

ORIGINAL ARTICLE

A Corresponding Fields Model for the Links Between Social and Digital Exclusion

Ellen Johanna Helsper

Department of Media and Communications, London School of Economics and Political Science, London, UK

The notion of digital exclusion has become important in communications research but remains undertheorized. This article proposes a theoretical model that hypothesizes how specific areas of digital and social exclusion influence each other. In this corresponding fields model, it is argued that they relate mostly for similar (economic, cultural, social, personal) fields of resources. The model further proposes that the influence of offline exclusion fields on digital exclusion fields is mediated by access, skills, and attitudinal or motivational aspects. On the other hand, the relevance, quality, ownership, and sustainability of engagement with different digital resources is said to mediate the influence of engagement on offline exclusion. Research supporting this model and possible operationalizations in empirical research and interventions are presented.

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Information and Communication Technologies (ICTs) go beyond the simple provision of platforms for communication and interaction. As Warschauer (2004) and van Dijk (2005) warned about the negative consequences of the commonplace simplification into dichotomies of haves and have-nots, analysis of digital exclusion has become increasingly nuanced in its explanations of the links between social exclusion and engagement with ICTs. The addition of skills, attitudes, and types of engagement in current measures of inclusion, beyond the initial indicators of access and infrastructure, reflects these developments.

How, then, should the links between digital and social exclusion be theorized? This question matters because it is in these links that the potential lies to exacerbate or decrease existing inequalities (Norris, 2001; van Dijk, 2005). Although it is known that exclusion from digital networking and communication tools relates to social exclusion and isolation, there have been few interdisciplinary attempts to integrate social and digital inclusion literatures. Digital inclusion research is often limited to one specific discipline or methodological approach (Loader, 1998; Loader & Keeble, 2004). McCreadie and Rice (1999a, 1999b) did seek to integrate information science and some social science approaches, but they did not encompass

Corresponding author: Ellen Johanna Helsper; e-mail: e.j.helsper@lse.ac.uk (E.J.H.)

the sociological literature on offline exclusion or an understanding of media use from communication scholarship. So we know little about different types of digital inclusion, having operationalized digital inclusion mainly in terms of amount of ICT use. But surely the nature of what is done with the technology also matters? Further, certain types of use, such as information, learning, and other economically beneficial types of engagement, are often taken to signify inclusion, dismissing leisure and mundane communicative uses as unworthy objects of study. Even when research presents a nuanced view of digital exclusion, the conceptualization of social exclusion is often uni-dimensional, based on socioeconomic or psychological frameworks, but rarely both.

This article discusses inequalities across the spectrum of engagement types, arguing that digital exclusion is not just about money or motivation. It develops a theoretical model in which the links between social and digital exclusion are understood through combining the cultural, social, psychological, and economic resources of households and individuals. As little empirical work has yet tested these links, the model presented here is explained in theoretical terms and also related to empirical evidence where available. The central argument is that links between digital and social exclusion depend on macroeconomic, meso-social, *and* micropsychological factors, and only by studying these together can research recognize the separate and combined influences of different types of social exclusion on different types of digital inclusion.

While the model applies across different national and cultural contexts, the ideas behind it originate in research published in Europe and the United States. The specificities of how to operationalize different elements of the model will depend on both individual and national contexts.

Corresponding fields

This article focuses on correspondence across key resource fields that exist online and offline. The term “field” refers to spheres of influence in everyday life as well as frames of reference for individual action. In combining sociological frameworks and psychological approaches, the article recognizes that social and digital exclusion are complex concepts that can be conceptualized, and thus measured, in a myriad of different ways. Notably, a field draws on a collection of resources, each operationalizable through a range of specific indicators. For example, the economic field of inclusion (offline) consists of income, employment, and educational resources, which can be operationalized—to take the case of education—through questions about the level of education of the head of the household, the years of schooling, and the highest completed degree. The corresponding economic digital field consists of financial and commercial uses, as well information and learning digital resources, which can be operationalized through questions about participation in online shopping, selling, and banking, and questions about distance learning and online information seeking.

Specifically, the model hypothesizes that the links between social and digital exclusion are strongest between corresponding fields of offline and digital resources,

where the primary fields are economic, cultural, social, and personal in nature. The framework thus elaborates on the nature of both social exclusion and digital exclusion and suggests ways to operationalize and test these in empirical quantitative research. It starts from the normative position that social exclusion is the main concern, and then examines how digital inclusion interacts with social inequalities. It neither assumes that one type of engagement trumps another nor that more general use of ICT necessarily means more overall digital inclusion. Instead, it makes the explicit and normative point that, depending on people's offline circumstances, exclusion from certain types of engagement can be perceived as leading to relatively more or less disadvantage in a person's everyday life. In other words, digital inclusion should always be seen as embedded in a person's offline circumstances, and for this reason, this analysis of digital exclusion is grounded in the prior analysis of social exclusion. The conceptualization of fields in this framework draws on Bourdieu's (1986) theorization of traditional inequalities in forms of capitals and Sen's (1999, 2004) classification as regards capabilities, but refers to van Dijk (2005) for his conception of resources.

The present emphasis on resources—the specific indicators that operationalize the fields of influence—follows the terminology introduced by Sallaz and Savizca (2007). Resources are part of people's identities and upbringing, elements they have access to but do not necessarily own. They are not limited to social structures, as in the notion of habitus (Bourdieu, 1990), and include sociopsychological and psychological resources that are distinct from and not conditional on economic and cultural resources, as proposed by McCreadie and Rice (1999b). Although the fields are conceptually separate, each with distinct resources, they are often strongly interrelated because of wider underlying power structures that concentrate (dis)advantage in certain groups. Walzer (1985) similarly distinguished different spheres of social inequality, and pointed out that inequality in one realm should be separated from inequalities in other spheres while, at the same time, recognizing that they are often experienced together because of underlying power structures that concentrate disadvantage amongst the few. For clarity, the corresponding fields framework uses the term “resources” to operationalize the more abstract fields of offline and digital exclusion where these power structures express themselves.

An important aspect of the model is that the influence of offline fields of exclusion on digital fields of exclusion may be mediated by social impact mediators (specifically, individuals' access, skills and attitudes). Conversely, the influence of digital fields on offline fields of exclusion is mediated by digital impact mediators (specifically, the relevance, quality, ownership, and sustainability elements of different types of digital engagement) (see Figure 1). The latter in particular are too often neglected in digital inclusion research, even when case studies and interventions repeatedly point to their significance.

Figure 1 shows how the corresponding fields model imagines that the four fields from which an individual can be excluded offline have corresponding fields of exclusion in the digital world. It also depicts how social impact factors mediate

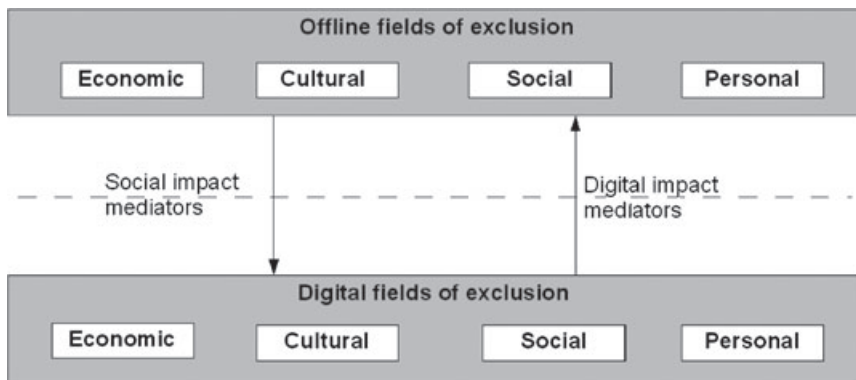


Figure 1 Basic corresponding fields model.

the impact of offline exclusion on digital exclusion and how digital impact factors mediate the impact of digital exclusion on offline exclusion. Importantly, although the fields are conceptually distinct, in practice they are often linked and their effects compound each other. Therefore, to understand how offline and digital exclusion relate, the independent and intersecting role of different fields must be examined.

Conceptualization of fields of offline resources

Research into offline exclusion and disadvantage extends discussions around poverty to conceptions of social exclusion. By the end of the 1980s, “social exclusion,” as distinct from “poverty,” appeared as a term in policy making and academic literature (ECC Council Decision 89/457 OJ 1989L 224/10, cited in Hunt, 2005; see also Chakravarty & D’Ambrosio, 2006; Percy-Smith, 2000; Room, 1999). With its origins in Europe, references to social exclusion were meant to counteract a purely financial approach to understanding the disadvantages to which some are subject in society. Social exclusion is the “deprivation from goods, services and activities which the majority of the population defines as being the necessities of modern life” (Gordon et al., 2000, p. 5). Thus, someone is socially excluded “if he or she does not participate in key activities of the society in which he or she lives” (Burchardt, Le Grand, & Piachaud, 2002, p. 30). Chakravarty and D’Ambrosio (2006) stress that social exclusion is multidimensional, so measurement of social inclusion should include economic, social, and political aspects of life (see also Bossert, D’Ambrosio, & Peragine, 2007). Burchardt, Le Grand, and Piachaud (2002) propose that “Measures of social exclusion attempt to identify not only those who lack economic resources but also those whose non-participation arises in different ways: through discrimination, chronic ill health, geographical location, or cultural identification, for example” (p.6). Thus, exclusion may be voluntary or involuntary and is rooted in broader social categories linked to other types of disadvantage and discrimination.

These definitions clearly go beyond the economic aspects of deprivation such as employment and income (see also Atkinson, 1998; Room, 1999; Sen, 1999), even

though deprivation and poverty are still used interchangeably with the term “social exclusion” (Abrams, Hogg, & Marques, 2005). Indeed, standard measures of social exclusion concern economic deprivation as measured through income, occupation, and education, and sometimes by the health and safety aspects of a person’s life, or a lack of material resources (Alvi et al., 2007; CLG, 2004; SETF, 2007). Problematically, digital inclusion research initially followed this mold by focusing on economic barriers to inclusion that prevented people from accessing ICTs. Even Zillien and Hargittai’s (2009) analyses, which incorporated individual motivation into their research on digital engagement, focus on simple socioeconomic measures. What is omitted is individual agency, and here the corresponding fields framework draws on Giddens’ (1986) notion of structuration in its conception of relations between individual agency and societal structures.

Empirical research suggests that offline exclusion can be divided into four broad fields grouping economic, cultural, social, and personal resources (although arguments can be made for a broader or narrower set of fields; see Abrams et al., 2005; Anthias, 2001; Chapman, Phimister, Shucksmith, Upward, & Vera-Toscano, 1998). The proposed set encompasses the full range of influences on people’s lives from macro socioeconomic to micro individual-psychological characteristics and from public to private fields of resources. When applying this model to empirical research and the design or evaluation of interventions, the precise operationalization of the resources in the fields depends on the context. However, irrespective of the context, it is important that all four fields (i.e., economic, cultural, social, and personal) are acknowledged so as to understand fully how inclusion and exclusion operate for any individual or group of individuals within that context. A brief description of possible operationalizations of these offline fields follows before the article moves on to discuss mediators between fields of offline and digital resources.

Economic

Resources related to exclusion from the offline economic field concern poverty, joblessness, and economic capital and are measured by indicators such as income, education, employment, and access to financial services. A combination of these resources allows for a quantification of the level of economic exclusion. Deep exclusion in this context refers to disadvantage in terms of multiple resources, such as people suffering a spectrum of deprivation in terms of education, income, and occupation and housing (Alvi et al., 2007; Atkinson et al., 2002). Examples of compound economic exclusion indicators are the Index of Multiple Deprivation (which includes noneconomic measures but is mostly poverty related; see Noble, Wright, Smith, & Dibben, 2006) and ACORN or socioeconomic status (SES; Braveman et al., 2005) indicators.

Cultural

Kingston’s (2001) conception of cultural capital describes it as the shared norms that guide behavior which give meaning to belonging to a certain group. These group norms include ideas about how certain groups of people are “supposed” to behave

and what their aspirations should be, also called “social scripts” by social psychologists (Bargh, Chen, & Burrows, 1996), similar to norms of social status (Weber, 1991) and habitus by Bourdieu (1990). Here, resources in the cultural field refer to identity categories associated with certain beliefs and the interpretation of information and activities as learned through socialization within these groups (Maccoby, 2007). Gender, ethnicity, and religion have all been considered indicators of identities with different cultural resources. Cultural resources can, through norms and socialization, “limit and undermine the capacity of local people to take up opportunities and to gain control of their lives” (Room, 1999, p. 168). In the corresponding fields model, resources in the cultural field are operationalized in terms of belonging to particular sociocultural groups that share a specific type of socialization or acculturation. This is different from but related to operationalization in terms of engagement with or perceptions of “high-” and “low-” brow culture (Kingston, 2001). Engagement with culture in this sense is seen as a consequence of cultural identity resources and therefore reflected in behavior (not characteristics of the individual). These behavioral consequences are integrated into the corresponding fields model in the different types of digital engagement, as discussed later in this article.

Social

Social resources reflect involvement in and attachment to networks that give a person access to the knowledge and support of others (Coleman, 1990; Portes, 1998). Social resources include both weak and strong ties (Granovetter, 1983), as well as networks that offer emotional or instrumental support (Hinson Langford, Bowsher, Moloney, & Lilis, 1997; Lin, 2001; O’Reilly, 1988). Social networks build on common interests, activities, family, or other ties that join a group of people together and are mostly located in the private sphere. In general, more and stronger ties are considered indicators of high inclusion in this field (for a critique of this, see Kadushin, 2012). While related to the cultural field, resources in the social field are subject to change and can be interrupted or established throughout the lifetime. People have little choice in their gender or ethnicity; they can, however, opt in or out of friendship, interest, and even family networks. While everyone is born with a specific set of cultural resources, social resources vary in strength and weakness depending on how many ties the person has and the quality of these ties, and therefore can be quantified in terms of levels (Haythornthwaite, 2002; Kadushin, 2012; Kavanaugh, Reese, Carroll, & Rosson, 2005).

Many scholars see civic and political participation as separate fields of exclusion (Anthias, 2001; Bossert et al., 2007; Chapman et al., 1998; Commins, 1993; Durieux, 2003; Phipps, 2000), but they are included here in social resources because political and civic participation are formalized, public social resources related to official organizational structures (Putnam, 1995; Wuthnow, 1998). Operationalizations of formalized social resources relate to having one’s voice heard within a wider community; this includes voting, advocacy group membership, a position of power within the local community, and the ability to influence unknown others in relation

to interests that lie outside the personal private sphere. Thus, the number of ties and interactions with (representatives of) civic and political organizations or institutions is an operationalization of the participation resources in the offline social inclusion fields.

Personal

Resources in the personal field reflect the ability to take advantage of new opportunities independent of a person's economic, cultural, or social background. These microlevel resources include psychological and physical well-being and aptitudes. Psychologists use skill, personality, and health indicators to judge how people are equipped to manage their everyday lives. The Big Five (Saulsman & Page, 2004), the UCLA Loneliness (Hughes, Waite, Hawkey, & Cacioppo, 2004; Russell, 1996) and the Minnesota Multiphasic Personality Inventory (MMPI) (Tellegen et al., 2003) scales are three of many that operationalize a person's disposition and well-being. Intelligence in its various traditional and communicative forms (e.g., emotional intelligence, EI: Kirk, Schutte, & Hine, 2008; Stanford–Binet Intelligence Scales: Roid, 2003; self-efficacy: Bandura, Barbaranelli, Caprara, and Pastorelli, 1996; Torkzadeh & van Dyke, 2002; Wechsler Adult Intelligence Scale, WAIS: Kaufman & Lichtenberger, 2006) can also be seen as a resource to be operationalized in this field.

Interrelations among offline fields of resources

These offline fields clearly interrelate; those who lack resources in the personal field, for example those who are of ill mental or physical health, are likely to lack resources in the economic and social fields. However, since one may be included in one of these fields and excluded in another, it is important to distinguish between the fields. It is also the case that resources within any single field are more closely related to each other than they are to resources in other fields. Everyone carries a combination of resources with them, and these might be differently operationalized depending on the context. Therefore, if the model is applied in a specific context, in, for example, qualitative research, the researchers should gather information on all four fields but inquire only after those resources that are contextually relevant in each field. The breadth of the model promotes an understanding of individuals as moving between different contexts, taking the person's life as a whole as the field of observation even when focusing on a specific situation. A failure to represent any one of the fields would lead to an incomplete understanding of the complex set of factors that underpin the relationships between social and digital inclusion.

Because it specifies how indexes can be constructed to measure the level of exclusion in each field (economic, social, cultural, and personal), this framework facilitates empirical (survey) research into how offline and digital exclusion relate in the wider population, permitting hypothesis testing about specific links between fields of offline and digital inclusion. Economic, social, and personal scales can be constructed by summing or averaging the "scores" for the resources associated with that particular field. For example, someone is excluded in the social field if

they have weak and few social ties *and* are part of few civic and political networks. This type of overall scale construction is not possible for the cultural field. A value on an individual cultural resource (e.g., Black or White ethnicity, Male or Female gender) is not quantitatively worse than another type of socialization, just different, and summing, for example, scores on ethnicity, religiosity, and gender would be nonsensical. A person can have higher income, stronger networks, and higher IQ, but not more ethnicity or gender. Therefore, while it is possible to create single economic, social, and personal field indexes of resources, it is impossible to rank people on one scale of cultural inclusion because in this framework cultural resources reflect different types of socialization. Resources in the cultural field influence digital exclusion but an individual cannot be more or less culturally excluded. Care should also be taken with the personal field because a higher score on one personality resource is not necessarily better than a lower score. Scales for the indicators of individual resources should be constructed instead of an overall field measure.

From social to digital exclusion

Van Dijk (2005) argues that distinguishing between material, skills, motivational, and usage access is vital in studying digital exclusion, and research on digital exclusion generally identifies four areas from which one can be excluded: access, skills, attitudes, and types of engagement (Livingstone & Helsper, 2007; McCreddie & Rice, 1999a, 1999b; Selwyn, 2004a, 2004b, 2006; Witte & Mannon, 2010). Although access, skills, and attitudes have all variously been targeted by digital inclusion initiatives, these are insufficient, and research and interventions should recognize the importance of people's practical engagement with ICTs. As social exclusion, digital exclusion can be defined and measured in a number of ways, and much could still be learned from the work of economists and sociologists who have analyzed social exclusion. Within the corresponding fields model, digital inclusion is less determined by whether someone uses technologies and more by whether the nature of their use enhances their life. This statement is not uncontroversial: Some argue that what people eventually do or do not do with ICTs is no one's business but their own, as long as they have the skills and access to do so, if and how they please (e.g., Selwyn, 2006). However, just having the right access, skills, and attitudes without actually making broad use of ICTs would surely not improve digital and, therefore, offline exclusion (Witte & Mannon, 2010). The model thus assumes no single form of digital inclusion, and takes the normative stance that engagement with one type of digital resource should not be ranked higher than engagement with another—one can be more or less socially digitally included but this is not better or worse than being economically digitally included because economic, social, cultural, and personal resources are all fundamental to well-being and full participation in society.

Consequently, access, skills, and attitudes mediate the influence of offline social exclusion fields on digital exclusion fields, that is, they are social impact mediators. This is where the model presented differs from other frameworks which often see the mediators as indicators of digital inclusion.

Classifications of social impact mediators

The next sections discuss the three social impact mediators—access, skills, and attitudes—followed by a discussion of the four fields of digital resources.

Access

Without access, no one can use the internet or other ICTs, therefore access is the most basic mediator between offline and digital fields of exclusion. Any operationalization of access to ICTs should go beyond having some kind of access somewhere incorporating aspects like quality, mobility, and ubiquity. For example, home access to ICTs offers more freedom to use and to develop digital skills through informal learning than access in other locations (Buckingham, 2005; Jackson et al., 2006; Livingstone, 2003). Home access can therefore be used as an indicator of high-quality access (Mumtaz, 2001). Similarly, in the case of the Internet, always-on and broadband access should lead to a higher quality experience and broader use (Anderson, 2007; Choudrie & Dwivedi, 2005). A high number of access platforms, such as PCs, laptops, games machines, and smart phones, as well as a greater mobility in accessing content, for example through wireless or 3G connections, are indicators of ubiquitous access. It is important to include and look at the different types of platforms for access since in digital inclusion research access is often seen as either there or not, and no distinctions are made between different types of access. Orlikowski and Iacono (2008) rightly pointed out that this impedes a proper understanding of how people engage with technologies.

Skills

Certain skills are required for the handling of ICTs and the internet. These skills include knowing how to turn a device on or off but are arguably broader than this (Buckingham, 2005). Zillien and Hargittai (2009) argue that these skills come with but are not the same as extensive use of applications and platforms. Skills should be measured on a basic technical and operational level, as well as in relation to critical and social skills in working with communication technologies (van Deursen, 2010). Creative uses of ICTs are also central, as are the skills that allow for the critical evaluation of trustworthiness and accuracy of content and sources (Livingstone & Helsper, 2010). Livingstone, Helsper, and Bober (2008) argue that the best measures of skill level are those that ask for expertise in a variety of specific tasks combined with measures of overall self-efficacy. The specific measures related to technical, social, creative, and critical skills would predict different uses of ICTs more succinctly. Basic access to and use of ICTs might be more strongly associated with general self-efficacy (for a discussion of computer self-efficacy, see Durndell & Haag, 2002; Eastin & LaRose, 2000; Harris, 1999; Yang & Lester, 2003).

Besides influencing success in using ICTs, self-efficacy levels might also influence the motivation to go and use them. Those with low levels of self-efficacy are less likely to use ICTs (Eastin & LaRose, 2000). It is likely that ICT self-efficacy correlates strongly with corresponding offline efficacies, as discussed earlier.

Attitudes

Attitude formation in relation to the usefulness and dangers of ICTs goes beyond perceptions of personal skills. Computer anxiety, for example, is the apprehensions one has regarding use of the ICTs in general, relating to the effect they have on society, freedom, and morals (Beckers & Schmidt, 2001). There is no clear emerging classification of different attitudes and motivations and much work is still needed in this area, although it has been shown that they can stimulate or hinder certain types of engagement with ICTs (e.g., Selwyn, 2004a). In that sense they relate to people's motivations and ideas about what media are supposed to do for them and society, as identified in uses and gratifications frameworks (e.g., Cho, Gil de Zúñiga, Rojas, & Shah, 2003).

Reviewing existing research suggests that operationalizations of ICT attitudes should probably include opinions about the availability, appropriateness, and regulation of content, as well as attitudes about effects of problematic content such as violence, sexual, political, and commercial content on vulnerable groups or society in general (see World Internet Project,¹ Pew Internet Studies²). Attitudes about improvements in productivity, effectiveness and changes in social interaction are also part of this spectrum and can be linked to corresponding offline resources.

Furthermore, attitudes about what ICTs in general are good and bad at providing strongly link to the centrality or importance individuals attach to ICTs in everyday life and how broadly they use them (Boneva, Kraut, & Frohlich, 2001; Cummings, Butler, & Kraut, 2002; Jackson, Ervin, Gardner, & Schmitt, 2001; Jung, Qiu, & Kim, 2001; Whitely, 1997; Zillien & Hargittai, 2009). For example, Selwyn's (2004b) work suggests that a lack of interest in a technology can be related to a feeling that ICT use is not suitable for an individual's social group as well as his or her personality.

Digital fields of resources

Access, skills, and positive attitudes toward ICTs are important but not sufficient conditions for productive use. Digital inclusion research, especially in relation to the internet, suggests that gradations of inclusion should be conceptualized that reflect the different ways of engaging with technologies (Livingstone & Helsper, 2007; Warschauer, 2004; Witte & Mannon, 2010). For example, simple distinctions can be made between basic, intermediate, and broad engagement with technologies (Eastin & LaRose, 2000; Livingstone & Helsper, 2007). Most researchers agree that there are different types (e.g., entertainment, information, finance, and social uses) and levels of engagement (i.e., frequent or infrequent) but, beyond that, agreement about what constitutes high-quality engagement is more controversial. Van Dijk (2005) mentions economy, social networks, space, culture, politics, and institutions as important aspects of society in which ICTs can help people participate, but he does not classify specific types of engagement (what he calls usage access) in these terms. It is possible to design a classification of digital fields of exclusion that mirrors the classification of four offline fields identified earlier. Conceptualizing corresponding fields in digital and offline exclusion aids research in relation to the links between the

two. While the discussion about definitions and operationalizations of engagement is by no means closed, this approach can be theoretically justified when arguing like this article does that offline inclusion should be the starting (and end) point for thinking about digital inclusion.

Various scholars argue that it is impossible to give an upfront definition of the activities that constitute inclusion, and that academic research should therefore incorporate people's own estimates of what it means to be included (see Anderson, 2005; Anderson & Tracey, 2001; Haddon, 2000; Selwyn, 2004a, 2006; Selwyn, Gorard, & Williams, 2001). Here, it is argued that this is a theoretical and empirical trap for research interested in a general comprehension of digital inclusion. The model presented here relies less on people's own interpretation of whether they are included or not, and instead examines objectively what they actually do in the four fields of digital inclusion once access, skills and attitudes have been accounted for. Exclusion from a certain field may not be perceived as a disadvantage—someone can be excluded from entertainment resources (e.g., gaming, watching videos, listening to music) in the personal field but this could be perceived by that individual as a relatively low disadvantage if none of their peers engages in this way. Or those who do not engage online civically (i.e., a resource in the social digital field) in a society where there is low civic engagement may not perceive themselves as disadvantaged even if objectively they are excluded. Some types of engagement can benefit certain people more because they have particular offline needs. For example, if someone is unemployed and does not use ICTs to find work, then according to the model presented here, he or she is digitally and socially excluded in the economic field.

A framework which looks at the links between offline and digital fields has to include all the different kinds of participation, even those considered “undesirable” by some (for a discussion of undesirability, see Livingstone & Millwood-Hargrave, 2006; Lüders, Brandtzæg, & Dunkels, 2009), whether they are economic, creative, informative, civic, or entertainment-focused, as indicators of digital inclusion. The model does not take a normative stance on whether some digital inclusion resources are “better” than others; it assumes that inclusion exists in various forms and that their value depends on a person's offline resources but should be independent of an individual's perception. Incorporation of a full range of activities is important because even engagement with “undesirable” digital resources, such as gaming, might have desirable effects on offline exclusion fields, such as social networks and self-confidence (Cole & Griffiths, 2007; Klimmt, Schmid, & Orthmann, 2009).

The internet is used here to illustrate a classification of digital fields along these lines, but the corresponding fields framework proposed would be applicable to the use of ICTs no matter the platform on which the engagement takes place, because it is a classification of types of engagement or use and thus not platform specific. The internet has a wider range of different functions than older ICTs, such as television and radio (Didi & LaRose, 2006; Slevin, 2000; Zillien & Hargittai, 2009). The literature, especially that relating to uses and gratifications theory, classifies the uses of ICTs in entertainment and leisure, information and learning, communication

and interaction, commercial and financial, creative and productive, and participation and engagement resources (Cho et al., 2003; December, 1996; Ferguson & Perse, 2000; Papacharissi & Rubin, 2000; Perse & Dunn, 1998; Rubin, 2002; Weiser, 2000).

These different types of digital resources are organized here in line with the four offline fields: Entertainment and leisure resources are mostly part of the personal field, information and learning mostly economic, communication and interaction mostly social, commercial and financial mostly economic, creative and productive mostly cultural, and participation and engagement resources mostly part of the social field. Nevertheless, the specific digital resources clearly extend across the broad economic, cultural, social, and personal fields. Entertainment is a personal resource but is often used to connect to others, for example through multiplayer games, which would make this resource part of the digital social field; and to express identity online, for example through interaction on cultural heritage sites, can be classified as part of the social as well as the cultural field. It is therefore important to preserve detail by using a variety of measures at the resource level of operationalization just as it was for offline fields of exclusion, even if the intention is to represent a general field.

Interrelations among digital fields of resources

For each of the four fields of digital resources (personal, social, cultural, and economic) a separate scale can be constructed and used for comparative analyses. Similarly, for different datasets, separate scales can be designed for the resources (for example, an entertainment scale as part of the personal field), and while these scales might contain different individual measures (e.g., playing games or watching videos as measures of the entertainment resource), in different studies they should measure the same underlying construct on the aggregate resource level. Some cross-national surveys on internet use, such as the World Internet Project and the Eurobarometer studies, have tried to incorporate a variety of items that can be classified in this way (see Helsper & Gerber, 2012) and which might serve as guidelines. Nevertheless, since no study or intervention has been designed with a theoretical model or clear classification of engagement in mind, good instruments that cover all resources through a variety of items measuring each resource are often missing. Further development of classifications and operationalizations of these concepts is necessary.

Corresponding to what social exclusion scholars have attempted for social exclusion, an index of multiple *digital* deprivation that includes economic, cultural, social, and personal elements could be constructed (see, for example, Helsper, 2008; Jung et al., 2001). This is in contrast to most current indexes of digital exclusion that focus almost solely on creating scales based on the social impact mediators discussed earlier. The Internet Connectedness Index developed by Yung, Qiu, and Kim (2001) incorporates some of these indicators but does not allow for distinctions between different types of digital resources or fields, limiting the possibility of examining how different types of offline exclusion are related to different types of digital exclusion.

Digital impact mediators

This article has so far looked at conceptualizations of offline and digital fields, as well as factors that mediate the impact of offline exclusion on digital exclusion fields (i.e., social impact mediators); what remains unaddressed are those factors that mediate the reverse impact of digital exclusion on offline exclusion. Selwyn (2004a) argues that while access, skills, and engagement with ICTs have been studied as indicators of successful digital inclusion initiatives, the effect of digital engagement on different fields of social inclusion remains understudied. In the corresponding fields model the factors that make up this path from digital exclusion to social exclusion fields are labeled digital impact mediators.

Empirical support for the classification of digital impact mediators must come from intervention and experimental research or from longitudinal panel data looking at the impact of different types of digital exclusion on different types of social exclusion. Research with representative data does not, in general, show significant effects of the introduction of digital resources on offline resources (Anderson & Tracey, 2001; Loader & Keeble, 2004). This might be because many of these studies focus on social impact mediators (access, skills, and attitudes) as indicators of digital inclusion, thereby ignoring the resources in different digital exclusion fields as specified in the corresponding fields model. Other social intervention research suggests that the factors that facilitate the influence of activities on individual well-being include activity relevance, the quality of the experience, ownership/empowerment, and sustainability (Hamelink, 1997; Selwyn, 2004a; Selwyn et al., 2001). There is almost no theoretical work regarding the factors that make digital engagement successful in improving people's everyday lives. Knowledge in this area is based on very specific case studies or interventions that do not allow for generalizations. On the basis of other research, such as that on media for development (e.g., Heeks, 2010) or those using theories of planned behavior and reasoned action (e.g., Taylor & Todd, 1995; Venkatesh, 2000), the following four digital impact mediators are proposed: relevance (usefulness), quality of experience (ease of use), ownership (agency and empowerment), and sustainability (social and financial). However, this part of the model in particular needs adjustment in light of future research that tests these assumptions across interventions and experiences of groups with different types of resources in the social and digital fields. Here, qualitative work such as that done under the domestication framework (Haddon, 2000; Silverstone & Haddon, 1996) can help in constructing indicators for more generalizable measures of digital impact mediators.

Translated into digital impact mediators the suggested classification means that only when experiences within specific digital fields are relevant to everyday life, if they are positive in nature, if the person feels that digital actions are owned by or empower them, and if the digital experience can be sustained over time will digital resources influence offline resources. All these digital impact mediators link directly to ICT activities and not to the social impact mediators (access, skills, and attitudes); therefore, engagement with different digital fields should be a fundamental part of any digital inclusion framework.

Hypothesized links between social and digital fields

The main aim of this article is to build a theoretical model based on existing constructs of social and digital inclusion that allows researchers and policy makers to analyze and shape research and interventions in such a way that the links between social and digital exclusion can be studied comprehensively. The model does not start from one specific context but from a holistic conception of everyday life including work, leisure, family, and other environments. The risk in starting from one individual's specific context, as is common in domestication research (Silverstone & Haddon, 1996), is that it is easy to lose sight of the wider social context. Emphasizing the uniqueness of each situation and each individual is valuable in that it provides rich descriptions, but these do not easily lead to an understanding of the wider societal processes in which different types of exclusion are embedded nor to knowledge that is transferrable across work with different groups. This type of highly contextualized and individualized research does not allow for predictions about which factors are more likely to be barriers for certain groups of people. In other words, theoretically starting from specific contexts leads to description instead of evaluation, prediction, and societal understanding. Even from interventions or case studies that are more generalizable, it has been difficult to find clear specific links between digital and offline exclusion.

One argument for the lack of evidence of this impact is that researchers have been focusing on the "wrong" fields. In education, an example of this is when researchers expect an increase in performance (the economic field) through the introduction of ICTs while the real impact is on self-esteem (the personal field) (see Kirkup & Kirkwood, 2005). Or perhaps, the introduction of ICTs did not focus on those digital resources that might have had the most impact. It is unlikely, for example, that using digital finance resources, such as online banking, will increase the offline social resources of the person. It is more likely that a person who uses social digital resources, such as social networking applications, will increase their offline social resources (Wellman, Boase, & Chen, 2002).

This article, therefore, argues for a theoretical model that hypothesizes that resources in offline fields will mainly influence corresponding digital fields and vice versa. It is important that studies incorporate the same fields (economic, cultural, social, and personal) in the classification of both the offline and the digital arenas so that these specific impacts can be detected. Some evidence suggests that those who lack resources in certain offline fields are also less likely to engage with resources in the corresponding digital fields (van Dijk, 2005). For example, Helsper and Galacz (2009) showed in their analysis of World Internet Project data that, amongst internet users in various countries, those with the lowest levels of education (i.e., excluded from the economic field) were the furthest removed from using the internet for educational and other economic purposes even when they engaged with entertainment-related personal field resources online and had similar levels of access and skills (see also Zillien & Hargittai, 2009). Similarly, Bimber's (2000) and Wellman et al. (2002)

studies showed that those with more social offline resources build up more social online resources than those with fewer offline social resources (see also Kraut et al., 2002).

A consequence of the corresponding fields model is that, even if an individual engages with a certain digital field and thus benefits from this, those with more resources still take more advantage of the same type of uses. The model would need to be contextualized by controlling for other potentially influential resources to be able to test this rich get richer hypothesis for various fields. This is another reason why an approach focused too much on specific individual contexts is at risk of missing important explanations and interpretations of digital inclusion.

No studies have been designed so far to allow for full testing of the model presented in this article, and so no conclusions can currently be drawn about how all these fields affect each other. A full empirical test of this model should include operationalizations of all the fields, incorporating as many underlying resources as possible. This way, researchers could examine whether, for example, educational offline resources in the economic field are indeed strongly, positively related to education resources in the digital field after controlling for effects of other economic and cultural, social, and personal resources, as well as for the social impact mediators.

The main premise of the corresponding fields model presented here is that the fields of offline resources influence, above all, the corresponding fields of digital resources (see Figure 2). While there are strong relationships between different resources and while there are undoubtedly links between noncorresponding offline and digital resources, this model posits that, when other factors are controlled for, the links between corresponding fields are stronger than those between noncorresponding fields. The use of this model makes it possible to hypothesize about the exact links between specific types of offline exclusion and types of digital exclusion, which is not possible with theories influencing current research design which often give a broad, general sweep of the links between social and digital exclusion.

Figure 2 shows a detailed diagram of the corresponding fields model. It includes all the mediator variables discussed as well as the offline and digital fields of exclusion with their associated resources. The four top level fields of offline and digital exclusion relate to each other; an individual who is excluded from one is also likely to be excluded from another. Nevertheless, the fields are separate constructs addressing different (macro and micro) aspects of exclusion. These economic, cultural, social, and personal fields are operationalized through underlying specific resources that are similarly interrelated. This means that, for example, the economic offline field includes the strongly related employment, education, and income resources, which are also but less strongly related to psychological well-being resources in the personal field. A similar logic is followed for the digital resources, whereby operationalizations of resources within digital fields are interrelated and can sometimes be placed under different top level fields. In other words, a lack of digital participation and engagement resources is mostly an indicator of exclusion from the social digital field but also functions as an operationalization of the cultural digital field. The hypothesis for all

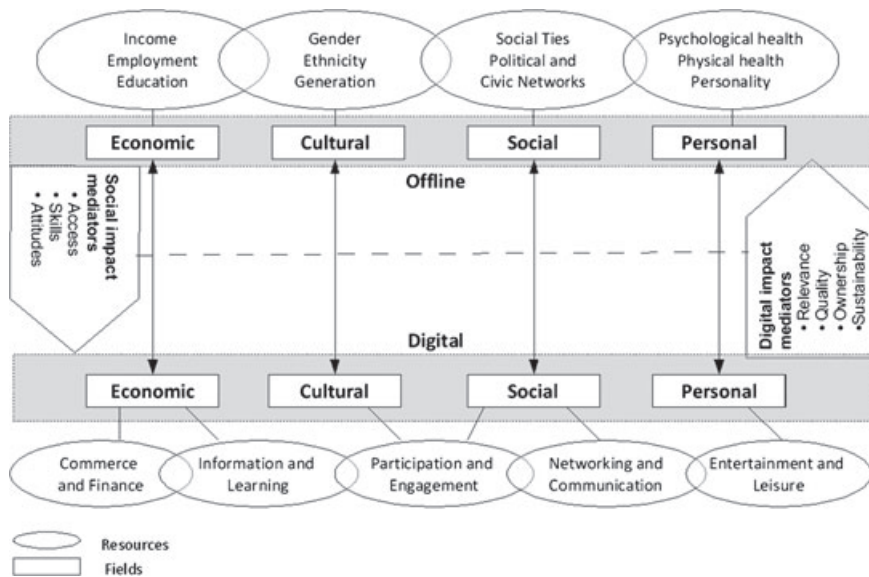


Figure 2 Theoretical model of the links between offline and digital fields of inclusion.

these fields would be that inclusion in one of the resources is related to inclusion in a resource within the same field but less strongly to a resource in another field.

The design and evaluation of policies or interventions around digital inclusion should make sure all digital and social fields of the model are measured. The mediators should be incorporated in any evaluation of success of policies or interventions, not as outcome measures, but to understand to what extent these can or cannot change the links between offline and digital exclusion. If all mediator and field elements are evaluated, best practice can be constructed around the types of mediators and digital engagement most effective in improving the lives of people with different types of offline exclusion.

The corresponding fields model is conservative because it predicts that lack in one offline resource will lead to a disadvantage in the corresponding digital resource, which implies a self-perpetuating cycle of exclusion. Nevertheless, the incorporation of mediators between the fields allows for hypotheses about change or exceptions. For example, there is the possibility of explaining unexpected cases of inclusion, such as individuals who, based on their lack of offline resources in a field, are predicted to disengage from the corresponding digital field but, nevertheless, engage strongly. There is some evidence that amongst the socioeconomically excluded, those who are engaged with ICTs are different from their peers in the quality of their access and levels of self-efficacy (see Helsper, 2010). An examination of other fields might also guide the researcher to find high inclusion in other resources that could explain increased access and skills and positive attitudes and digital inclusion “against the odds.” For instance, if an individual has low offline economic resources but high digital economic resources, this might be explained by certain

individual resources (e.g., personality) or social resources (e.g., strong, extended networks) that lower access, attitudinal, or skills barriers. Therefore, exceptions to the corresponding fields hypothesis should be explored in more depth in further research. The characteristics of the unexpectedly included will aid theorization about which resources and impact mediators are the most important in breaking the rich-get-richer cycle where digital exclusion reinforces or perpetuates offline exclusion.

The hypotheses regarding mediators are another aspect of the corresponding fields model that has empirical implications and requires further explanation. There are certain barriers to going from one field to another and some factors that make the jump from offline to digital fields easier. Instead of seeing access, skills, and attitudes as the (outcome) variables of interest in a process of digital exclusion, these factors are seen as the barriers or enablers in the relationship between offline fields of exclusion and digital fields of exclusion (see Figure 2). In other words, the level of internet access, skills, and the types of attitudes a person has will facilitate or inhibit the influence of offline resources on corresponding digital resources. Relevance, experience quality, ownership, and sustainability are seen as the enablers and barriers to going from the digital field to the social field. An example of a study in which this type of framework has had an impact is in the UK part of the World Internet Project (i.e., the Oxford Internet Survey, OxIS³). The 2009 survey included measures of different fields of inclusion online and offline as well as different skills measures corresponding to these different fields (Dutton, Helsper, & Gerber, 2009). OxIS 2009 also tried to include digital impact mediators after research on the previous versions made clear that some possible links between offline and digital exclusion had remained unexplored which constrained analyses (Oxford Internet Institute, 2008). Of course this is only one study and future theory development should not be limited to what has already been done. As the model presented is mostly theoretical and not empirically tested in its entirety, research that incorporates more measures at the spectrums of both social and digital exclusions should be conducted. This research should try to understand the complex links between the offline and the online, as well as how different offline and online fields are related to each other.

Conclusion

Many advances have been made in research and policy as regards the understanding of digital exclusion. The field developed from looking at single outcome indicators, such as access, to defining digital inclusion as a multifaceted construct incorporating access, skills, attitudes, and different levels of engagement with technologies (Selwyn, 2004a, 2004b; van Dijk, 2005; Warschauer, 2004). Nevertheless, there has not been a theoretical model that has dealt with the complexities of the links between social exclusion and digital exclusion in a world in which ICTs are part of most aspects of everyday life. The existing work on digital exclusion referred to the links between social and digital exclusion but did not hypothesize about *how* they are related.

Researchers must unpack the offline aspects of exclusion as well as define clearly which elements characterize digital exclusion. The corresponding fields model presented here identifies four fields of offline resources—economic, cultural, social, and personal—and argues that they are linked most strongly to corresponding fields of digital resources. This model goes beyond van Dijk's (2005) and others' work on explaining digital inclusion by hypothesizing not only which factors (access, skills, and attitudes) mediate the effect of offline resources on digital engagement, but also which factors (relevance, quality, ownership, and sustainability) mediate the effect of digital engagement on social inclusion. By specifying the fields of offline and digital resources it becomes possible to design measures and evaluation tools that capture the whole range of links between social and digital engagement. Much can be learned in this context from historical thinking about social exclusion. As ICTs have become more and more integrated into different aspects of everyday life and more widely used by the general population, the models that researchers have used to understand offline exclusion and disadvantage should become increasingly valuable in understanding our engagement with ICTs.

The corresponding fields model presented here was an attempt to integrate this work into thinking about digital exclusion. It was designed with quantitative research, policy, and (evaluations of) interventions in mind. As such it addresses issues separate from but relevant to qualitative research and is seen as complementary to, for example, domestication approaches to digital inclusion. The specific elements of the model should be debated and need to be fleshed out through both empirical and theoretical research but, on an aggregate theoretical level, it can be used to study these links for different platforms and using different individual indicators of offline and digital resources. This means that instruments and interventions must be designed to include indicators in all categories, contextualized in wider social processes of exclusion. As long as all the general fields, that is, economic, cultural, social, and personal offline and digital fields, as well as the mediator categories, are operationalized, this model is robust enough to deal with the rapid changes in ICT applications exactly because it does not depend on how the specific fields are filled in. It is also important that theorization and empirical work include the bidirectionality of this model, that is, not only hypothesizing the details of how social exclusion leads to digital exclusion, but also how digital engagement might or might not change social inclusion for the separate fields.

The model presented is by no means final but takes a step in supporting thinking about the different aspects of offline and digital exclusion and about the complexity of the links between them.

Notes

- 1 Information available at: www.worldinternetproject.net.
- 2 Information available at: www.pewinternet.org.
- 3 Information available at: www.oii.ox.ac.uk/microsites/oxis.

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