

# Digital Inclusion of People with Disabilities: A Qualitative Study of Intra-disability Diversity in the Digital Realm

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This paper presents an in-depth study of intra-disability diversity in the digital realm and the related role of individuality and selectiveness in the digital choices and experiences of people with disabilities (PwD). The study adopts the interactionist model of disability and problematises conceptual uniformity in research that focuses on the medical and socially-constructed features of disability as those determining digital constraints and affordances for PwD. Through primary qualitative evidence, it argues that individuality and selectiveness shape a complex terrain of intra-disability diversity, which forms the nuances and experiences of digital inclusion for PwD. Thus, it invites researchers to move beyond disability-fixed categorisations and offers a 3-tier recommendation for future research to explain the range of PwD's perceptions and experiences in the digital realm.

Keywords: digital inclusion, disability, individuality, intra-disability diversity, selectiveness, social inclusion

## 1. Introduction

According to the World Health Organisation (2011, 29), over a billion people are estimated to be living with a disability. People with Disabilities (PwD)<sup>1</sup> are commonly acknowledged as a population 'often defined against

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<sup>1</sup> The term 'disabled people' is often used in both scholarly and non-scholarly discussions. While scholars such as Dan Goodley make use of the term 'disabled people', the term PwD is often used by the advocacy movement that aims to put the person before the disability. In this paper, the preference is for PwD, as this term approaches a certain aspect of those people's bio-medical status, without characterising them as 'disabled' and thus without defining their identity by their disability.

a norm of ability hence seen in terms of deficit’ (Adam and Kreps 2009, 1045), for which social inclusion is a pursuit rather than a secured state. They arguably live in a society designed for the numerically disability-free majority and face an increased risk of social exclusion, as they ‘do not have equal access to health care, education, and employment opportunities, do not receive the disability-related services that they require, and experience exclusion from everyday life activities’ (WHO 2011, xxi). Also, they often live in low-income households and the mobility and accessibility issues they often encounter decrease their participation in civic activities (Gov.UK 2014; papworthtrust.org.uk 2013; Sourbati 2012). As Raja states in the background paper ‘Digital Dividends Report’ for the World Bank:

The physical inaccessibility of “brick and mortar” and “pen and paper” based educational, employment, information, and social environments has been one of the primary factors for the marginalization of persons with disabilities. Everything from being able to travel to and enter a school or work site, perceiving and understanding what is written on the blackboard, hearing, understanding, and communicating with teachers, managers, clients, and peers, accessing paper and print based content, and recreation and socialization can become a barrier (2016, 5-6).

Considering this state of exclusion, there is a growing interest in whether and how digital technologies, tools, and services could make a difference to PwD’ social inclusion and welfare. Empirical research on the development of assistive technologies and related platforms started to grow in the last couple of decades (e.g. the European ASTERICS project<sup>2</sup>), while discussions and developments about the potentialities of the so-called Internet of Things as a new way to improve the everyday lives of PwD are being produced (G3ict 2015; Mulfari et al. 2015). Overall, it has been argued that Information and Communication Technologies (ICTs) offer to PwD the potential to compensate for physical or functional limitations by enlarging the scope of activities available to them.<sup>3</sup> Some of these activities can include better access to healthcare and more quality education, as well as

<sup>2</sup> See at <http://www.asterics.eu/index.php?id=3>

<sup>3</sup> See at <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/access-for-people-with-disabilities//>

enhanced opportunities for civic participation and increased presence in the labour market (ITU 2015). Also, the decreasing cost of mobile technologies benefits PwD' independence through the use of portable technology which integrates accessibility systems (ibid). Similarly, one can observe that the merging of ICTs with robotics creates possibilities for creative play, education, and also the assessment of therapeutic interventions, especially for children with disabilities (van de Heuvel, Lexis, and De Witte 2017).

However, existing accounts on PwD' digital experiences omit to involve those who have chosen to be digital-free, not exploring sufficiently the role of human agency and the importance of the concept of digital choice. This paper argues that PwD' digital inclusion and how it relates to their social inclusion are far from simple or one-dimensional. Specifically, it explores the extent to which intra-disability diversity prevails in the digital domain and unpacks the role that individuality and selectiveness play in the choices PwD make with regard to digital technologies and in those technologies' perceived or experienced influence on their social inclusion.

As shown later in the paper, 'digital choice' is a central notion in broader debates on digital inclusion, justifying a closer look into PwD' digital inclusion as a choice rather than as purely externally or bio-medically enabled or prohibited. To unpack the status of digital inclusion as a choice for PwD and shed light on the degree of intra-disability diversity that marks PwD' digital inclusion and its importance for their social inclusion., this paper presents qualitative evidence on the role of individuality and selectiveness in PwD' perceptions, decisions and experiences in the digital realm. In this paper, individuality is defined as independent individual agency and selectiveness is understood as selection on the basis of free choice.

The next section presents the multi-faceted concept of digital inclusion and existing evidence on PwD' digital inclusion. Then, the paper presents the notion of digital choice and urges for a closer look into PwD' choices in the digital realm through the lenses of intra-disability diversity and as per the interactionist model of disability. The empirical part of the paper presents first, the qualitative methodology and analytical approach of the study and second, the findings obtained from focus groups with PwD. The concluding discussion reflects on the findings and offers recommendations for future research.

## 2. Digital inclusion and PwD

### 2.1. *Digital inclusion: a multifaceted concept and reality*

In the last three decades, researchers increasingly understand not only the existence of multiple and complex inequalities in the access to, use of and benefits from digital technologies, but also that digital inclusion varies in breadth and depth and involves evolving gradations. This has led researchers to propose various typologies of digital adopters and non-adopters (Blank and Groselj 2014; Borg and Smith 2018; Brandtzæg, Heim, and Karahasanović 2011; Livingstone and Helsper 2007; van Deursen and van Dijk 2014).

The multi-faceted nature of digital inclusion (Tsatsou 2011a) suggests the existence of a complex terrain of hurdles to digital inclusion that combines access and cost problems, material asset inequalities, lack of skills, and unsuitable everyday life contexts (e.g., Katz and Gonzalez 2016; Mubarak 2015; Trentham et al. 2015; Witte and Mannon 2010). Digital literacy, in particular, has gained prominence in accounts of digital inclusion. While digital literacy has broadly been classified as skills and knowledge of various types (e.g., Brandtweiner, Donat, and Kerschbaum 2011; van Deursen and van Dijk 2010; van Deursen, van Dijk, and Peters 2011), recent research has captured it through the concept of self-efficacy (e.g., Helsper and Eynon 2013; Lauren et al. 2016), namely ‘the belief in one’s capability to organise and execute the courses of action required to manage prospective situations’ (Bandura 1997, 2).

In accounting for what makes digital inclusion so important, existing scholarship has argued that digital inclusion is ‘a practical embodiment of the wider theme of social inclusion’ (Selwyn 2004, 343) and that ‘a high degree of correlation between social inclusion/exclusion and digital inclusion/exclusion’ is in place (Tapia and Ortiz 2010, 217). In this respect, communication resources appear to be imperative for participation and exercise of citizenship, with social, economic and political exclusion being exacerbated due to digital exclusion (Baum 2014; Helsper 2012; Mossberger, Tolbert, and McNeal 2008; Park 2012). On the other hand, critical evaluations of technology have argued that ‘maybe some people will not use it at all and – hard though it might be to accept – maybe its lack does not have to be a source of inequality and disadvantage.’ (Wyatt, Thomas, and Terranova 2002, 25). Further, some scholars have stressed that broader social disparities shape conditions of

digital exclusion, not only questioning the likelihood of overcoming socially and economically engrained divides (Norris 2001, 17) but also raising the possibility of exacerbating social disparities through digital technology (Robinson et al. 2015; van Deursen and van Dijk 2015). Taking a more middle ground, others have questioned the strength of the link between digital inclusion and social inclusion. They have argued that beneficial forms of engagement with technology do not always represent or enable transformational experiences in social inclusion domains (Clayton and McDonald 2013) and that more nuanced, multiple levels of access, use and appropriation of digital technology are needed in order to enhance the role of technology in individual and community living (Livingstone and Helsper 2007; Selwyn 2004; van Deursen and van Dijk 2015; Witte and Mannon 2010).

Whether it is digital exclusion that creates social inequalities and disparities or the latter paves the way for disproportionate digital opportunities often appears as a ‘chicken-egg’ problem, and one should acknowledge that the relationship between the ‘digital’ and the ‘social’ is far from uniform.

## ***2.2. Digital inclusion of PwD: importance and barriers***

The relationship between the ‘digital’ and the ‘social’ is even more complex when it comes to socially marginalized populations, such as people with one or more disabilities. Since the 2000s, the question of PwD’ social inclusion has increasingly been informed by digital inclusion research, which has drawn its attention to the correlation between PwD’ social inclusion and their digital engagement (e.g., Dobransky and Hargittai 2016; Helsper 2008; Hynan, Murray, and Goldbart 2014; Lussier-Desrochers et al. 2017; Scholz, Yalcin, and Priestley 2017; Watson 2016).

Specifically, research has demonstrated the benefits of digital communication for PwD’ capital-enhancing activities, such as: information seeking; education; health support; social interaction; job seeking; self-determination; self-advocacy; independence development; and identity expression for reduction of stigma (Adkins et al. 2013; Chadwick et al. 2013; Darcy et al. 2017; Dobransky and Hargittai 2006, 2016; Watling 2011; Wise 2012). This has led to numerous calls for continuous support and funding of an assistive technology ecosystem that will enhance PwD’ community living, transforming day services, supporting them

into work and their own homes, and providing primary care and disability network services (Disability Federation of Ireland 2016). Research has invited supportive action to enable PwD to use assisted living technologies (Hayhoe 2014; Gerling et al. 2016) and has accounted for their related motivations and interaction needs (Birčanin and Brereton 2016; Wilson et al. 2016).

However, the role of digital inclusion in PwD' social inclusion is not debate-free. Regardless of the continuous enrichment of Web Accessibility Initiative Guidelines, research has found that people with disabilities frequently experience digital exclusion and require a greater level of customization, training and support in order to effectively and beneficially use technology (e.g., Darcy et al. 2017; Fox 2011; Ofcom 2013). Researchers have argued that people with disabilities continue to lag behind in Internet access and skills those without disabilities, making it likely for this disadvantage in accessing online resources of social, economic and mental nature to compound the socioeconomic disadvantages they face (e.g., Dobransky and Hargittai 2016; McDonald and Clayton 2013). Such critical accounts stress the gap in policy commitment to promoting universal access for PwD and that a lack of access to technology is a 'denial of opportunities' or 'inability to control one's environment' that can be interpreted both politically and materially (Easton 2014, 277; Sourbati 2012, 574). From a different perspective, others have questioned the extent to which online participation and activities pave the way for increased social capital and inclusion compared to offline participation (e.g., Viluckiene 2015), while some consider digital participation a potential risk to offline socialization, due to creating technological dependencies and a spatial narrowing of social connections (Chib and Jiang 2014).

Regarding barriers to PwD' digital inclusion, these have largely been attributed to low literacy and technological skills, unemployment, low income, accessibility barriers, limited available support, cyber etiquette, and related policy insufficiencies (Blanck 2014; Caton and Chapman 2016; Chadwick, Wesson, and Fullwood, 2013; Dobransky and Hargittai 2016). Affordability, in particular, has been a longstanding issue (Helsper, 2008) due to the fact that PwD are often classed as low-income earners, making the acquisition of expensive assistive technology a cul-de-sac (Boeltzig and Pilling 2007; Dobransky and Hargittai 2006; Macdonald and Clayton 2013). Some research has taken a design-perspective (e.g., Easton 2014; Lewthwaite 2014; Williams and Hennig 2015), presenting device complexity (Palmer et al. 2012), user interface chaos (e.g.,

Bradbrook and Fischer 2004, 41) and reactive design of assistive technologies (Dobransky and Hargittai 2006; Lindsay 2011, 2) as prominent design-related barriers to PwD' digital inclusion.

### **3. Digital inclusion as a choice: the case of PwD through the lenses of intra-disability diversity**

In the above-reviewed literature, one can see that existing arguments have developed a dialectic understanding of digital inclusion in general, providing a diverse account of its benefits for PwD and the barriers to it that PwD encounter. However, the literature on PwD presents digital inclusion as a required opportunity, which is missed due to systemic and personal constraints, thus adopting an 'exclusion' rather than an 'inclusion' approach. In this sense, existing accounts focus more on constraints imposed on PwD rather than on PwD' decisions and choices in the digital realm, thus overlooking their agency.

Digital inclusion as a choice is what researchers have argued for more than a decade now (e.g., Selwyn and Facer 2007, 4), suggesting that even when access to technology is available, people might still disengage or decide to adopt a lifestyle which does not accommodate digital technology (Dutton, Helsper, and Gerber 2009; Mancenelli 2007). For example, Eynon and Helsper (2010) found that choice and exclusion are both important and that individuals do have agency independent of broader sociocultural factors that determine their use of the Internet. Also, Tsatsou, Youngs, and Watt (2017) have demonstrated that the role of age identity in digital inclusion is subjective and relational and they report findings that challenge discourses of youth as 'digital natives' and older people as 'digital immigrants', suggesting the existence of intra-generational diversity. Research has also found that culture and cultural determinants of identity play a role in the decisions people make for their digital inclusion (e.g., Baron and af Segerstad 2010; Robinson 2009; Tsatsou 2011b, 2012). At the same time, what constitutes choice and the extent to which choice and personal decision-making are informed are questions scholars have emphatically raised (e.g., Eynon and Helsper 2010).

Regarding PwD, existing discourses broadly adopt the idea that digital exclusion is imposed and, similarly, envision digital inclusion as coming from the top. For instance, Raja's (2016) paper on disability divide for the World Bank presents cost-beneficial policy and practice and offers related recommendations to governments and development practitioners, neglecting personal agency and decision-making. Most research has focused on

the support needs and availability of support services for PwD (e.g., Darcy, Green, and Maxwell 2017; Sallafranque-St-Louis and Normand 2017), while recent studies that celebrate the online agency demonstrated in PwD' online/technologically-mediated experiences view agency and empowered decision-making as an aftermath rather than a driver of PwD' digital inclusion (Bannon et al. 2015; Chadwick and Fullwood 2018). While Seale, Draffan, and Wald's (2010) study looks at the agency of PwD, it is of narrow scope, as it examines the role of digital agility and digital decision-making only with regard to the e-learning experiences of disabled students. This lack of focus on PwD' digital agency can clearly be seen in the absence of research insights into the role of individuality and selectiveness in PwD' decisions about and experiences with the digital. This is so, since choice-making, as a clear indicator of agency, necessitates a certain degree of individuality - namely, independent individual agency - and selectiveness - namely, selection on the basis of free choice - and it results in intra-disability diversity, namely the existence of commonalities and differences within and across disabilities, since different PwD make different choices as agents. What this paper argues is that one can approach digital inclusion as choice and PwD as actors by assessing the degree of intra-disability diversity in the digital domain, namely PwD' degree of individuality and selectiveness when they make decisions about and experience digital technologies.

To demonstrate the value of such an approach in the study of PwD' digital inclusion, it is important to go back to some foundational approaches to and debates on the notion of disability itself. Disability is a 'complex, dynamic, multidimensional, and contested' notion (WHO 2011, 3) that has been defined variously depending on the perspective taken on it and the contexts in which it occurs. For instance, Kim and Han (2017) identify three models of disability: the 'medical or individual', which approaches disability as an individual issue resulting from a situation that is either biological or not; the 'Nagi', which is concerned with how disability is expressed in the arrangements of everyday life and how the individual copes with this; and the 'social' that shifts the focus from the individual to societal, technological or other systemic factors that hinder PwD' equal participation in the society.

While disability studies shifted from the medical to the social model in the 1970s (Chib and Jiang 2014, 696), critiquing privatisation and deregulation of the ethics and politics of neoliberal policies of care (Edwardes



2015), scholars more recently suggested that the social model had become a shibboleth (Shakespeare and Watson, 2002), rejecting ‘a firm distinction between impairment and disability because they viewed biology and culture as impinging upon one another’ (Goodley 2011, 14). Thus, critical disability studies emerged in the new century partly in reaction to the dominance of the materialist social model (Meekosha and Shuttleworth 2009) and invited disciplines previously on the outskirts, such as psychology, to enter the field in order to launch a sense of self-appraisal and to reassess where we have come from, where we are at and where we might be going (Goodley 2013, 632). In this critical perspective, disability links together other identities as the moment of reflection and emphasises the cultural, discursive and relational undergirding of the disability experience. From this perspective, Shakespeare and Watson (2002) have noted the possibility of multiple identities, with some people with impairment resisting identification as disabled, because they want to see themselves as normal, and with others being more likely to identify with (alternative) parts of the experience of disability.

In a similar vein, some researchers have pointed to the interactionist model of disability, which was born out of the idea that our sense of self is constructed in relation to how we view ourselves and how others view us (Fay 2014), thus suggesting that ‘the differences between individuals and groups are recognised, scrutinised, challenged and perhaps transformed’ (Scruton and McNamara 2015, 50). In this regard, the interactionist model of disability conceptualises a dynamic fusion of the social and psychological self and acknowledges that the self and others constantly change. Through dismissing the binary distinction between bio-medical and social factors of disability, it places the individual factor, namely individuality and selectiveness, at the epicenter of the interest, noting the unavoidable possibility of intra-disability diversity.

However, currently, there is a lack of empirical insight into intra-disability diversity, namely into the portrait of commonalities and discrepancies within and among disabilities, in the digital realm. Although existing research has explored adoption, experiences and importance of technological services for a range of disabilities (e.g., Seale et al. 2015), it has not directly tackled the importance of intra-disability diversity for digital inclusion and its repercussions on PwD’ social exclusion. This way, the question when PwD will be allowed to board the diversity train (Olkin 2002) remains non-addressed by research on inter-sectionality (i.e., imbrication of disability and other categories such as sex, gender, race, age, culture, class, distribution of

wealth, ecology and war) (Goggin 2008) and trans-sectionality (i.e., disruptive, boundary-breaking, paradigm-shifting nature of the crip/queer body and identity) (Goodley 2013, 638). Similarly, existing research that examines the role of within-disability variations (e.g., mild, moderate or severe disability) in PwD' selection and use of digital technology (Duplaga 2017; Henshaw et al. 2012) takes a strictly medical approach, concluding, for instance, that people with multiple impairments have the lowest level of access to the Internet (Ofcom 2015). Such arguments tie digital inclusion with the nature and stage of the medical impairment and omit to look at non-medical aspects of within-disability or at across-disability diversity.

Due to these gaps, this paper adopts the interactionist model in its argument that the dynamism between the biological, social and psychological self can help one account for the heterogeneity within and across disabilities in general and in relation to digital inclusion in particular. This argument aims to challenge conceptual uniformity in the examination of PwD' digital inclusion and suggests that intra-disability variances are an important indicator of PwD' individuality, selectiveness and related choices and agency in the digital realm. Hence, this argument leads the paper to explore the following questions:

RQ1: *How diverse or uniform is the status of PwD' digital inclusion across and within disabilities?*

RQ2: *To what extent do individuality and selectiveness play a role in PwD' decisions and experiences in the digital realm?*

The methodology of the study is presented in the next section.

#### **4. Methodology**

Studying PwD' digital inclusion constituted part of a larger focus group study on the digital inclusion of three vulnerable population groups in the UK that are commonly identified within contemporary debates around social exclusion: PwD, older people and ethnic minorities.

The nature of the study made it imperative to employ a qualitative methodology, adopting openness in the research approach and aiming less at testing existing or hypothesized knowledge and more at discovering new aspects of the topic under study (Flick 2015, 11). In this sense, the study aimed to explore different levels

of participants' everyday life and experiences and to comprehend how social processes, discourses or relationships among (disabled) people work and the meanings they generate about the phenomenon under study (Mason, 2002). Qualitative methodology has gained popularity in research on PwD' digital inclusion owing to the need to gain insight into the personal experience of PwD' technology use (Williams and Hennig 2015; Sallafranque-St.-Louis and Normand 2017).

Scholars have also drawn attention to the usefulness of focus groups as a method for eliciting data in disability studies (Imrie and Kumar 1998). The study employed focus groups and adopted the idea that 'the group context is important for exploring the way social and cultural knowledge, opinions and meanings are produced' (Tonkiss 2018, 238). Specifically, focus groups with PwD from a range of disabilities were conducted, so as to generate rich discussions that combine the individual, disability and group perspective on PwD' perceptions of and experiences with digital technology, and thus to respond to calls for more insight into the nuances of different disabilities in relation to digital inclusion (Dobransky and Hargittai 2006, 316; Rosso et al. 2013; Seale et al. 2015).

The study conducted two focus groups with PwD in the United Kingdom: one in the city of Leicester with 6 participants and one in London with 9 participants. The sample of participants (see Table 1) consisted of 18+ years old and covered various age categories, with a fair distribution of males and females. Although the sample represented a range of disabilities (e.g., physical, intellectual, cognitive), focus group research encounters the difficulty of including people with severe mental illness (Onocko-Campos et al. 2017). Due to the key principle of focus group research being the participants to have sufficient cognitive ability in order to interact verbally with other members of the group (Kitzinger 1994), PwD with severe mental impairment were not included in the study. Similarly, people with severe hearing impairment were not included, as the presence and intervention of a speech or sign language interpreter would prevent participants from interacting with each other without disruptions and at their own pace. While this is a limitation to be acknowledged, the study did not make such a decision on the ground of bio-medical considerations – something which would contrast the study's argument against a purely bio-medical approach to disability - and this decision did not imply a 'lack of

capacity' on the part of those excluded from the study. Instead, this decision constituted a sampling compromise for the purpose of the chosen methodology and in order to benefit from the group dynamics generated in focus groups, something that is absent in other qualitative methods such as individual interviews. Also, it is important to note that the study did not select particular individuals as participants and its sample included a range of disabilities, securing a certain degree of diversity.

-----Table 1 about here -----

Participants were recruited through a specialised UK charity, SCOPE. SCOPE circulated a call for participants via the SCOPE online community site and the SCOPE charity shops in Leicester and London. Purposeful sampling ensured that the disabled population in both cities that used the SCOPE supporting services were given the opportunity to participate. On the other hand, one needs to recognise that PwD who did not make use of SCOPE services were not included in sampling. Those interested to participate contacted SCOPE and were briefed on the study and their eligibility to participate. SCOPE reviewed the facilities, accessible material and other support needed by potential participants and provided fully accessible venues and tailored assistance, as per participants' requests.

The study was approved by the Research Ethics Committee of the University of Leicester, ensuring that its ethical framework served the principles of minimal risk and harm; respect of participants' dignity and rights; voluntary and informed participation; research integrity and transparency; research accountability; and independence of research. The study met the ethical requirements prior to and during data collection to ensure effective handling of 'ethics issues throughout the lifecycle of a research project and promote a culture of ethical reflection, debate and mutual learning' (ESRC Framework for research ethics)<sup>4</sup>. Accessible versions of the ethical documentation reassured the participants of their right to withdraw from the study at any time and that storage and use of participant information would be undertaken in accordance with the Data Protection Act 1998. On the day of the focus group, the participants signed and dated the relevant consent form, providing the researcher with informed consent, including consent to audio recording of the focus group discussions.

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<sup>4</sup> See at <http://www.esrc.ac.uk/funding/guidance-for-applicants/research-ethics/our-core-principles/>

The focus groups were designed so as to tackle and revisit a broad line of topics (see Figure 1 for a mapping of the topics the focus group participants discussed). In their initial form, such topics were pre-defined in the focus group schedule, so as the discussions among participants to be tuned with the aims and research questions of the study. However, the focus group schedule was adapted to each focus group, with the interactive discussions among group members placing more emphasis on some topics compared to others. The two focus group discussions were audio recorded and, although very different in terms of discourses and group interactions, their duration was about the same (2 hours and 15-20 mins).

-----Figure 1 about here -----

Verbatim transcripts were generated and underwent thematic analysis with the assistance of NVivo 11. Thematic analysis was chosen because it helps categorise the features of large data sets and enables in-depth analysis (Braun and Clarke 2006). In line with the nature of this study, an inductive approach was adopted in identifying and coding themes in the data. The first step involved the careful reading of the transcripts in order to inform the development of an initial coding hierarchy. This hierarchy was developed based on Braun and Clarke's (2006, 82) suggestion for flexibility and no rigid rules. Thus, the analysis applied the 6 phases of analysis/coding that Braun and Clarke propose, ensuring that coding 'involves a constant moving back and forward between the entire data set, the coded extracts of data that you are analysing, and the analysis of the data that you are producing' (2006, 86). As a result, some of the themes comprised topics broadly discussed in the focus groups and some others were concrete arguments that individual participants put forward.

Following coding, the study moved away from a narrowly-defined qualitative approach and, with the assistance of NVivo, identified the prevalence of individual themes and associations between themes. This does not violate the fundamental principles of thematic analysis, as measures of prevalence of themes are essential in thematic analysis (Braun and Clarke 2006, 83). Specifically, through employing a range of NVivo analysis outputs ( e.g., text and coding queries, text-coding matrices, cluster analyses and hierarchy, and comparison diagrams), the coding results were organized and accounts of thematic occurrences were generated, offering an overview of key themes and discourses in the data and paving the way for qualitative elaboration of the coding

results. Hence, the findings presented in the next section contain graphical and tabular accounts of prevalent themes and discourses in the data, which are complemented by qualitative elaboration and discussion.

## 5. Findings

This section begins with an outline of the prevalent discourses in the data, which, as noted above, can pave the way for elaborating on key nuances relating to the argument of intra-disability diversity in the digital realm.

### 5.1. Overview of prevalent discourses

-----Table 2 about here -----

The matrix coding in Table 2 presents prevalent themes and discourses that occurred more than 5 times in the focus group discussions. According to this matrix coding, the following were the most prevalent discourses in the focus group discussions:

- social exclusion remains a problem, as most participants referred to exclusion while discussing the theme of social inclusion status;
- only a couple of digital services and technologies, such as mobile phones and accessibility tools (mostly those which were built in regular technologies), appeared popular in participant discourses;
- participant discourses involved miscellaneous themes, namely not pre-defined or necessarily digital inclusion-specific themes, with the most prevalent discourses being those on intra-disability diversity and individuality, as discussed in Section 5.2.
- participants' negative experiences of digital technology outnumbered the positive ones, but at the same time the participants demonstrated an overall selective attitude to digital technology, as discussed in Section 5.2;
- the participants identified disability as the main barrier to their social and digital inclusion, while their discourses on the theme of digital inclusion benefits stressed the benefit of 'managing disability more effectively', as unpacked in Section 5.3. Nevertheless, whether and the extent to which the barrier of

disability undermines PwD' human agency in the digital realm is a complex matter analysed and discussed in Section 5.3;

What follows presents in more detail the findings on most of these prevalent discourses and unpacks related complexities and interconnections, especially in relation to the presence of intra-disability diversity in the digital realm.<sup>5</sup>

### ***5.2. Intra-disability diversity: PwD' identity and their attitudes to and decisions on digital media***

As noted above (Table 2 and the third bullet point in Section 5.1), the participants developed discourses on various miscellaneous themes, such as the theme of intra-disability diversity and individuality, which was prevalent in the data, alongside the themes of disability stigma and the juxtaposition of the online with the offline world.

More specifically, the participants stressed the importance of individuality within and across disabilities for how they make sense of who they are as unique individuals and their life circumstances and experiences:

Joanna: I have MS, Fred has visual problems... But that doesn't mean we are completely different, that we don't have the same problems but it doesn't mean either that we have exactly the same problems. It doesn't mean that someone else with MS like George has the same problems; we are all different, we are still individuals.

Similarly, in relation to their positioning in the digital realm, the participants referred to individuality and how it leads to intra-disability diversity when they explained the digital tools and technologies they use, as well as their related preferences and experiences with technology: 'Joanna: So when it comes to technology,

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<sup>5</sup> The prevalent discourses on social exclusion (top bullet point) and participants' focus on a couple of digital services and technologies (second top bullet point) did not involve specific or informative discussions on intra-disability and thus, they were of limited pertinence to the focus of this paper. For this reason, they are not presented further in the paper.

George doesn't always like to use what I like and often I say to him: "oh my gosh, I wouldn't be doing it, I don't know what you're up to"... We're all different because we're all individuals'. In this sense, they dismissed labeling that places PwD in the same box and separately from the 'abled' population or as people whose decisions are fully determined by bio-medical or external conditions, constraints, and affordances.

Moving on to selectiveness, in agreement with Table 2 and the (fourth) bullet point in Section 5.1, the participants mostly expressed a selective attitude towards digital media. Specifically, while acknowledging positive aspects of and phenomena in the digital world, they were not keen to fully support the importance or necessity of digital technologies in their lives. In this sense, participants with the same or different disability weighed their decisions about digital inclusion on the basis of individual preferences and taste, and thus, participants with the same disability appeared to have different preferences for technologies and services. For instance, participants with the same disability and others with different disability debated about Android phones and iPhone, while they explained changes in their use of technology on the basis of personal taste and preference:

George: Yeah! Personally, I use Mac [Apple]. I do not like OSX, the current version of OSX, because it just got far beyond what I needed and, sorry, my cognition difficulties with my MS meant I could no longer use software quite as easily as I did before and I was not able to learn it ...but I've used different android phones and buying a new semi-android phone I really did not go on with that cos again, it was, it did things in a different way to get to the same function. So I moved back to Samsung again.

Fred: It is all about what you like. Because I have a lot of friends with relatively the same level of sight and they say 'yeah I've got the same device but I like to do this and this that way'. Everyone is different and even if you've got the same disability, you do things in a different way to overcome the barriers.

In this vein, participants from across the disability board appeared quite careful with technology, demonstrating not only their differences but also their commonalities in terms of encountered barriers and their attitudes to digital technologies, all of which added to a picture of intra-disability diversity. For instance, participants in the second focus group with different disabilities (e.g., Edward, Annie and Steph) stated that skills are easily lost when one relies heavily on technology. While over-dependency on technology is a concern



raised among ‘abled’ people as well, these and other focus group participants appeared to value all kinds of physical, cognitive and other skills not taken away by their disability and they aimed to maintain such skills naturally, without technological means.

### ***5.3. Intra-disability diversity in PwD’ benefits from digital inclusion***

As noted in Table 2, the most prevalent focus group discourses on the theme of benefits from digital inclusion were those that stressed the following benefits: a) manage disability and other health issues effectively, b) manage everyday life tasks effectively, and c) feel more socially included (e.g., escape from stigma).

However, the benefit ‘manage disability or other health problems effectively’ was interestingly interwoven in participant discourses with the role of disability as a barrier to digital inclusion (see Table 2). On one hand, in narrating their life experiences, the participants presented disability as a mostly practical (physical) barrier to their digital inclusion:

Yvonne: ...if I need anything doing on the computer, I tell him [husband] what needs to be done... With my left hand getting weak, I find I cannot lift the laptop, I cannot even keep it stable. So if I am tapping with that hand it will move.... [it will not be controlled]

Adrienne: I cannot get on with doing this either... when I am texting, I am deleting what is on there because it [hand] clicks on the wrong ones [keys] because I’ve got trembles as well... [also] because of my back and everything, I found it difficult being able to sit there with my laptop,.. it was quite heavy if you think because it was a big 17 inches one... big thing to pick up and I cannot pick up things like that these days.

Halima: So, I like to use computer, but I cannot because if I keep my hands still then pain goes worse, but I try to do this as much as I can.

Lina: I have a mobile phone but then you have to find a mobile that I could use easily. I find the texting, the keys, even in a big phone, are still small. So my mobile is mainly for emergency use only.

On the other hand, digital inclusion appeared to benefit the participants by helping them manage certain practical and other constraining implications (e.g., emotional, communication, social) related to their disability. This showcased an interesting dynamic between disability and digital inclusion, with digital inclusion variously

alleviating the adverse implications of disability and with disability continuing to generate various practical obstacles to participants' digital inclusion.

More specifically, the benefit 'manage disability or other health problems effectively' appeared in the data as tightly interrelated to the benefit 'feel more socially included (e.g., escape from stigma)', since the participants mostly identified stigma as disability stigma. The prominence of discourses on these two interrelated benefits is hardly surprising, as the participants suggested that 'disability' is the primary reason for their social exclusion (see Table 2) and stigma was a prevalent miscellaneous discourse in their discussions (see Table 2). As to the third most prominent benefit in the focus group discourses - manage everyday tasks effectively - that also appeared tightly linked to the benefit 'manage disability or other health problems effectively'. Specifically, the participants stressed that digital technology makes disability-affected everyday life tasks easier through: downloading supermarket apps to find out the ingredients of food that meets diet constraints; ordering online prescriptions and obtaining health-related information online; using online shopping and home delivery, which is particularly important for people with mobility impairment (e.g., Steph); reading through digital readers, audio books, e-books and Kindle, which enables visually impaired people to read more and easily (e.g., Annie); booking tickets online and staying away from the awkwardness of phone service, something of value especially to people with speech difficulties (e.g., Hannah); using voice recognition systems that reduce the need for typing, which is very important for people with mobility or sight difficulties (e.g., Edward, Fred, Elisa); and using online videos (e.g., YouTube) for practical guidance on housework and other tasks, something particularly helpful for people with intellectual or cognitive difficulties (e.g., George, Yvonne, Stewart).

-----Figure 2 about here -----

Additionally, the cluster analysis of digital inclusion benefits in Figure 2, which breaks focus group discourses into thematic clusters, places the three prominent benefits in the same 3-tier level cluster, with the benefits 'manage disability or other health issues effectively' and 'feel more socially included (e.g., escape from stigma)' being part of one of the smallest 4-tier clusters, right next to the benefit of 'manage everyday life tasks

effectively'. If one attempts to explain the proximity of these three benefits – alongside their prominence in the relevant focus group discourses – it could be suggested that these benefits are driven by individuality, namely they are individually- and subjectively-defined and constitute varying and multi-dimensional areas of benefit. For instance, the benefit of enhanced social inclusion through escaping stigma is determined by individual experiences and perceptions of social exclusion and related stigma. Likewise, the benefit of managing disability can vary depending on personal experiences of disability (e.g., stage, severity, symptoms, physiological and psychological parameters) and related choices (i.e., degree and direction of selectiveness). Similarly, the benefit of managing everyday tasks can involve a range of different, on an individual basis, everyday activities and tasks, which are determined by the disabled person's lifestyle, needs, personal taste, and resulted choices or non-choices (i.e., selectiveness). On the contrary, other, less prominent digital inclusion benefits that were mentioned in the focus group discussions, such as the benefits of cost or time savings, information acquisition, meeting new people, developing new interests etc., are rather concrete and one-dimensional, being defined regardless of the parameter of independent individual agency (i.e., individuality) and selection on the basis of free choice (i.e., selectiveness).

Thus, in answering the question posed in Section 5.1 of whether disability as a barrier to social and digital inclusion undermines PwD's human agency in the digital realm, specific discourses in the data demonstrate that this is not the case and that the importance of digital technologies for PwD and related benefits are dependent on individuality and selectiveness, leading to a certain degree of intra-disability diversity. For instance, Elisa, visually impaired, stressed that the aesthetics of technology contributes to her fight against disability and the stigma assigned to it. Hence, she defined herself as fashionable and girly, suggesting that stylish technology, which everyone (both abled and PwD) likes, can assist people like her become more part of the non-disabled majority and overcome stigma. On the contrary, participants with the same disability as Elisa, such as Fred and Annie, focused on the practical function of accessibility tools (e.g. digital readers) and how they can practically help them conduct everyday tasks and face social exclusion and stigma. Similar to Fred and Annie, people with different disability, such as cognitive and memory problems due to MS (e.g., George and

Yvonne), emphasised practical usages of technology rather than the aesthetics of it, but they valued different technologies to those mentioned by Fred and Annie as enhancing their social inclusion. For instance, they stressed the benefits of email communication as a mental note that enables them to keep up with communication and prevents their social isolation, something (i.e., the ‘mental note’ function of email) which was identified as a benefit for social inclusion by Elisa as well, the visually impaired participant who stressed the importance of technology aesthetics for the benefit of stigma alleviation.

Another example of discourses concerns the benefits of interactive communication platforms and online forums, since participants with different disabilities favoured such platforms differently and for different reasons. For instance, Annie, visually impaired, stressed that online forums helped her connect with similar people, people with the same disability, which was ‘life-affirming’ and increased her sense of social inclusion and belonging. Similarly, participants with different disability, such as Stewart and Edward, who have a combination of mobility and cognitive disabilities, evaluated interactive communication and networking platforms positively, but not because of communicating and sharing with others – like Annie – but because the anonymity on such platforms had allowed them to be more open and relaxed and not feel judged for their disability by others, thus enhancing their self-esteem: ‘Edward: Technology is hiding your identity and allows you to talk to the people that you normally wouldn’t talk in the street.’ At the same time, participants with similar mobility disabilities to Stewart and Edward (e.g., Steph, George and Adrienne) expressed criticism and reported negative experiences that made them withdraw their use of such interactive and networking platforms:

George: I was involved with social media groups and I stopped responding to them because they are, as Adrienne said, they can get quite negative in some respects. When you are offering advice to something...

Steph: You can get some very horrible people [online]. I’ve been subjected to some very horrible bullying... I feel like I get dragged into things or cannot let things go because if I feel like something is unfair or not right [online], then I want to make sure the right thing is said and the truth comes out and I will stand my ground. But it often lands me in trouble and then regardless of whether I am right or not, I will often be attacked for it, and then people will turn on me for it.

## 6. Discussion

The above-presented findings demonstrate the presence of intra-disability diversity on the basis of the parameters of individuality and selectiveness in PwD': a) attitudes to the digital and digital choices; and b) the benefits from digital inclusion. Based on these findings, one can argue that, whereas disability appears as the main barrier to digital inclusion, PwD' related attitudes, decisions and experiences are much defined by individuality and selectiveness, resulting in intra-disability diversity. Thus, in answering the first research question 'How diverse or uniform is the status of PwD' digital inclusion across and within disabilities?', the paper suggests that the picture of PwD' digital inclusion is diverse across and within types of disability, and a complex terrain of intra-disability diversity is in place. Regarding the second question 'To what extent do individuality and selectiveness play a role in PwD' decisions and experiences in the digital realm?', the focus group discussions demonstrated that individuality and selectiveness have a big part to play in shaping a complex terrain of intra-disability diversity, significantly driving PwD' decisions about and benefits from digital inclusion.

These findings support the argument that choice matters for digital inclusion (Eynon and Helsper 2010) and adopt the biopsychological model of disability and its critique of strictly medical and social constructivist accounts of disability (Chib and Jiang 2014) on the basis that medical and socially-constructed features of disability only partly define constraints and affordances in digital inclusion. The findings also confirm the value of the interactionist model of disability (Fay 2014; Scruton and McNamara 2015), since the factors of individuality and selectiveness and the resulted intra-disability diversity comprise core elements of a dynamic fusion of the socio-biological and individual/psychological conditions that define PwD, their experience of digital inclusion and, consequently, the positive contribution that digital inclusion can make against disability stigma.

Thus, the findings problematise the conceptual uniformity of research literature that focuses on medical and socially-constructed features of disability as determinants of PwD' digital constraints and affordances and on barriers to and affordances of digital inclusion (see literature in Section 2.2), as such uniformity omits to

demonstrate PwD as selective individual actors (who decide on the role of technology in their lives) and the implications of such agency on the benefits of digital inclusion. As conceptualised and explored in the study, intra-disability diversity reveals that PwD' individual agency in the digital realm is defined more by their personal preferences, attitudes, and beliefs as selective individual actors rather than by the nature of their impairment as such. Thus, the paper invites researchers to move beyond purely bio-medical or fixed categorisations of disability in order to shed more light on the complex and dynamic role of digital inclusion in disability stigma.

This is not to entirely dismiss existing arguments that PwD' preferences and uses of digital technology are informed by the nature and severity of impairment/disability (e.g., Duplaga 2017; Henshaw et al. 2012). On the contrary, disability types, such as that of intellectual disabilities, confirm the existence of a range of bio-medical and social barriers (e.g., social dismissal, too complex and confusing technology, high cost) which, however, vary across and within disabilities (i.e., intra-disability diversity) and are mitigated or managed by 'choice', since PwD make their own decisions on whether they will participate in the digital world and how they will manage associated barriers. Thus, findings presented in the paper, such as that on individuality in relation to the aesthetics of design and the repercussions of the aesthetics of design for blind/visually impaired people's social inclusion, reinforce Pullin's (2009) argument that disability and design can inspire each other and demonstrate the continuing importance and timeliness of the following questions: What new forms of braille signage might proliferate if designers keep both sighted and visually impaired people in mind? Can simple designs avoid the need for complicated accessibility features? Can emerging design methods such as "experience prototyping" and "critical design" complement clinical trials? (Pullin 2009).

At the same time, the study critiques existing research for lacking an insight into the existence of diversity not only across but also within disabilities. Although existing literature tends to examine specific groups of PwD, namely groups of people who encounter the same disability, it does not systematically unpack variations within each group and the related role of individuality and selectiveness. While this study was designed to consist of participants from a range of disabilities, the role of individuality and selectiveness was

demonstrated not only between different disabilities but also within the same disability. Many of the focus group participants noted that neither they are the same as other group members with the same disability nor they are totally different from those with different disability.

Hence, the study offers the following 3-tier recommendation for future research:

- (1) First, researchers need to systematically explore and analyse the presence and role of the parameters of individuality and selectiveness in PwD' digital choices and decisions.
- (2) Then, they need to move on to systematically exploring how individuality and selectiveness inform intra-disability trends and practices in the digital realm, looking in particular at commonalities and discrepancies within and across disabilities.
- (3) Finally, researchers need to use the insights obtained in tier 1 and 2 in order to explain the range of PwD' perceptions and experiences in the digital realm and the role of such perceptions and experiences in PwD' social inclusion and welfare.

Nevertheless, one cannot but acknowledge that this study has some limitations. One limitation is scale, as this is a small-scale study that does not address exhaustively the research questions under study. On the contrary, it has provided a range of initial insights into the role of individuality and selectiveness in PwD' digital experiences and the repercussions of intra-disability diversity on their social inclusion. More and more focused qualitative research is needed in order for the richness and value of such insights to be explored further. Specifically, there is a need to expand this focus group study, including PwD from various regions and diverse socio-economic and cultural profiles. Another limitation is that the study excluded some types of disabilities and members of the 'disabled population'. Future research can overcome this limitation by employing suitable methodological tools that enable the participation of PwD who are not in a position to be involved in directly interactive communication of the kind required in focus groups.

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Table 1. Sample

<i>Name</i>	<i>Sex</i>	<i>Age</i>	<i>Disability</i>
<i>London focus groups</i>			
<i>Hannah</i>	Female	19	Cerebral palsy
<i>Steph</i>	Female	32	Ehlers Danlos Syndrome (longitudinal myelitis)
<i>Annie</i>	Female	48	Visual impairment / albinism
<i>Edward</i>	Male	64	Cerebral palsy
<i>Stewart</i>	Male	28	Cerebral palsy
<i>John</i>	Male	47	Mild cerebral palsy, hearing loss
<i>Lina</i>	Female	78	Cerebral palsy
<i>Halima</i>	Female	71	Rheumatoid and osteo-arthritis
<i>Leicester focus group</i>			
<i>Adrienne</i>	Female	50	Fibo myalgia, chronic pain syndrome, tremors, vertigo
<i>Yvonne</i>	Female	50	Multiple Sclerosis (MS)
<i>Joanna</i>	Female	32	Multiple Sclerosis (MS)
<i>George</i>	Male	46	Multiple Sclerosis (MS)
<i>Fred</i>	Male	23	Registered blind
<i>Elisa</i>	Female	32	Registered blind

Table 2. Prevalent themes and discourses

<i>Themes</i>	<i>Discourses</i>	<i>Occurrences</i>
<i>Social inclusion status</i>	Socially excluded	7
<i>Reasons for social exclusion</i>	Disability	9
<i>Understanding of digital media</i>	Detailed, advanced understanding	6
<i>Digital devices used</i>	Mobile phones	16
	Technology with built-in accessibility tools	11
<i>Digital services used</i>	Assistive or accessibility tools	8
	Email	6



	Facebook	8
	Other service	7
<i>Digital activities</i>	Communication	7
	Participation in online forums or communities	6
<i>Non-use or limited use of digital devices and technologies</i>		7
<i>Non-use or limited use of digital services or applications</i>		10
<i>Barriers to access digital technology</i>	Disability	6
<i>Experiences with digital media</i>	Negative experiences	18
	Positive experiences	7
<i>Attitudes to digital media</i>	Enthuse with digital media	10
	Selective of digital media	24
	Positive traits, phenomena and influences	16
<i>Benefits from digital media</i>	Feel more socially included (e.g. escape from stigma)	7
	Manage disability or other health problems effectively	22
	Manage everyday tasks effectively	11
<i>Critiques of digital media</i>	Inflexible, not tailored to user needs	9
	Low or varying effectiveness of accessibility tools	14
	Other critiques	8
<i>Miscellaneous</i>	Intra-disability diversity - Individuality	12
	Online vs. Offline	14
	Stigma	16

Figure 1. Focus groups: mapping of topics

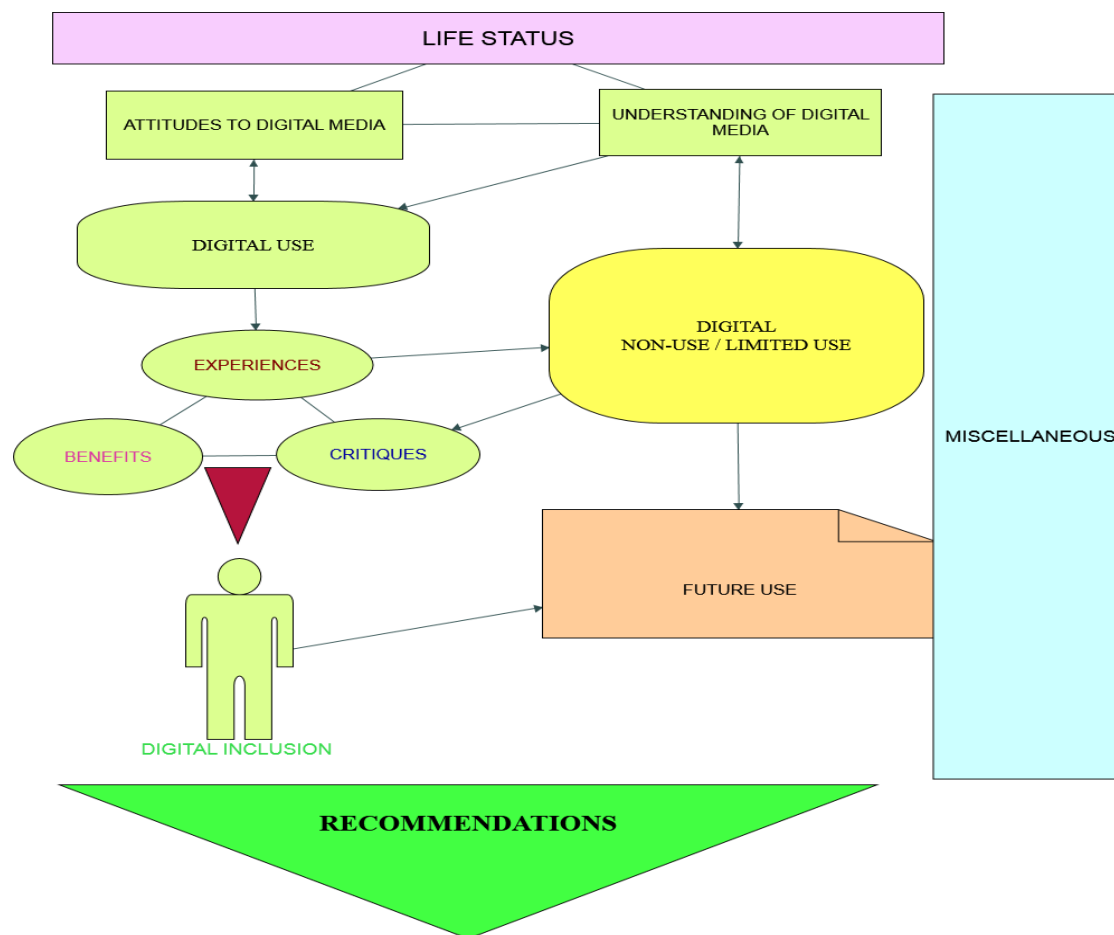


Figure 2: Cluster analysis of digital inclusion benefits

