployment, numerous jobs in the ICT sector remained unfilled.

The Covid-19 pandemic accentuated the importance of digital skills (Antonopoulou et al. 2021; Manco-Chavez et al. 2020). The idea that we can no longer survive in contemporary society without proper digital competence (a set of digital skills that could be assessed, for example Calvani et al. 2008) is implicitly accepted by individuals and governments (Tsekeris 2019). Indeed, in certain circumstances digital literacy, which refers to a multiplicity of digital skills and knowledge of how to apply these

skills in real-life situations (Ng 2012), proved to be a vital resource during the pandemic. For example, online education was crucial: educators, students and librarians had to learn new ways of transmitting information and interacting using internet-based tools (Manco-Chavez et al. 2020). Even the most critical voices on the role of new technologies in education had to submit to the new digital work environment and hone their skills accordingly. Again, the discussion remains in terms of those who succeeded in adequately acquiring the relevant skills and those who did not.

The Covid-19 pandemic also put pressure on 'vulnerable groups' (e.g. those with the lowest incomes or levels of education or the older members of society) to improve their digital skills – including those already acknowledged to have lower digital skills, such as older adults (Garcia et al. 2021). Studies suggest that ICTs can reduce the effects of social isolation (e.g. Buléon et al. 2022), providing healthcare at a distance, sustaining remote work and education (Al-Habaibeh et al. 2021) and also maintaining basic services (O'Sullivan et al. 2021), such as shopping and appointments (see, for example, Baker et al. 2018). However, these studies have mainly used self-assessment measures, in which people report the frequency of use, the type of use (for example, for work or leisure) and possible difficulties in using digital resources.

Digital skills are considered to be the main prerequisite of work adaptation. The development of digital skills in the pandemic scenario was focused on vulnerable social groups (Garcia et al. 2021). Raising the level of digital skills in such groups was presented as an emergency call for action. For example, a recent study on the computer skills of the EU population aged 55 years and above living in community dwellings called for intervention: in two-thirds of the EU countries 30 per cent of the population aged 55 and above have no computer skills. The results showed, unsurprisingly, that older adults in general have the lowest level of computer skills, something that has been labelled as a problem needing EU 'action and intervention' (Midão et al. 2020, 31). Note, however, that the study is based on SHARE data from 2015 (Survey of Health, Ageing and Retirement in Europe), in which people self-reported their computer skills on 5-point Likert scale (ranging from 1 (Excellent) to 5 (Poor), or 6 – I have never used a computer (spontaneous answer)).

This study opens the discussion on the challenges faced when using the concept of digital skills in a normative way. It is not only a matter of how we measure digital skills or computer skills, as in the example presented here (Midão et al. 2020), but also of what exactly we measure when assessing digital or computer skills. Challenges in operationalisation and in providing a standardised list of skills need to be assessed.

Challenges of measuring digital skills

As shown here, two methodologies prevail regarding the measurement of digital skills (Allmann and Blank 2021): self-assessment measures and performance tests. Self-assessment approaches either ask respondents to evaluate their skills, as in the example above, or to answer whether they can perform certain tasks such as using a browser, shopping online or designing a website. An obvious limitation of self-rating digital skills is the lack of external validity and the fact that people have limited capacities to evaluate their own skills. There are certain groups of people who have particular systematic bias when they self-rate digital skills (Hargittai and Shafer 2006; van Deursen and van Dijk 2010). We know, for example, that older people tend to underestimate their digital competence, whereas for younger people the effect is the reverse: they tend to overestimate their digital skills (Hargittai et al. 2019). Furthermore, self-evaluation of digital skills occurs within a social context that should not be overlooked. Internalised stereotypes regarding a respondents' social group could play a role in shaping a response. This can be the case for older women, for instance, who tend to underestimate their digital skills compared to older men, following stereotypical gender roles that associate technology with masculinity (Ivan and Schiau 2016). In addition, the fact that advanced digital skills are presented as socially desirable is an important contextual factor when individuals self-report their skills (Zimbardo 1995).

Performance tests are more accurate measures of evaluating digital skills by asking participants to perform certain tasks while observed by researchers (van Deursen and van Dijk 2010). Besides the time and costs, a performance test is a top-down approach, starting from what is expected from people in terms of digital skills – an etic perspective – of what somebody should do to be labelled as 'digitally competent'. However, this gives us no information on the relevance of each task for people in their individual lives. Recently, more in-depth methodologies have been used in an attempt to construct an emic perspective on digital skills (Allmann and Blank 2021), based on ethnographic techniques such as observations and interviews. Even so, however, the way in which digital skills have been operationalised does not encourage the use of in-depth methodologies.

Traditionally, digital skills have been related to the technical aspects of the medium of communication (van Deursen et al. 2016; van Deursen and van Dijk 2011); they are generally defined as 'the capacity to respond pragmatically and intuitively to challenges and opportunities in a manner that exploits the internet's potential' (DiMaggio et al. 2004,

378). More recently, digital skills are defined in terms of effects – by focusing on positive outcomes, for example the ability to solve problems and to make use of online resources. Digital skills are considered 'the primary requirement for conducting capital-enhancing activities online, for obtaining positive outcomes from internet use' (van Deursen and Mossberger 2018, 123).

The concept of digital literacy (Glister 1998) changes the focus of digital skills from the ability to handle technology (for example, using a browser, creating a file and installing an application) to mastering ideas and addressing problems with the use of digital resources. Digital literacy then encompasses cognitive and social-emotional skills to help in problem-solving (Eshet-Alkalai 2004). Digital literacy is seen not only as a sum of digital skills but also as a mind-set (van Laar et al. 2017) that enables individuals 'automatically' to solve different issues in the digital environment, effectively and effortlessly using their technical, cognitive and socio-emotional resources (see Ng 2012).

The original context of the concept of digital skills was to investigate people's readiness for the future labour market. Following the labour-market-oriented definitions of the term contributes to its normativity and certain ageist characteristics of the concept, particularly when applying it to the theory of age-based digital divides.

When operationalising digital skills, the concept accounts for technical competence in communications (see van Deursen and van Dijk 2010), ranging from content-related skills (e.g. sharing and reacting to content) to information communication (e.g. using a digital environment to find relevant things) and to creative and strategic skills (e.g. using a digital environment for self-presentation). More specifically, lists of ICT abilities used for work, leisure, learning and communication have been deployed for operationalisation of the digital skills concept. For example, the European Parliament (2006) refers to

> the use of computers to retrieve, access, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the internet (394).

The Organisation for Economic Co-operation and Development (OECD) launched a large programme for testing adults on different skills, including problem-solving in technology-rich environments.[2] In so doing it listed four layers of digital skills: 1) foundational skills, including emotional and social skills enabling the use of digital technologies; 2) complementary skills, such as information processing, problem-solving

and communication in the digital environment; 3) generic skills related to the use of digital resources for professional purposes, such as handling commonly used software; 4) special skills, named e-skills by some authors (see Fernández-Sanz et al. 2017). These skills are required for professionals in the ICT sectors, for example in programming or app development.

The operationalisation of digital skills by international bodies such as the European Union and OECD underpins the idea of employability by focusing on the digital skills people would need to be successful in the labour market in the so-called information society. Nevertheless, it is worth asking: who decides what digital skills are needed for a certain period or setting? We know little about the process of decision-making: how such skills are selected, valued and considered desirable over time. Indeed, international bodies rely on experts' views (Donoso et al. 2020; van Laar et al. 2022) and estimations about how the labour market might evolve in the future, with some studies finding that desirable digital skills might not correspond to managers' expectations (see Prezioso et al. 2021). Whereas other studies highlight an unbalanced focus on certain skills – for example, prioritising information- and communication-related digital skills while ignoring other aspects such as strategic use and content creation (Iordache et al. 2017).

A recent and broader model to operationalise digital skills has been developed by van Laar et al. (2017). This model integrates the idea of twenty-first-century skills with the concept of digital skills, resulting in a hybrid term: 'twenty-first-century digital skills'. Through a systematic literature review, the researchers identified the core skills needed in a digital environment, one not restricted to the technical use of different digital resources and in line with twenty-first-century skills (as provided by the *Assessment and Teaching of 21st Century Skills* – Binkley et al. 2012). The conceptualisation of twenty-first-century digital skills comprises seven core dimensions: technical, information management, communication, collaboration, creativity, critical thinking and problem-solving. They also included five contextual dimensions; ethical awareness, cultural awareness, flexibility, self-direction and lifelong learning, as presented briefly in Figure 2.1.

The conceptual model of 'twenty-first-century digital skills' brings some nuance to the normativity of describing digital skills; it is also more context-sensitive than previous attempts have been. In addition, the model has been tested on a relatively large sample of employees (N=1.222) working in the creative industries (van Laar et al. 2019), proving that problem-solving was a key component of twenty-first-century digital skills

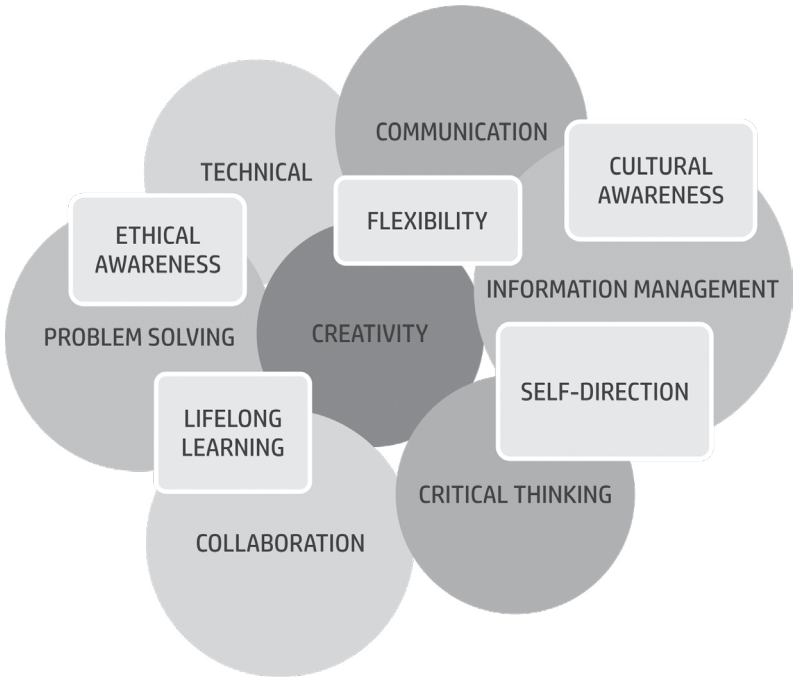

Figure 2.1 Operationalisation of twenty-first-century digital skills, adapted from van Laar et al. 2017. Image by the author.

– and also, more importantly, that the listed skills build on each other sequentially. As previous attempts treated the listed skills independently, current research on digital skills acknowledges the fact that the measured skills could be simultaneous or sequential but are not necessarily linear (Allmann and Blank 2021).

Nonetheless, the digital skills concept is deterministic in nature, forcing us to think in terms of hierarchies, privileging the 'advanced' over the 'laggards'. It is a concept largely used to assess individuals' success in the labour market and their potential employability in a society marked by rapid digital transformation. At the general level, the way it has been operationalised and measured responds to the idea of the global innovation competition. At the individual level, the concept of digital skills starts from the premise that 'more is better' and ignores the meanings people invest in digital technologies. Below I argue further for digital repertoires as an alternative and less deterministic concept that could be employed to understand the role of digital technologies in everyday life, and so go beyond people's capital in the labour market.

Moving from digital skills to digital repertoires

In recent years, the concept of digital repertoires has been employed to capture digital realities (Edgerly et al. 2018; Lee and Yang 2014; Peters et al. 2022). There is a shift from seeing technology use as a set of discrete behaviours and skills, aggregated at the individual level to place a person on a hierarchy, to everyday practices and mechanisms through which people navigate the technological ecology of everyday life. With digital repertoires, the focus is on the meanings of using different technologies and the significance that people invest in their digital behaviours and others' digital practices.

The repertoires are meaningful and fulfil their functional adaptation role: to meet people's needs in everyday situations (Schwarzenegger 2020). Beyond discrete digital behaviours, digital repertoires encompass a continuum of contextualised digital practices. This presents a shift from an etic to an emic perspective in understanding the adaptive role that digital tools play in people's lives. To give an example, when interviewing older Romanian women in the 'Grannies on the Net' project (Ivan and Nimrod 2021; Ivan and Mocanu 2020), we seldom found women who were not using Google applications to search for different information that they might have needed in daily routines (for example, the service hours of certain institutions). This would have counted as a low level of digital skill – mainly the ability to solve problems by using digital technology.

During interviews with some of these women, I would ask exactly how they would proceed when they sought to obtain particular information, exploring such practices 'from the inside'. It was a revelation that some of them used Google Voice Search to find information, even though they did not name the functionality as such. The conceptual strength of digital repertoire derives from the fact that they offer a holistic view of different practises that co-exist, in the service of a desired end-goal (Peters and Schrøder 2018; Peters et al. 2022). The concept also offers insight into the possibilities people have of navigating through different media spaces, and of using interrelated modes of different technological affordances (Taipale et al. 2021).

Indeed, the digital repertoire concept shares a connotation with the meaning of media repertoire – a term that has been used in the literature to explore media use (see Gallistl and Nimrod 2020; Hasebrink and Popp 2006; Hasebrink and Domeyer 2012; Hänninen et al. 2021a; Olsson et al. 2019). Starting from media ecology theory, introduced by McLuhan in 1964 and later developed by Postman in 1969 (Postman 2000),

media repertoire investigates the interrelation between technology, the communication medium and the social environment. Media repertoires thus describe the entire media landscape of a person (see Gallistl and Nimrod 2020) and the contexts in which this could be beneficial.

The fact that some media uses could be more beneficial than others, for example in predicting wellbeing or reducing loneliness (Liu et al. 2019), could explain the preference for such media and their functional role. I agree with Nimrod (2017), who argues that current studies on media repertoires rarely offer a holistic and emic perspective. Such studies (see Boczkowski et al. 2018; Choi 2016) instead explore how the discrete use of different media are associated with certain positive or negative outputs in people's lives. In the case of older adults, for example, studies show that greater use of social media is accompanied by higher life satisfaction (e.g. Gaia et al. 2021); others, however, have produced contradictory results (e.g. Tomini et al. 2016; Zhao 2021).

In more nuanced studies (see Gallistl and Nimrod 2019; Nimrod and Ivan 2019), social media use and older adults' subjective wellbeing have been linked, revealing the functional role of different media. Some media have been perceived by people as 'ways of wasting time', whereas others are perceived as 'ways of filling the time' (Nimrod and Ivan 2019,16). When moving from a behaviourist ('the more the better') to a functionalist perspective, we incorporate the meaning of the concept of repertoire and depart from the deterministic view that is criticised here regarding the digital skills concept. Research on digital repertoires reveals media use in social context, in connection with people's lifestyles and the practical meanings of different social interactions (Schwarzenegger 2020).

The role of digital repertoires in describing digital practices

Although media and digital repertoires encompass similar connotations, digital repertoires offer a broader view of technology use in everyday life, transcending media use to cover internet-based devices, digital applications and services. Digital repertoires refer to media content and include affordability and intersectionality of the media content, as well as how such content is used in people's daily routine. However, 'digital skills' and 'digital repertoires' are intersecting concepts, referring both to people's technology appropriation and technology domestication. The fact that digital technologies are omnipresent in people's lives requires certain skills (competence) and functionalities associated to one's needs

and daily routine. We can therefore understand that the two concepts form part of the same rhetoric on the ubiquitousness of digital influence in our lives.

The digital repertoire is not only a broader concept than media repertoire; it also offers a way of looking at the use of technology to create social accountability about the ways in which people navigate through today's digital realities. I use here the term of 'accountability' suggested by Harvey Sacks (1992) to describe the subtle ways in which our behaviours convey norms and conventions of everyday interactions. For example, in the case of older adults, as Hänninen et al. (2021b) have suggested, investigating people's digital repertoires would mean also discussing the co-use, supported use (as the role of the warm experts) and the non-use or discontinued use of digital technologies. Research often focuses on older adults' reluctance to adopt new technologies, or their 'lagging' ability to use different devices, or the challenges they face on being immersed in the new digital sphere. This is evident in the use of the concepts of 'digital immigrants' as opposed to 'digital natives' (Prensky 2001). We want better to understand the digital ecologies created by people, the environment and the technologies they are using. By doing so, as shown in a recent article (Loos and Ivan 2022), we aim better to comprehend the relation between age and technology use by underlining the fact that it is not only people who are getting old; digital technologies are too.

In addition to ethnographic and interview-based research methods (Hänninen et al. 2021a), the use of longitudinal data can be equally beneficial in the study of digital repertoires, showing how practices change and are maintained over time. Such studies highlight changes in the meanings people ascribe to different digital practices over time. Indeed, the concept of repertoire incorporates the idea of dynamics (Tilly 2006), as repertoires evolve 'with time, place and available technologies' and differ according to context (Khazraee and Losey 2016, 41). From this point of view, longitudinal and cross-cultural data (both quantitative and qualitative) may provide a better approach to the investigation of digital repertoires than cross-sectional and culturally homogeneous data.

A more nuanced way to approach digital repertoires would be an investigation of how daily life is reflected and reconstructed through the use of digital technology. The concept encompasses socio-digitisation (Latham and Sassen 2005, 3), the process by which daily life reflects and is reflected through technology use. By studying the ways in which digital technologies are used in everyday contexts, we have access to people's micro-social universe. For example, in previous work (see Ivan and Nimrod 2021), I have offered insight into family conflicts by investigating

technology use in intergenerational settings, using narratives from grandmothers in different countries. In doing so, we shed light on the role of digital technologies in generating, maintaining and solving conflicts.

In other work, the routines of daily life offer a reflection of the digital spectrum, providing another way of approaching the concept of digital repertoires. For example, in one of our studies (Ivan and Mocanu 2020), we explored how a group of older people talk about how they have incorporated different digital technologies into their lives. To trigger their reflections, we used video material featuring a short artistic movie about an elderly couple struggling to install an internet-based application. We noticed that people tended to construct meanings for the different digital tools they have appropriated by associating them with their social environment and different situations in life. Some would say, for example, that receiving a phone specially designed for older people from their adult children was somehow humiliating, or at least uncomfortable. They thus ascribed a negative meaning to that type of device as an object that marked the loss of their agency with technology.

Moreover, this approach enabled us to talk about people's digital repertoires in general, as well as about specific digital repertoires – for example, blogging repertoires, social network sites (SNS) repertoires and instant messaging repertoires (see Khazraee and Losey 2016). People's digital repertoires became more nuanced with rapid change and diversified technology. The SNS repertoires, for example, do not only incorporate 'skills' to handle different options offered by SNSs, but also come together with a kind of tacit knowledge (Polanyi and Sen 2009; Stevenson 2013). Such an implicit recognition of norms and regularities would enable people not only to explore different functionalities of such digital platforms, but also to proceed in the 'proper way'.

A good example of how SNS repertoires differentiate between generations, creating irreconcilable situations, appears in an interview I recently conducted with a woman of 65 in Romania (Mandache and Ivan 2022). During the Covid-19 pandemic, she loved using Facebook to communicate. Every morning, she would post a 'good morning' message on her page, feeling connected to the world in this way. When her son asked her to stop because she was embarrassing him, she felt really confused. Repertoires can certainly be complementary, but they may also be conflictual. Digital repertoires mirror people's micro-sociality (in this instance, for example, the conflicts between generations). They therefore become a valuable tool to investigate some sensitive issues, such as people's intergenerational expectations or conflictual relationships.

In addition, the concept of digital repertoires offers a more useful, less prejudiced conceptual framework for studying technology use later in life. I agree with Taipale et al. (2017,4), that age-related digital gaps are specific to certain periods and will eventually disappear, and that the 'digital skills' deterministic approach seems unable to capture the integration of technology in older adults' everyday lives.

There are two principal reasons for this. Firstly, the concept itself is related to the work environment and to people's success in the labour market, something that many older adults have already left. The whole idea of improving people's skills serves the purposes of readiness for the new digitalised global economy and the increased level of competitiveness between economies from different parts of the world. The digital life outside the working sphere is difficult to capture through the concept of 'digital skills'.

Secondly, when measuring 'digital skills' older adults will always be the later adopters, the least advanced and in some ways 'behind' the younger groups. This serves to create and reinforce a stereotypical representation of older adults as being unable to use digital technology, or at least as being 'not that good at it'. In a previous article (Ivan and Cutler 2021) we showed how powerful such ageist views are and how they activate the 'vicious cycle of ageism' in which people internalised such representations, maintaining themselves in the so-called 'grey digital divide' (Friemel 2016).

As noted in this chapter, older adults tend to underrate their digital skills, whereas younger adults may often overrate theirs (see e.g. Barrie et al. 2021; Černochová et al. 2020; Hargittai et al. 2019; Ivan and Schiau 2016; Maderick et al. 2016). We also showed how when people underrate their abilities, a process of self-fulfilling prophecy may occur – such a vicious cycle is difficult to break. As we have observed elsewhere, the 'stereotype' issue plays a role in older people's underperformance when using digital technologies (Ivan and Cutler 2021).

Conclusion: from more inclusive concepts to more inclusive societies

The current chapter argues that 'digital skills' is a concept that dominates the rhetoric of public bodies in the discussion about contemporary digitalised society. The normativity and linearity of such rhetoric may have negative consequences in reinforcing prejudices and social cleavages between those who have the proper digital skills and those who do not,

creating arbitrary hierarchies and ultimately a divided society. However, digital repertoire could be a more inclusive concept when compared to 'digital skills'. Moreover, the use of digital skills is related to people's employability and competitiveness in the labour market. The study of digital technology use should extend beyond the traditional work sphere, particularly in reference to older people. In addition, the decision regarding what digital skills are relevant for success in the labour market might also be arbitrary, or at least problematic.

The critical reaction of policy-makers to a more nuanced conceptual framework and the study of digital repertoires could be related to the fact that policy development is often based on the measuring of several indicators which are easily quantified. This is the main limitation of the practical use of the digital repertoire concept instead of digital skills. Nevertheless, although the digital repertoire concept does not focus on the quantification of digital behaviours, it does provide a rather more in-depth exploration of current digital realities. Here I have offered a reaction to such criticism by explaining that longitudinal data (both quantitative and qualitative), as well as data coming from different cultural groups, are a novel way of capturing the dynamics and multiplicity of digital practices – the essence of the 'digital repertoire' concept. However, longitudinal data are not always available and are not even country-inclusive: data are mostly collected in Europe and North America, and longitudinal studies are costly and difficult to conduct.

The ACT longitudinal study (2016–2021, see Loos et al. 2018; 2020), in which we investigated digital practices among older people across seven countries (Austria, Canada, Finland, Israel, the Netherlands, Romania and Spain), gathering panel data in three waves (2016, 2018 and 2020), is rather an exception. Although there are longitudinal and cross-national studies collecting data about digital skills (see, for example, OECD 2016 – PIAAC longitudinal study), they are normally focused on young adults, and they target skills that could be converted into valuable outputs on the labour market. In addition, little is known about the contexts in which such skills have been acquired and adjusted, or indeed about the contexts in which they are used. Moreover, people of all ages use their digital repertoires in contexts that transcend the work environment. They may be used to connect with others and reduce loneliness, for example, or to look for a partner or to stay in touch with topics related to hobbies, values and interests. I believe that 'digital repertoires' would be equally relevant to understanding the wellbeing of these users.

After all, a concept is not only a theoretical construct; it is also a way of seeing the world through certain 'lenses'. A reliance on the concept of digital skills envisages a more deterministic world in which success is rated by the way we adapt faster to predefined digital realities, whereas digital repertoires give room for individual choices and tacit digital knowledge, for diversity and subjective meanings. Furthermore, digital repertoires are not obliged to be consistent or free from contradictions. For example, an older adult can be an avid photographer, experienced in using sophisticated equipment and software, but at the same time be less familiar with email (because it involves typing) or with using digital services.

People can also change or become more sophisticated in their repertoires. Understanding and appreciating such change would mean (re-)considering the relevance of different digital practices in their lives. In failing to understand people's perspective towards what they are doing when using digital devices, we will eventually employ a 'technology-centred' lens, with possible negative consequences. The concept of technostress, for example (Ayyagari et al. 2011), coined by the clinical psychologist Crain Brod (1984), describes a modern disease resulting from an inability to cope with the proliferation of information and communication technologies (Ayyagari et al. 2011). Technostress phenomena have now become the subject of widespread research (Nimrod 2022; Tarafdar et al. 2019; 2020), revealing the discomfort and unease people may experience when it is imperative to engage constantly with new (digital) technologies and become more advanced or skilled. Those who fail to keep up with increasingly ubiquitous technological devices and do not learn how to handle the latest technology advancements will eventually be left behind.

This underscores the importance of critiquing digital skills as a less inclusive concept that stresses technology use and creates a binary division between 'successful' and 'unsuccessful' individuals. Instead, I argue that the idea of digital repertoires helps us to implement a person-environment fit model, providing a more contextual and nuanced understanding of our interaction with a range of digital technologies.

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Notes

1 See https://icdleurope.org/.
2 Programme for the International Assessment of Adult Competencies, PIAAC.

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