Open access to health and education research outside academia: perspectives of research users, research intermediaries and researchers

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Thesis abstract

The thesis investigates how publics outside academia engage with ideas of open access to research publications. To do this, it analyses data from interviews with users of health and education research in two non-academic contexts, as well as with researchers interested in communicating their work to wider audiences. It draws on constructivist grounded theory (Charmaz, 2006) and situational analysis (Clarke, 2005).

The literature review highlighted a need to empirically explore OA outside academia. This study focused on the ways in which publications were accessed and used outside academia and the factors enabling and preventing access. It also explored perceptions of OA within a wider context of communicating research to non-academic audiences, and identified areas of contestation.

The study found that there was a demand for open access, although the demand was perceived to be limited. There were significant sources of friction in accessing research publications, including paywalls, which could be circumvented through file/password sharing and drawing on contacts. Conceptual access (e.g. understandability) was also found to prevent engagement with research publications in some cases, although this varied according to levels of expertise.

The study identified research intermediaries as playing an important dual role, as they accessed research in order to make it accessible to a wider audience.

The study found a disconnect between some OA advocacy and research-user perceptions. There was also a disconnect between researchers' commitment to communicating their work outside the academy and their support of OA. Attitudes towards OA were influenced by bureaucratic mandates, high APCs and belief that there would be little demand for their research. Findings indicated however, that OA could complement other forms of research communication in specific contexts. Finally, the study suggests that a narrow focus on 'tangible outcomes' for non-academic publics (Moore, 2019) risks obscuring attempts to develop a more equitable scholarly communications system.

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I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously been presented for an award at this, or any other, university.

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1 Introduction

1.1 Chapter introduction

Over the past two decades, open access – making research publications available online and free of charge to read and download, as well as free of most copyright and licensing restrictions (Suber, 2012) – has become an established trend in scholarly publishing. In that time, it has proved itself to be a contested area, with disagreement among different groups and stakeholders over how best to fund, implement and enforce it. It has attracted both fierce advocates (Suber, 2012; Willinsky, 2006), and critics (Golumbia, 2016; Osborne, 2013), as well as a growing body of research covering questions as diverse as whether OA increases citation rates, researchers' attitudes towards it, and how best to finance an open access scholarly communications system (Pinfield, 2015).

A small but growing subset of that research deals with issues around whether open access to research publications can have benefits not just for researchers, but for those outside the academy (Alperin, Gomez, & Haustein, 2019; Beddoes, Brodie, Clarke, & Hoong Sin, 2012; Moorhead, Holzmeyer, Maggio, Steinberg, & Willinsky, 2015; Tennant et al., 2016; Zuccala, 2009, 2010). In Willinsky's monograph, *The Access Principle*, he devotes a chapter to the public benefit of OA, outlining what he perceives to be the benefits of unfettered access to the research literature to a wide variety of non-academic audiences; from patients to parents, to interested members of the public (Willinsky, 2006). He sees open access not only as having tangible benefits for people looking for information (e.g. for health reasons), but also as a contribution to democracy and public debate. Making a similar argument, the Budapest Open Access Initiative (a foundational declaration signed in 2002 after a meeting of researchers, publishers, librarians and other stakeholders), stated that providing access to research is a public good, making possible “the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds” (Budapest Open Access Initiative, 2002). This thesis builds upon existing literature by empirically exploring open access through the perspectives of research users situated outside the academy as well as researchers and research intermediaries (those who have a role in making research accessible, usable and context-specific to different audiences) (Meyer, 2010).

1.2 Background to open access

The growth of the internet, and subsequent movement of research literature, (primarily in the form of journal articles) from a paper-based to digital format (Borgman, 2007), has created the potential to provide unlimited access to material that was once confined to academic libraries (Peters & Roberts, 2016; Tennant et al., 2016). Advocates of open access have traditionally argued, however, that this material has been artificially enclosed by publishers through the use of paywalls, meaning that research articles can only be accessed by those affiliated to a subscribing institution, or who pay a one off payment for an individual article (Suber, 2012). In what has been termed the “serials crisis,” the costs of institutional subscriptions have become so expensive that academic libraries bear an unsustainable burden of subscription costs. The open access movement has responded to this crisis by introducing alternative ways of publishing or self-archiving online, allowing free access to research articles at the point of use (Suber, 2012). There are two main routes to making research literature open access – the *Gold* route; publishing directly in an fully OA or hybrid journal (which sometimes requires the payment of an Article Processing Charge to the publisher), and the *Green* route; publishing in a closed-access journal but depositing a copy of the article in an institutional or subject repository (Suber, 2012). As open access has become more established, a proliferation of other terms have been introduced including *diamond* publications that adopt a non-APC, not-for-profit business model (Fuchs & Sandoval, 2013), and *bronze*, a catch-all term for publications that are made freely available online without using open licenses (Piwowar et al., 2018). These terms are often contested and overlapping, with some preferring to remain with the original green/gold distinction and others using different terminology altogether (Barnes, 2018). A distinction has also been drawn between *gratis* and *libre* OA, with *gratis* referring solely to the removal of price barriers, whereas *libre* is concerned with the removal of permission barriers such as copyright and licensing (Suber, 2012).

There has been significant growth in the percentage of research literature that is available open access over the last twenty years. Although it is impossible to reach an exact figure (studies attempting to do this all use different definitions of open access, datasets and time periods), some estimate that between 25% and 28% of the world's scholarly literature is now open access (Khabsa & Giles, 2014; Piwowar et al., 2018). Whilst of course this leaves a great deal of work still to be done, open access is now "widely accepted as a credible prospect" (Pinfield, 2015). However, the practical implementation of OA is still an area which is hotly contested, with stakeholders holding differing, and at times opposing views (Lawson, Sanders, & Smith, 2015; S. A. Moore, 2017; Pinfield, 2015; Tennant et al., 2016). In particular, the growth of APC-based Gold OA supported by research funder policies in the UK has drawn criticism for failing to solve the serials crisis as publishers engaging in "double dipping;" making money from subscriptions and APCs at the same time (Pinfield, Salter, & Bath, 2017).

1.3 Outside academia

The potential benefit to audiences outside academia has remained an important strand of open access advocacy and policy, despite not always being seen as a central focus. Suber, for instance, wrote that public access was only a useful side effect of increasing access for the research community (Suber, 2012). The public benefit of OA has been framed theoretically in several different ways; from a means of providing accountability to taxpayers, to a way of democratising the world's scholarly knowledge (Bacevic & Muellerleile, 2017). More pragmatically, researchers have identified groups outside academia to whom access to the research literature could be relevant and useful, including industry researchers, the non-profit sector, patients and practitioners (ElSabry, 2017). Some of this work presupposes that open access will be ultimately beneficial to society (Tennant et al., 2016). Other work is more critical and questions whether a commitment to open access (articulated by Golumbia as an "exploitative notion of a commons as public good to which laborers owe their labor without compensation"), causes harm to researchers, and restricts research in ways that are more subtle than a paywall (Golumbia, 2016, p. 103). In recent theoretical work, Moore has critiqued an approach to open access which focuses on "tangible outcomes" (which is understandably often the default approach when exploring issues of public access) and concentrates instead on an ethical and "care-full" approach to scholarly publishing, epitomised by the work of small, scholar-led OA presses (Moore, 2019, p. 3).

There is also a small but growing body of work which seeks to explore these questions through empirical analysis, either in a general sense (Zuccala, 2009, 2010), or by focusing on the experiences and barriers to access for specific groups of research-users, such as doctors, third sector staff, policymakers or small businesses (Beddoes et al., 2012; Maggio, Moorhead, & Willinsky, 2016; Moorhead et al., 2015; Parsons, Willis, & Holland, 2011; Willinsky, 2003). This work uses a diverse range of methodologies, ranging from qualitative interviews and focus groups (Zuccala, 2010) to quantitative social media analysis (Alperin et al., 2019), and is a valuable addition to what is otherwise often a theoretical debate.

1.4 Research rationale

This thesis seeks therefore to add to this growing body of empirical work. It attempts to move beyond generalised and theoretical claims that open access can benefit the general public (Willinsky, 2006)[1], and that the general public have a 'right' to access research publications (Davis, 2009) in order to interrogate specific contexts where those without institutional affiliation have had experience of accessing and using open access research. In this way, it hopes to provide rich evidence of perceived benefits of open access to non-academic publics, as well as barriers and limitations to that access. It also questions whether it is helpful to refer to the 'general public' in the context of demand for open access, rejecting this framing in favour of one where a range of different publics are identified.

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[1] Although the thesis uses Willinsky's 2006 theoretical arguments as a starting point for which to explore these issues more deeply, it also notes that Willinsky and his colleagues have also undertaken extensive empirical work in this area, including with doctors, staff in the third sector, and policy makers (Maggio et al., 2016; O'Keeffe et al., 2011; Willinsky, 2003), all of which are referenced later in the thesis.

The thesis also engages with some of the theoretical debates around open access and its relationship with society. It is not a piece of open access advocacy, although influenced by works of open access advocacy such as those written by Suber (2012) and Willinsky (2006). In fact, it is ultimately ambivalent about both the possibilities of open access in engaging wider publics with research, and the ways in which open access is currently implemented and financed. It explores negative or ambivalent perspectives within the data alongside recent critical scholarly work.

arguing that the mainstream open access movement has failed in some of its aims, and that a narrow focus on providing access 'outside the academy' serves to obscure some of those failings (Lawson, 2019; Lawson et al., 2015; Moore, 2017, 2019). It also positions the concept of open access within the wider context of research communication, interrogating whether the two concepts complement each other, or whether they should be perceived as separate aims and strategies.

It takes a qualitative approach to explore the perspectives of people who have accessed research from 'outside academia' for professional or personal reasons, supplemented by data from researchers interested in communicating their work to various non-academic audiences, and from research intermediaries (Beddoes et al., 2012). In the context of this research, an 'intermediary' is someone who is engaged in making research publications more accessible to wider publics through a range of strategies such writing accessible summaries, web content, or providing training. An intermediary or 'knowledge broker' (Meyer, 2010) sits at the intersection between academia and other non-academic contexts, and is employed in a formal capacity. However, there are also examples within this thesis of participants taking on an informal intermediary role.

By including the perspectives of different stakeholder groups, the research identifies areas of conflict and contestation in attitudes towards open access, as well as a deeper understanding of the barriers that research-users face when accessing research outside academia.

The main focus of this study is on research publications produced within Higher Education Institutions in the UK, and how they are accessed by people ‘outside academia’ – that is, in personal and professional contexts that are not for the purposes of research, teaching or studying within a university. This is because this is the main priority of the open access movement; to make research outputs such as journal articles and academic monographs available (Lawson, 2019). However, as the research acknowledges that lines between ‘academia’ and ‘outside academia’ are blurred, and important research communication activities happen on the borders of these social worlds, some participant voices are included who work in this border area, or who have moved recently between academic and non-academic work. More discussion of this can be found in Chapter 3.

1.5 Research context

In order to develop a more detailed analysis of how OA is used outside academia, the study focuses in two disciplinary areas, health and education. Medicine (and health more broadly) is seen by many as being potentially the most useful form of published research to a wider audience (Willinsky, 2006; Zuccala, 2010), and patient narratives are used to argue powerfully for the need for increased access (Taylor, 2015). However, some authors interested in OA have argued that it is important not to restrict discussion of open access to the sciences (Eve, 2014; Willinsky, 2006). Education is a diverse discipline, encompassing work in both the social sciences and the arts and humanities. It is also a field which has engaged heavily in discussions of applying research to practice, which means that there is already a body of literature around the use of research by non-academics (Coldwell et al., 2017; Schaik, Volman, Admiraal, & Schenke, 2018; Williams & Coles, 2007b).

There are a wide range of potential research users who could potentially benefit from open access, including policymakers, healthcare staff and journalists (ElSabry, 2017). In order to narrow down the situation of enquiry even further, this research focuses on two specific contexts; the first being health information seeking (Lambert & Loiselle, 2007), and the second being research engagement in educational practice (Sharp, Handscomb, Eames, Sanders, & Tomlinson, 2006).

1.5.1 Health information seeking

Health information seeking is defined by Lambert and Loiselle (2007) as how people “go about obtaining information, including information about their health, health promotion activities, risks to one’s health, and illness.” It has been studied in contexts such as dealing with a crisis of health and shared decision making about treatment options (Lambert & Loiselle, 2007). Although it rarely focuses solely on accessing formal research publications, this aspect is particularly highlighted when discussing people diagnosed with chronic health conditions (Clarke et al., 2015) as they are often seen as more likely to make treatment decisions in partnership with healthcare practitioners, and be interested in self-management of their conditions.

In order to explore the health information seeking context, the study analyses interviews with three participant groups:

Health information seekers (HIS)	Members of the public with experience of searching for, and accessing research publications for reasons connected to their own, or another's health
Medical charity staff (MC)	Staff working at charities with a remit for supporting a patient population, including funding medical research and communicating research to a non-academic audience
Health researchers (HR)	Researchers in the areas of medicine and health more broadly, with an interest in communicating their research to a non-academic audience.

1.5.2 Research engagement

‘Research engagement’ refers to the idea that practitioners are encouraged to use research-based evidence to inform their practice and decision making (Nelson & Sharples, 2018; Tripney, Gough, Sharples, Lester, & Bristow, 2018). Along with concepts such as “evidence based practice” and “evidence informed practice” (Coldwell et al., 2017), research engagement is commonly discussed in education. For example, Sharp et al. (2006) advocate for schools to become research engaged through a commitment from senior leadership to use evidence in decision making, as well as supporting staff to both engage with evidence, and conduct their own research. Research-based evidence is usually defined broadly in this context (Coldwell et al., 2017), but it is clear that peer-reviewed journal articles and academic books make up an important part of an evidence base. A UK based teachers’ professional body, *The Chartered College of Teaching,* offers subscription access to journals and ebooks, as part of its commitment to developing a teaching profession that is informed by research evidence (Scutt, 2017).

In order to explore the research engagement context, the thesis analyses interview data from two participant groups:

Educational Practitioners (EP)	Practitioners in the area of education who have had experience of accessing research publications as part of their work. This group includes those who support other practitioners with research access.

Educational Researchers (ER)	Researchers in the area of education, with an interest in communicating their work to a non-academic audience.

1.6 Methodology

The research takes a qualitative, interview based approach informed by situational analysis (Clarke, 2005) and constructivist grounded theory (Charmaz, 2006). Grounded theory is an inductive methodology which grounds analysis in the data itself (Charmaz, 2006), and is widely cited in all areas of qualitative research (Vasconcelos, Sen, Rosa, & Ellis, 2012). Situational analysis builds on the work of constructivist grounded theorists such as Charmaz (2006), but also incorporates mapping exercises in order to identify all elements of the “situation of enquiry,” including human and non-human elements, sociocultural and political elements, and discourses (Clarke, 2005). It also draws on social worlds and arenas theory, which conceptualises the situation of enquiry as being formed of a mosaic of overlapping social worlds (Clarke, 2005). This approach was felt to be appropriate for a study that dealt with the relationship between the social worlds of “inside” and “outside” academia, focusing on the organisations, actors and technologies that reduce the “friction” of research publications moving between those worlds (Neylon, 2013). It was also deemed appropriate for the study of a contested area such as open access (Šimukovič, 2016), as it encourages the identification of conflicting and positions and discourses within the data.

1.7 Research aim

This research aims to qualitatively explore perceptions of, and attitudes towards research-use and open access outside academia in two different disciplinary contexts, and from the perspectives of research-users, research intermediaries and researchers.

1.8 Research questions

The research asks the following five questions in the contexts of health information seeking and research engagement in educational practice:

1. In what ways are research publications in the areas of health and education accessed, interpreted and used by research users and research intermediaries outside academia?

2. What are the main factors enabling and preventing access to research publications?

3. What major discourses do participants draw on when talking about open access outside academia, and what are the key areas of contestation and disagreement?

4. What is the relationship between open access and other forms of research communication practiced by researchers and research intermediaries?

5. How does an approach to OA that focuses on access to research outputs outside academia fit alongside other priorities and perspectives in scholarly communications research, practice and advocacy?

1.8.1 Evolution of research questions

The research questions changed and evolved throughout the duration of the study. This is expected in qualitative research taking a grounded theory approach, which is often iterative rather than involving the formation and testing of a hypothesis as found in quantitative research (Charmaz, 2006). The first two questions – exploring motivations and strategies of non-academic research-users, and identifying barriers to access – were formulated after an extensive literature review. The study aimed to build on other studies seeking to provide a more detailed, contextual account of research-access outside academia (Beddoes et al., 2012; Maggio et al., 2016; Parsons et al., 2011). The third research question – identifying major discourses – came from a more in-depth engagement with the study's chosen methodology, situational analysis. Clarke's interpretation of grounded theory centred the discursive within the situation of enquiry, and including a specific discourse-related research question allowed a more detailed analysis of how open access was spoken about by participants and how it compared to dominant discourses drawn on by open access advocates (Davis, 2009). The fourth and fifth research questions were formulated after data collection and initial analysis had begun. It became clear that participants often saw open access in its wider context of other forms of research communication, rather than as a unique concept, so the fourth question became a way to analyse that relationship in more depth. The fifth question evolved from the realisation that there was a disconnect between researcher participants who were intensely critical about aspects of open access, and research-user participants who understandably focused only on whether a publication was freely available or not. It also allowed the thesis to draw on more recent, critical work by scholars such as Moore and Lawson.

1.9 Definition of terms

Open access: This study recognises Suber's definition of open access as research publications that are "digital, online, free of charge, and free of most copyright and licensing restrictions" (Suber, 2012). However, it also follows Moore (2017) in emphasising that open access is not a "thing-in-itself" but rather a process of experimenting with the way that research is published and disseminated. Moore has drawn attention to the heterogeneous and contested aspects of the term, and the way in which it is implemented.

Non-academic or lay research user: Users of research who are not academic researchers will be termed non-academic or lay. However, the boundary between expert and lay readers is not always easy to define. People may move between academia and practice, for instance, or an academic researcher in one area may be "lay" when the research they are accessing falls outside their own field of expertise (Zuccala, 2009).

Public(s): It is recognised that there is no single, homogenous public for research publications outside academy. Instead there exist multiple, overlapping and heterogeneous publics (Dawson, 2018). Following Chikoore, Probets, Fry and Creaser (2016, p. 148), the study understands the public to be "all non-academic audiences (including the general public) that can potentially be engaged with by academics."

Research publication: This study understands a research publication to be a journal article, academic monograph or book chapter, as these are the primary research outputs in most disciplines and the main focus for open access (Lawson, 2019). It could also be a set of conference proceedings, a data paper or other formal research output. Peer review is recognised to be a central principle in the publication of such scholarly work (Peters & Roberts, 2016). However, the thesis acknowledges the situated and contextual aspects of peer review, and recognises that not all peer review is carried out in the same way, or at all (Tennant et al., 2019). Furthermore, due to the nature of this research, distinctions between peer reviewed and non-peer reviewed literature may not always be clear to participants. Participants may therefore understand a research publication as including non-peer reviewed research reports (produced by a university, third sector, government or commercial organisation), or books, articles and resources written by researchers with a practitioner audience in mind.

Scholarly communication: The Association of College and Research Libraries (ACRL) defines scholarly communication as "the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic mailing lists" (Association of College and Research Libraries, 2003). Open access falls under the wider umbrella of scholarly communication (Lawson, 2019). It is notable, however, that this definition does not recognise the use of research publications outside the ‘scholarly community.’

1.10 Structure of thesis

Chapter 2 provides an overview of literature related to open access outside academia, and identifies a need for qualitative empirical work in this area. It also briefly reviews literature in related areas such as science communication and research impact in order to situate open access within a wider context. Finally, it explores literature from the disciplines of health and education; particularly focusing on health information seeking and the concept of the “informed patient” in the health domain, and on teachers’ research engagement in the education domain.

Chapter 3 introduces the research philosophy and methodology used in the thesis, providing an explanation of both constructivist grounded theory (Charmaz, 2006) and situational analysis (Clarke, 2005; Clarke, Friese, & Washburn, 2015). It then critically discusses the methods used in more detail, including sampling, participant recruitment, qualitative interviewing and coding. It also identifies the limitations of the study.

Chapter 4 explores the data analysis in more detail, presenting examples of the three mapping exercises proposed by Clarke; situational maps, social worlds/arenas maps and positional maps. The chapter aims to make visible the analytic steps taken in the research, as well as providing visual representations of the themes identified in the interview data.

Chapter 5 presents findings drawn from the three “research user” participant groups (MC, EP and HIS). It focuses on motivations for accessing research outside academia and experiences of searching for, accessing and reading research publications. It also explores attitudes towards open access, and identifies material and conceptual factors that enable or prevent access to research.

Chapter 6 presents findings drawn from research intermediary and researcher participants. It focuses on researcher experiences of publishing, and intermediary experiences of translating research for wider audiences. It also explores how researchers and intermediaries perceive their non-academic audiences, and their attitudes towards open access.

Chapter 7 brings together findings from the previous two chapters, and discusses them with reference to relevant literature. It focuses on five key concepts: *imagined publics, friction,* areas of *disconnect, intermediaries* and *power.* It closes by bringing the focus back “inside” the academy, cautioning against a focus solely on “tangible outcomes’ for the public (Moore, 2019) without also reflecting on how open access is implemented, governed and financed.

Chapter 8 presents key conclusions, with reference to the concepts discussed in the previous chapter. It also presents this study’s contribution to knowledge, suggests implications for practice and makes recommendations for further research.

1.11 Chapter overview

This chapter has introduced the background and context to the study, and has introduced the research aims and questions. It has provided a brief overview of the study's methodology, has defined key terms and has outlined how the rest of the thesis will be structured. Chapter 2 will move onto a review of the literature in order to identify how this study will build on existing research.

2 Literature Review

2.1 Chapter introduction

The following review of the literature will outline the main arguments for viewing audiences outside academia as beneficiaries of open access, and how these arguments have been used in open access policy and explored in empirical research. It will then review disciplinary-specific literature from the fields of health and education in order to situate a discussion of open access within current debates within those disciplines around information seeking, research communication and evidence based practice. The initial search strategy for the literature review is indicated in Table 1; it was then developed iteratively through following citations and current awareness services. A range of scholarly and professional literature has been used, as it is common for scholarly communications discussion to take place on professional blogs as well as in formal research literature (Pinfield, 2015).

Table 1: Initial search strategy

General (Google Scholar, Library & Information Science abstracts, Scopus)	Medicine (Google Scholar, PubMed)	Education (Google Scholar, ERIC)
Open access + public OR society OR social impact OR science communication OR democracy	Open access + health information OR informed patient OR expert patient OR chronic illness OR patients	Open access + evidence based practice OR research engaged practice OR research literacy OR teachers

2.2 Open access outside academia

In 2002 and 2003, three foundational declarations were signed in support of open access (OA): Budapest (Budapest Open Access Initiative, 2002), Berlin (Max Planck Society, 2003) and Bethesda (2003). Suber has referred to them collectively as the BBB definition of OA (Suber, 2012).

These declarations all contain, to a certain extent, reference to wider society within their call to make research literature OA. In Berlin, 120 research and cultural organisations attended a conference organised by the Max Planck Society. They released a declaration emphasising the internet's capacity as a revolutionary tool for knowledge dissemination, describing their mission as "only half complete," if research was not made "widely and readily available to society" (Max Planck Society, 2003). Ten years after the declaration was signed, the original signatories released an updated mission statement reiterating that "scholarly research results and cultural heritage shall be freely accessible and usable for scientists and the public" (Max Planck Society, 2013). The Bethesda declaration, signed following a meeting of the biomedical research community at the Howard Hughes Medical Institute in Maryland, similarly referred to the potential of the internet to make possible "substantially increased access," and stated that the work should be made available and "useful" to wider society (Bethesda Statement, 2003). However, the Berlin and Bethesda declarations did not expand on access for the public, focussing instead on action required by researchers, libraries and publishers to facilitate OA.

The language of the Budapest Open Access Initiative (BOAI), however, is clearly aligned with the idea of access for the public, as demonstrated by the frequently cited first line: "an old tradition and a new technology has converged to make possible an unprecedented public good" (Budapest Open Access Initiative, 2002). The BOAI was initially signed by thirteen individuals attending an Open Society Institute Conference held in Budapest. It advocated for access to research for all "scientists, scholars, teachers, students and other curious minds," strongly suggesting that access would benefit not only the academic and research community, but also the general public (Budapest Open Access Initiative, 2002). It went on to emphasise this in its aim to “unite humanity in a common intellectual conversation and quest for knowledge” (Budapest Open Access Initiative, 2002). The rhetoric of the BOAI suggests a moral imperative and a commitment to reducing social inequalities through giving access to research to the public. This aim can also be seen in other statements supporting OA, such as the International Fedaration for Libraries (IFLA), which states that access should be granted to “all those who experience disadvantage” (IFLA, 2003).

The following year, a UK House of Commons report argued for open access to all scientific publications, citing both practitioners and the general public as potential beneficiaries (House of Commons Science and Technology Committee, 2004). Dismissing concerns about the potential dangers of allowing the public too much information, it stated that “it is not for either publishers or academics to decide who should, and who should not, be allowed to read scientific journal articles” (House of Commons Science and Technology Committee, 2004, para. 40). The report identified possible benefits for the general public, including being able to challenge biased reporting within media portrayals of research.

In the years since the publication of these declarations and reports, debates around OA have been ongoing in the scholarly communications literature and elsewhere in academia. In 2015, Pinfield identified key areas of research interest around OA to be:

- green vs gold route of funding

- building up an evidence base to inform future scholarly communications decisions
- researchers' perceptions and use of OA
- development of OA policy
- the creation and maintenance of repositories
- trends in Gold OA journal publishing
- institutions' use of OA
- research impact (including wider public access) (Pinfield, 2015)

This overview of the research landscape suggests that access for non-academics makes up only a small part of ongoing debates around the politics and practical implementation of OA. Influential OA activists, such as Suber, have argued that access for a non-academic readership is not the movement's main priority; rather, it is simply a side benefit from providing access to researchers. Suber has even expressed concern that journals focus on lay access as a way of deflecting attention from how many researchers still do not have access to their material (Suber, 2012).

2.3 Critical perspectives on open access

As awareness of OA has become more widespread among the research community; partly through the implementation of OA policies and mandates by funding bodies, there has been an increase in critical literature in this area (Bacevic & Muellerleile, 2017; Golumbia, 2016; Herb, 2010; Lawson, 2019; Lawson et al., 2015; Moore, 2017). Much of this literature situates OA in its historical, social and institutional context, pointing out the way in which scholarly communications and knowledge production is inescapably tied to an increasingly marketised and “neoliberal” HE environment (Lawson, 2019). In this literature, scholars do not uncritically accept public access as the ultimate aim of open access, with Moore arguing that focusing only on “tangible outcomes” risks obscuring more important questions around how open access is governed and financed (Moore, 2019).

Other scholars have always been sceptical of the public benefit of OA, arguing that research articles are written to communicate with a community of fellow scholars who have invested in training to be able to read and understand them (Osborne, 2013), and that researchers should not feel that they have a misguided duty to the idea of the commons (Golumbia, 2016). According to Osborne, this does not preclude researchers attempting to communicate their research to the public in other ways, but emphasises that there is little need for articles to be read by non-academic audiences (Osborne, 2013).

However, as a non-academic audience is frequently referred to in open access mandates, and in informal online discussion, it has been argued that it should be explored in a more systematic way in the literature (ElSabry, 2017; Pinfield, 2015)

2.4 Framings of open access outside the academy

The following section presents a discussion of three key framings of OA in relation to society, found in research, policy and advocacy. The first section focuses on the moral right to access, the second focuses on the social benefits of OA, and the third discusses how OA can function as a “commons.”

2.4.1 Public right to OA

A key positive framing of OA is that it allows *publicly funded research to be made available to the public*. Variations of this argument have appeared in UK government and research funder policy over the past decades; for example, the House of Commons Science and Technology Committee Report (2004), the Finch report (2012), the official guidance for UK HE's research evaluation exercise, REF2021, and the Wellcome Trust's influential open access policy. This argument generally centres on the right of the public to access research. Former Minister of State for Universities and Science David Willets, who commissioned the Finch Report as part of the Coalition government described it in this way:

> "As taxpayers put their money towards intellectual enquiry, they cannot be barred from then accessing it. They should not be kept outside with their noses pressed to the window - whilst, inside, the academic community produces research in an exclusive space" (Willetts, 2012).

OA researchers and commentators have discussed the possibility of varied interpretations of this claim. For example, taken literally, it could mean that research should only be made accessible to citizens who pay their taxes in the country or region where research was funded (Bacevic & Muellerleile, 2017). It also suggests that only government funded research should be made OA, which does not allow for the reality of research funding, which depends on a mixture of private and public funding streams (Lawson, 2019). OA-sceptics from the research community, such as Osborne (2013), argue that it is over-simplistic to claim that a research output (particularly in the humanities) can be easily connected to a specific research grant.

It also relies on the assumption that researchers are not able to earn revenue from their research outputs; something that has also been challenged in a humanities context (Golumbia, 2016; Osborne, 2013). Despite these critiques, however, the claim is commonly repeated in policy, advocacy and research.

Bacevic and Muellerleile (2017) have argued that although the *publicly funded research* argument is commonly made by OA advocates, it often overlaps with a wider moral argument which “assumes in principle that all knowledge (publicly funded or not) should be accessible to all publics. In this case, any undue enclosure of knowledge, whether by companies or nation states, becomes immoral.” Willinsky (2006) similarly theorised that the moral and political imperative to make research accessible existed whether or not the general public wished to read it. These arguments avoid focus on taxpayers and are reflected in slogans such as “information wants to be free,” a cyber-libertarian slogan taken from the free and open source software (F/OSS) movement and subsequently applied to open access (Boshears, 2013; Moore, 2017).

2.4.2 Transparency and accountability

Public accountability and *transparency* have also been identified as dominant framings of open access advocacy (Davis, 2009). The Finch Report claimed that OA would lead to “enhanced transparency, openness and accountability, and public engagement with research” (Finch, 2012). This claim has been reiterated in a 2016 report which advised a continued commitment to OA (Tickell, 2016). Similarly, UKRI’s OA policy links a governmental commitment to transparency to increased access to peer reviewed research literature (Research Councils UK, 2013).

The term *accountability* is often linked with *transparency* in discussions of those responsible for managing public funds, who are deemed to be answerable to the taxpaying public for their “stewardship” of these resources (Ranson, 2003). Research on transparency and accountability often focuses on opening up the financial workings of public institutions and governments, and forcing them to justify themselves to the public (Ranson, 2003). However, the argument can also be applied to publicly funded research. UK Research and Innovation (UKRI) research portal, advertised as “the UKRI gateway to publicly funded research and innovation,” demonstrates its commitment to transparency and accountability by listing comprehensive details of research projects accompanied by the amount of funding each received from UKRI (http://gtr.rcuk.ac.uk/).

Transparency and accountability are often held up to be intrinsic properties of scientific practice, allowing scientific work to be replicated, critiqued and refuted (Peters & Roberts, 2016). Although in practice, research is often more complex than this (research can be kept secret through patents, for instance, or to protect the anonymity of participants), they still act as powerful drivers for a more open science (Peters & Roberts, 2016).

The focus on *public* accountability, however, suggests that researchers should not only be held accountable by other researchers (for instance processes of peer review), but by the public as a whole. This could be seen as a positive step; for example, Zuccala has suggested that this could influence informed decision-making among members of the public, such as voting for a candidate who promised to allocate tax money to stem cell or global warming research (Zuccala, 2009). More controversially, it has been argued that OA could work to call the whole Higher Education system to account, exposing to the public that “much scholarly work represents poorly written exercises in career maintenance and advancement” and bringing about systemic change (Willinsky, 2006).

However, applying principles of public accountability to academic work is not always viewed so positively, especially in the context of an HE environment where researchers are increasingly subjected to an “audit culture” where they are constantly required to prove themselves using quantified metrics (Shore, 2008). Accountability has been defined as the “capacity and right to demand answers,” twinned with the “capacity to sanction” (Fox, 2010). Applying these principles could risk limiting academic freedom (Kloor, 2015), or could be used to promote only a certain type of ‘public friendly’ research. This argument has played out in the national news recently as research funding in the humanities and social science in the recent case of Australian politician Simon Birmingham intervening to remove funding from multiple research projects (Piccini & Moses, 2018). In his own defence, Birmingham stated (on Twitter) *“I‘m pretty sure most Australian taxpayers preferred their funding to be used for research other than spending $223,000 on projects like “Post orientalist arts of the Strait of Gibraltar”* (Piccini & Moses, 2018), which was seen by many as part of a sustained attack by politicians on humanities disciplines. This is a concern that has already been raised by OA sceptics from the humanities (Golumbia, 2016).

It is also worth noting that research suggests that transparency does not always lead to accountability (Fox, 2010). It is often unclear within open access discussions how the public (or members of the public) would be able to hold researchers to account.

2.4.3 Social benefits of OA research

OA advocates also claim that providing access to scholarly research has tangible social or public benefits (Davis, 2009; ElSabry, 2017; Tennant et al., 2016; Willinsky, 2006). Once these benefits are recognised, Bacevic and Mullerleile contend, the provision of OA then becomes a *moral good,* and anything that hinders or slows down the process of providing access (such as delays caused by embargo or pre-publication peer review) can be perceived to prevent or limit those benefits (Bacevic & Muellerleile, 2017).

A key claimed public benefit is the effect on innovation, and therefore on economic development (Finch, 2012; House of Commons Science and Technology Committee, 2004; Tennant et al., 2016). Tennant et al. list several economic benefits of open access, including to research and development in industry. Quantifying the impact of open access research on innovation and economic development remains difficult (Alperin, 2015; ElSabry, 2017; Fell, 2019), although attempts have been made (Houghton & Sheehan, 2006, 2009). For example, Houghton and Sheehan propose a model for calculating the impact of increased research access on research and development, taking into account factors such as efficiency and time-saving (Houghton & Sheehan, 2006). Aside from innovation and economic development, potential public benefit from OA derives from its use by policymakers in decision making processes (Alperin, 2015; Tennant et al., 2016; Willinsky, 2006), independent researchers, and members of the public taking part in citizen science projects (ElSabry, 2017; Tennant et al., 2016).

2.4.4 OA and democratic participation

A particular benefit of increased access to research is its potential to enable democratic and political participation (Willinsky, 2002, 2006). Here, arguments draw on ideas of a democratic public sphere, where non-experts are able to contribute to public debate. Foundational to the conceptualisation of the public sphere is the work of Jürgen Habermas. Habermas envisaged the public sphere to be a social space separate from both private and state interests, where public issues could be debated by all citizens, and public opinion could be formed (Habermas, Lennox, & Lennox, 1974). Central to the idea of a public sphere was the right to free speech, free press and free assembly, and the idea that the state should be accountable to critical scrutiny by the public (Fraser, 1990). Habermas's ideas have been critiqued and modified on the grounds that his theorisation of the public sphere, despite promoting accessibility to the public, actually excluded many on the grounds of gender, race and class (Fraser, 1990). This has led to the proposal that instead of one public sphere being characterised by reasoned and rational debate, we should recognise competing public spheres characterised by conflict and contestation (Fraser, 1990). Taking into account critiques such as Fraser's, the public sphere is still foundational to much discussion around democracy and public participation in politics.

Internet researchers have drawn heavily on these ideas, (Dahlgren, 2005; Fuchs, 2013; Papacharissi, 2002), debating whether the internet acts as a public sphere by encouraging political engagement and facilitating participative democracy. Utopian visions of the potential of online spaces to empower political engagement sit alongside more critical accounts of the digital divide, media literacy and traditional power dynamics replicating themselves in online spaces (Papacharissi, 2002). Willinsky's vision of OA in *If Only We Knew,* and his later work, *The Access Principle,* is based on the concept of a democratic public sphere (Willinsky, 2002, 2006). In *If Only We Knew,* he argued for what he termed a "public knowledge project," opening up social science research to become a "democratic resource that encourages greater participation not only in formally political settings but in all walks of our lives" (Willinsky, 2002). Drawing on Habermas's work, he contended that knowledge generated through social science research could help with personal decision making and encouraging democratic participation, and suggested that new technologies could facilitate this process (Willinsky, 2002). His later monograph, *The Access Principle,* took the argument further, specifically identifying OA as the tool allowing the public knowledge project to develop fully (Willinsky, 2006). In *The Access Principle,* he identified practical reasons why non-academics might access and use academic research, such as patients researching their own conditions, environmental activists wishing to challenge political decisions, and amateur historians and astronomers researching for their own pleasure (Willinsky, 2006).

More recently, it has been proposed that in an online landscape characterised by of mis/disinformation, providing free access to research literature could help to challenge a "fake news epidemic" (Gohd, 2017), although there have been concerns that open access (and particularly openly licensed) research could be taken and modified in order to give misinformation a veneer of legitimacy (Eve, 2019). In-depth research into the different ways misinformation circulates online (van der Linden, Leiserowitz, Rosenthal, & Maibach, 2017) suggests that it is simplistic to cite OA as a solution to scientific or political misinformation. However, bringing the two issues together reflects the way that OA adoption is framed as a way to improve the quality of public debate and political participation.

More critical readings of the potential of OA question the ability of the internet to act as a tool for democracy in a landscape where stakeholders are motivated by self-interest (Herb, 2010), and that open access discourses, rather than being truly democratic, fall into the trap of asserting expert knowledge's dominance over a lay readership (Haider, 2007). Many have now pointed out that the unequal global scholarly communications landscape, where much more research is produced in the Global North than in the Global South (Haider, 2007; Piron, 2018), and the exclusive nature of the 'publics' who are interested and able to engage with research articles (Boshears, 2013; Neylon, 2015), means that a simplistic view of any democratic potential of OA seems increasingly unlikely. However, following Moore's call to look more specifically at individual and community driven projects (Moore, 2017), means that it may be possible to realise the democratic potential of Open Access whilst still acknowledging its limitations.

2.4.5 The 'public good' and the creation of a commons

As well as a public good in moral terms, OA is also framed as a public good in economic terms. A public good is a resource that is both non-subtractive (one person's use of the resource does not deplete it for another user), and non-excludable (excluding people from accessing the resource is either impossible or high-cost) (Hess & Ostrom, 2007). A resource that is governed by the communities responsible for it is known as a “commons”; a term which has been widely discussed in reference to scholarly communications and open access (Lawson, 2019; Lawson et al., 2015; Moore, 2017; Morrison, 2015; Neylon, 2015; Suber, 2007). The term was originally used in reference to the governance of shared natural resources such as fisheries, forests and grazing land, which were subject to “dilemmas” such as free riders, enclosure and over exploitation (Hess & Ostrom, 2007). Hess and Ostrom outline the differences between traditional commons (such as forests and fisheries), and knowledge or information commons: namely that the former are “subtractive” (or “rivalrous”) resources which are depleted through use, whereas knowledge and information are generally “nonsubtractive” (or ‘non-rivalrous’). Knowledge (defined by Hess & Ostrom in a broad sense as “all types of understanding gained from experience and study,”) is seen as a *public good* – a resource that is both non-subtractive and non-excludable, or for which the cost of excluding users from the resource is very high (Hess & Ostrom, 2007). This interpretation refers to knowledge in its abstract form, whereas when it is contained in a printed book or journal it becomes a *private good.* However, with the movement of scholarly publications online came the opportunity for them to also become *public goods* (Lawson, 2019), due to the capacity to be accessed, used and copied an infinite number of times without degradation. Imposing digital paywalls and restrictions on reuse therefore counted as a form of artificial and unnecessary ‘enclosure’ of the resource (Bacevic & Muellerleile, 2017; Suber, 2007). In this sense, open access scholarship, especially when it applies the most permissive CC BY licenses, can be conceptualised as a scholarly commons (Morrison, 2015).

It is important to note, however, that although “commons” has become popular terminology in the field of scholarly communications (a search for on the Directory of Open Access Repositories returns 62 repositories with ‘Commons’ in their title), there is some disagreement about what constitutes a commons. For example, Duranceau (2008) sees an institutional repository as a type of commons whereas Lawson (2019) argues that library collections cannot be seen as a commons if they are managed by library and administrative staff without input from researchers and students. This is because analysis of the commons has to focus not just on a shared resource, but how that resource is governed.

The current OA landscape, where access is delivered through a number of routes, including by big academic publishers, mandated centrally by government and research funders, and in the cases of academic social networking sites such as Academia.edu and ResearchGate through similar models of platform capitalism as drive companies such as Uber and AirBnB do not fit with those new nonmarket, decentralised modes of production and therefore cannot definitively be called a commons (Lawson, 2019). A number of researchers (Adema & Hall, 2013; Moore, 2017) therefore focus their attention on specific OA projects which can be seen to be creating a commons, rather than open access in general.

2.4.6 The scholarly commons and users ‘outside the academy’

Lawson (2019) is careful to argue that a commons need not necessarily be open to all, but to a defined community with criteria for membership. Indeed, the literature described above focusing on commons governance tends to focus on the (scholarly) communities that contribute towards, use and ideally manage the shared resource.

However, the rhetoric of the scholarly commons is often employed with the assumption that it is a resource that anyone will be able to access, although there may be criteria (such as peer review) to meet to contribute to the resource (Morrison, 2015). Overall, the literature on open access as a commons tends to focus more on governance of a shared resource than the provision of access to a wider public, and open access researchers should be cautious about using the term commons uncritically.

2.5 Measuring the benefits and reach of OA outside the academy

Although Willinsky has made a sustained argument for public access, it is mainly grounded in theory. Since the publication of *The Access Principle* there has been a growing number of attempts to categorise and measure the benefits and reach of OA publications outside the academy.

ElSabry (2017) has proposed a model for assessing the impact of OA research outside the academy, as well as suggesting a list of possible non-academic beneficiaries, including practitioners, policymakers and journalists. Zuccala's work used focus groups made up of members of the public to explore support for OA (Zuccala, 2009, 2010). Interestingly, she found that her participants were very positive about the potential of OA to help people with personal decision making, but were less interested in holding the government accountable for where they spent research funds (Zuccala, 2010). Participants could also see the value of OA for some disciplines much more than they could for others; for instance, they saw health, environment and business to be of much greater public interest than mathematics, media studies and chemistry (Zuccala, 2010).

Zuccala's study gives a useful indication of public opinion about OA. However, her participants were only considering OA hypothetically, which led to conclusions that may have changed if they had personal experience of accessing research. For example, they felt that that they would easily be able to find what they were looking for using Google (Zuccala, 2010), whereas participants interviewed by Nunn and Pinfield found that they still experienced significant technical barriers to accessing research (Nunn & Pinfield, 2014).

Other studies have used quantitative methodologies to measure the impact of open access publications. Researchers using this method are careful to define what they mean by terms such as use, impact and reach. For example, social media shares or download data can act as a proxy measure, but it cannot provide information about whether the article was read and used (Alperin et al., 2019; Snijder, 2013).

Alperin's doctoral work quantitatively analysed survey and social media/altmetrics data to assess the impact of open access on the general public in Latin America. Alperin found that there was clear evidence of research use by non-academics, including professionals and members of the public. He found non-academic use across all disciplines, although health was by far the most popular discipline (Alperin, 2015). He has since applied these quantitative methods have also been applied to measuring the reach of articles from two medical journals on Twitter (Alperin et al., 2019). Snijder (2013, 2019), assessed the societal relevance of OA monographs by analysing usage data in order to see whether users were linked to particular institutions. He found that over 45% of all monograph downloads were from non-academic users, although he discusses the problems with categorising such users as ‘non-academic’ – for example, it was impossible to tell whether a user was downloading a book for academic reasons but not using an institutional provider. The limitations of both qualitative and quantitative methodologies shows the need for both kinds of investigation in this area.

There has also been more focused research into the benefits of open access to different stakeholder groups, such as third sector and voluntary organisations (Beddoes et al., 2012; Hardwick, Anderson, & Cooper, 2015; Holzmeyer, 2018; Moorhead et al., 2015), and it is to this category that this thesis hopes to contribute. Direct benefits to non-academic audiences noted in this research have included the time and money saved through not having to purchase journal subscriptions or search for free copies of resources (Beddoes et al., 2012; Fell, 2019). Indirect benefits included the ability to gain a broader awareness of the research landscape, and the opportunity to come across interesting research serendipitously (Beddoes et al., 2012). Embargoes were seen as a major impediment for organisations accessing research (Moorhead et al., 2015), but organisational barriers, such as staff lacking time and the skillset to synthesise research and apply it to a particular context, were also cited (Hardwick et al., 2015).

Policy makers are another group of suggested beneficiaries of open access and there exists research from many disciplines (including health and education) which discusses how to translate research into policy (Elliott & Popay, 2000; Locke, 2009; Meisel, Gollust, & Grande, 2016; Olesk, Kaal, & Toom, 2019). This research covers questions such as which evidence sources policy makers draw on, and whether researchers should use social media. Several studies have also found evidence that policymakers appreciate open access research publications (Oliver, de Vocht, Money, & Everett, 2015; Willinsky, 2003), and that intermediaries advising policymakers find paywalls to be a barrier to access (Olesk et al., 2019). However, providing access to research publications is only one of many ways that research is translated into policy.

UK public libraries and academic publishers ran a pilot scheme from 2014-2016 called "Access to Research" which provided walk-in access to research articles within public libraries, and initial evaluations of the scheme have been published. These were mixed – some deemed it a success with articles being accessed across a range of disciplines, with reasons given ranging from "help with volunteering" to "researching creative works" (Shared Intelligence, 2015). However, even positive reviews of the scheme acknowledged that usage rates were very low, and suggested that this was because public libraries were not promoting the service (Griffin, 2016). Lawson argued that the Access to Research scheme was introduced in the context of unprecedented cuts to public libraries and increased management by volunteers, which may have reduced the scheme's effectiveness (Lawson, 2019)

There have also been attempts by OA advocates to gather narratives from members of the public in order to evidence the pressing need for access. For example, the UK website, *Who Needs Access?* posts the stories of patients, carers, activists and practitioners who have struggled with accessing the research they need (https://whoneedsaccess.org/).

The majority of empirical work related to the social impact of OA has focused on gratis rather than libre OA, with little discussion of the benefits of open licensing for individuals and organisations outside the academy.

2.6 Societal impact

Measuring the societal and economic impact of research has grown increasingly important in a climate where researchers are expected to be accountable to their research funders and to the taxpaying public (Greenhalgh, Raftery, Hanney, & Glover, 2016; Penfield, Baker, Scoble, & Wykes, 2014). The UK Research Excellence Framework (REF) defines research impact as “an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia” (https://re.ukri.org/research/ref-impact/). Impact is measured by the REF in the form of narrative accounts of impact known as impact case studies’ (Chubb, Watermeyer, & Wakeling, 2017).

Some scholars have suggested that a focus on societal impact and accountability has caused a major shift the way knowledge is produced. Gibbons et al. coined the term ‘Mode 2 knowledge,’ describing knowledge that has been created in the context of application and problem solving, carried out by transdisciplinary teams and a range of organisational actors both within and outside the academy. This is set in contrast to Mode 1, referring to knowledge created in the more traditional academic sense, without an obvious application and within disciplinary communities (Gibbons, Nowotny, Schwartzman, Scott, & Trow, 1994). Although the idea that there is such a strict division between Mode 1 and Mode 2 knowledge has been critiqued (Hellstrom & Jacob, 2000), it is useful as a reminder that a significant proportion of knowledge production within academia is focused on an applied context which is designed to have societal impact from its inception.

Open access has been linked to these ideas of societal impact (Tennant et al., 2016), with the argument that research publications are more likely to influence change outside academia if they are available to non-academic audiences. However, literature studying research impact has acknowledged that impacts are complex and non-linear, and that as it is very difficult to quantify them (Greenhalgh & Fahy, 2015; Greenhalgh et al., 2016). Impacts may develop slowly, and it may be difficult to associate them with a particular publication or research project (Penfield et al., 2014) Impacts are also influenced by contextual factors that are often outside the control of the individual researcher – such as the timing of the research findings to provide the solution to a pressing (or fashionable) policy question (Greenhalgh & Fahy, 2015; Milat et al., 2013). They may also bypasses the written academic literature altogether. relying on personal contacts made with policymakers or practitioners, and tacit processes (Meagher, Lyall, & Nutley, 2008). For example, Gibbons et al. envisage that communication between academic and non-academic stakeholders involved in the creation of Mode 2 knowledge would be integrated into the research process itself, rather than results being disseminated via journals and conferences (Gibbons et al., 1994).

Critical work has also explored UK researchers' perceptions of research impact (Chubb & Watermeyer, 2017; Chubb et al., 2017) and found a mixed response, especially towards the way it is interpreted and measured as part of the REF. Similarities can be seen between open access and research impact, in that both concepts have been critically analysed in the context of an HE environment characterised by evaluation, quantification and compliance (Lawson, 2019).

2.7 Conceptual access

An increasing focus on societal impact has meant that attention has been drawn to the inaccessibility of traditional research publications. Academic publications use specialised language and rhetorical features meant to communicated within certain communities, and are written according to the conventions and norms of the disciplines within which they are produced (Bazerman, 1988; Kelly & Autry, 2013). University education can be seen as a way in which undergraduate and postgraduate students are taught these norms and conventions, in order to engage with academic literature and produce their own writing (Bazerman, 1988). The scientific research article – a “key academic genre” (Autry, 2013) – is often recognisable to other academics, divided into sections such as introduction, methodology, results and conclusion, and ending with a list of references (Kelly & Autry, 2013), although academic writing includes a range of genres – abstracts, review articles, monographs, book chapters (Cronin, 2008).

There is a large and varied field of study dedicated to analysing the genre of academic writing. For example, Bazerman (1988) and Gross, Harmon and Reid (2002) have produced histories tracing how the rhetorical and argumentative features of the scientific research article was shaped as a genre of writing from its inception in the 1700s till the 21st century. More recent studies have examined academic writing in different disciplines and in different types of publication (Kjellberg, 2015). For example, Reid (2019) found that scientists used different rhetorical strategies in order to communicate with academic and lay audiences, Kjellberg (2015) explored the way researchers in two different disciplines adapted their writing when blogging, and Autry analysed examples of OA journal articles in order to examine what effect OA had had on the genre of the scientific research article (Autry, 2013). In the fields of medicine and education, numerous guides have been written to help both students and practitioners decipher research publications – for example, Greenhalgh's "How to Read a Paper" (2014).

When providing access to research literature for non-academics, therefore, cost is not seen as the only barrier. "Conceptual" access, as opposed to "technical" or "material" access, has been used when discussing the limitations of focusing only on removing paywalls (Kelly & Autry, 2013). Zuccala's participants identified the conceptual barrier to scientific research as being more important than the technical one. They felt that lay readers could easily find information online, but worried that they would not understand the scientific and technical language (Zuccala, 2010).

Kelly and Autry's research has supported these findings, their analysis of articles from *PLoS ONE* suggested that scientific research remains linguistically inaccessible to a wider public due to the way articles are traditionally written. They identified rhetorical structures, such as a focus on methods rather than findings, which would make it more difficult for a lay reader to understand (Kelly & Autry, 2013). Moreover, there are different levels of conceptual access. Not only does a lay reader need to understand specialist language and complex terms, they also should understand how scientific research is produced in its social context; for example, understandings of methodologies, sponsorship and research practices (Zuccala, 2010).

Although it is not clear to what extent open access advocacy and policy should embrace the need for conceptual access, it has been recognised in the 2016 Vienna Principles, developed by the Open Access Network Austria (OANA) (Kraker et al., 2016). Along with principles such as “discoverability,” “resusability,” and “reproducibility,” “*understandability*” is emphasised as an important component to providing access to research to “interested citizens” (Kraker et al., 2016). To meet the challenge of conceptual access, solutions have been suggested, such as providing lay or plain English summaries to research articles (Kuehne & Olden, 2015; Marsden, Trofimovich, & Ellis, 2019; Nunn & Pinfield, 2014; Tennenhouse, 2016). The Finch Report supported this, calling for more accessible publications to accompany academic work if it was to attract a wider readership (Finch, 2012).

Attempts have been made to persuade science researchers to be able to write these summaries, for example, the *Access to Understanding* collaboration provides advice to researchers writing for non-specialist audiences and runs a lay summary writing competition (http://www.access2understanding.org/). Research by Nunn and Pinfield found that their participants (open access publishers, research funders and members of the public) expressed support for lay summaries, and felt that they would help with the conceptual barrier to understanding research. However, concerns were raised from the publisher/funder perspective about the cost of producing summaries, especially on a large scale, and from members of the public who preferred to read the actual journal article because they felt lay summaries would miss information (Nunn & Pinfield, 2014).

Some have also argued that lay summaries do not push accessibility far enough. For example, Kelly and Autry pointed to PLoS blogs as a positive example of how to communicate research in an accessible way, but in the longer term advocated for a wider structural change in how research articles are written (Kelly & Autry, 2013).

It should be recognised that the amount of attention paid to public accessibility varies among academic disciplines. In some social science disciplines, discussions around accessible outputs have long been part of the politics of academic work, as research often involves participants who find it difficult to engage with formal research articles. For instance, theoretical discussions take place within disability studies literature around whether "accessible outputs" should be accorded the same academic credit as a traditional journal article (Goodley & Moore, 2000). These disciplines are politically aligned with giving voice to marginalized groups who have been traditionally seen as "research subjects" rather than researchers. McClimens wrote that the paywalled scholarly publication system with a closed audience of academics "effectively precludes any incursion by those individuals whose life experiences provide the raw material for much of the theorizing that arises" (McClimens, 2004). He called for disability studies journals to actively disseminate their articles to a wider audience, and to create accessible summaries (McClimens, 2004).

There are also an extensive body of methodological work that deal with co-produced research, community-based research and action research (Kemmis & McTaggart, 2005; Liddiard et al., 2019), all of which deal with issues of how to communicate accessibly to research participants. A review of this literature is not within the scope of this thesis, however, it is worth noting that researchers working in this area may not necessarily consider open access as a central focus, as their work deals with how to make research more accessible and equitable at all stages of the research cycle, rather than only when outputs are disseminated.

The business potential for making research accessible has clearly been recognised by companies such as *ResearchMedia*, whose CEO has blogged about the difference between open access and accessibility in order to advertise their range of services, which includes creating lay summaries, infographics and research animations (Williams, 2015). Platforms such as Kudos have also been established are available to encourage researchers to write their own lay summaries (Ellen, 2015).

When discussing conceptual access, it is important to remember however, that publics outside the academy are not a homogenous entity, and that some research users do have the skills and ability read and understand research articles in their original form For example, Holzmeyer found that her research user participants from public health NGOs were highly educated and able to use the skills gained through that education in order to engage with research (Holzmeyer, 2018).

2.8 Trust and ‘predatory’ publishers outside the academy

Conceptual access also relies on being able to evaluate research publications and decide whether the information is trustworthy. Although it has been suggested that open access could increase trust in science by allowing people to see the underlying research (Grand, Wilkinson, Bultitude, & Winfield, 2012), concerns have been raised around the growth of publications deemed ‘predatory,’ exploiting the Gold Open

Access model. ‘Predatory publications’ is a term coined by Jeffrey Beall, an academic librarian in the US, who was instrumental in bringing the issue to the attention of academics and librarians, and has written on the topic at length (Beall, 2012, 2013, 2017). Publications labelled as ‘predatory’ are characterised by unethical and deceptive business practices, including charging academics APCs and then representing themselves as ‘peer reviewed’ when in reality they only provide limited or non-existent peer review services. They also are known for communicating with research communities using spam emails, promising a very fast turnaround, including editorial board members who may not have agreed, and calling themselves ‘American’ or ‘Canadian’ when they are located elsewhere in the world (Erfanmanesh & Pourhossein, 2017; Roberts, 2016). Recent quantitative studies have found that the percentage of publications identified as ‘predatory’ is relatively small, but have seen significant growth over the past few years (Perlin et al., 2018).

The term ‘predatory publications’ has been criticised, with researchers arguing that it is too simplistic to claim a clear dividing line between ‘predatory’ and ‘non-predatory’ journals; instead a range of practices have been identified that may impact to some extent the quality of the work published (Eve & Priego, 2017; Yeates, 2017). The association between ‘predatory’ publications and non-English publications has also drawn criticism of racism and xenophobia (Houghton, 2017).

Despite a growing body of literature on ‘predatory publications’, the question of unethical and deceptive business practices on non-academic readership has received limited discussion, although it is mentioned in passing. For example, Pyne (2017, p. 137) suggests that such publications could be used to spread misinformation by groups of conspiracy theorists such as 9/11 deniers, and argues that their presence online work to erode public trust in academic expertise: “Because decision makers and the public may lack the expertise to distinguish between nonsense and legitimate research, they may be led [*by predatory publications]* to suspect expert opinion in general.” The Guardian newspaper also reported that climate change deniers had been found to be using questionable journals such as *the International Journal of Engineering Science Invention* as venues to disseminate their work, although there has been little scholarly work carried out in this area (Redfearn, 2017).

Eve and Priego, in an attempt to analyse the potential harm caused by ‘predatory’ publishers, have situated them in a wider context of a loss of ‘cultural authority,’ where online sources (conspiracy theory websites, predatory publishers) are able to present themselves as trustworthy. Therefore, readers of those sources may find they cannot evaluate them in the ways that ‘authoritative’ sources have traditionally been evaluated. However, they have argued that this does not mean that ‘predatory journals’ automatically contain false or fraudulent material, and point out that peer reviewed journals have also been known to publish information that has later been retracted (Eve & Priego, 2017).

2.9 Science communication

The field of science communication offers a way of further understanding how research is communicated to, and received by, the public (Bucchi, 2008; Kahlor & Stout, 2009; Perrault, 2013; Trench, 2008). Theories of public understanding of, and public engagement with, science are well developed, and have been applied to a range of practices, from science journalism (Bauer & Bucchi, 2008) to laboratory open days (Bucchi, 2008). Zuccala has applied theories of science communication to OA, arguing that linking to OA research articles online could potentially challenge the distinction between academic and popular representations of research and create a new form of public awareness (Zuccala, 2009).

Early understandings of science communication were shaped around the *deficit model*. This model conceptualised the public as passive receivers of scientific information, whose scientific illiteracy could be improved by more effective communication. It was felt that, in turn, this would increase public support for scientific research (Kahlor & Stout, 2009). The deficit model has been critiqued for assuming the existence of a homogenous public, and not taking into account the effect of different communication contexts. The development of a *contextual model*, therefore, has emphasised that communication is always socially situated, and different contexts will affect how members of the public respond to research (Kahlor & Stout, 2009). Other science communicators have questioned the idea of direct transfer of knowledge to a passive and ignorant public, and see a *dialogue model* of science communication as made up of multiple interactions between scientists and non-scientists. These interactions happen in specific contexts, and are non-linear as the act of public communication can also have a transformative effect on academic scientific debate (Bucchi, 2008). Developing this concept further is the model of *knowledge co-production*, or *lay expertise* which questions the distinction between expert and lay knowledge, and sees lay knowledge as vital to the processes of knowledge construction (Bucchi, 2008; Kahlor & Stout, 2009).

However, despite the narrative of progression from the deficit model to the lay expertise model, it is not the case in practice that the deficit model has been abandoned by science communicators in favour of the later approach (Simis, Madden, Cacciatore, & Yeo, 2016; Trench, 2008). Bucchi has described the science communication landscape as characterised by “intrinsic heterogeneity and fragmentation” with different types of communication taking place alongside each other, dependent on context (Bucchi, 2008). It is also important to note that even in the context of a much broader conception of science communication, there are still many publics that are excluded (Dawson, 2018). Dawson’s analysis of the reasons why migrant communities do not participate in the majority of science communication efforts illustrates how cautiously claims should be made about the democratic and social justice potential of OA (Dawson, 2018).

Incorporating models of science communication into discussions of open access can help consider how different contexts affect responses to research from non-academic readers, and to potentially challenge the lay/expert binary. For example, when Morrison writes that the scholarly commons should be “accessed by anyone,” but available for “any qualified scholar” to contribute, science communication may help to question who counts as qualified, and who has the right to contribute to scientific debate (Morrison, 2015).

2.10 Research intermediaries

Intermediaries are increasingly seen as important in making research accessible to audiences outside academia. (Beddoes et al., 2012; Hardwick et al., 2015; Zuccala, 2010). Zuccala’s focus groups identified the role of intermediary as essential for explaining research findings to those who could not read the research themselves (Zuccala, 2010). Similarly, Nunn and Pinfield found that participants reported either using an intermediary to read research, or acting as an intermediary themselves, summarizing and explaining journal articles to fellow patients in an online support group (Nunn & Pinfield, 2014). More formal intermediaries can be seen be seen in the role of the press, charities, or science communicators whose professional role is to make research more accessible to those outside academia (Meyer, 2010). These intermediaries, termed "knowledge brokers" by Meyer, have roles in communicating research in a more accessible, usable and context-specific ways. Studies looking at research use by third sector organisations (Beddoes et al., 2012; Hardwick et al., 2015) and teaching (Tripney et al., 2018) identify the importance of intermediaries in placing research in context and helping with academic language. Intermediaries do not necessarily have to be individuals, but can also refer to services, programmes or resources (Tripney et al., 2018).

2.11 Limits to open access

In a 2015 interview with Richard Poynder, Willinsky argued that access to research will always necessarily be partial (Poynder, 2015). This is in agreement with Peters and Roberts, who see openness as "always bounded," with Suber, who has argued that "OA isn't universal access," and with Adema, who portrays open access as an "ongoing critical struggle," rather than as an achievable end goal (Adema & Hall, 2013; Peters & Roberts, 2016; Suber, 2012). In a 2015 blog post, Neylon, terming OA advocates naïve to believe universal access is possible, argued that:

> "There are limits to openness. We can never completely remove exclusion. But we can invest time, effort and resources thoughtfully in dropping those barriers." (Neylon, 2015)

Inequalities caused by the "digital divide," and weaknesses in technological infrastructure are seen to limit the potential of open access (Peters & Roberts, 2016; Suber, 2012). Another frequently mentioned limitation is time – with the sheer amount of research that exists, non-academics simply do not have the time to read lengthy research articles (Beddoes et al., 2012; Peters & Roberts, 2016). However, Willinsky has argued that failing to work towards open access just because limitations exist is a "poor excuse" on behalf of researchers (Willinsky, 2006)

The potential benefits and limitations of open access for non-academic research users will be discussed in more depth in the specific contexts of medical and education research in the following sections.

2.12 Open access to medical research

Medical research is the first disciplinary focus of this study. The aim of medical research is to improve knowledge in the field of health and medicine, to develop effective ways of diagnosing, treating and managing health conditions, including preventative medicine, psychological support and palliative care (Miettinen, 2015). This section will review the literature relating to OA in the context of medical research.

2.12.1 Healthcare professionals' access to medical research

Up-to-date primary medical research has been identified as an important information resource for healthcare professionals to use in clinical decision making, but research suggests that staff are still unable to access everything they need (Moorhead et al., 2015; O'Keeffe, Willinsky, & Maggio, 2011). An exploratory study by O'Keefe, Willinsky and Maggio found the perception among healthcare professionals that a lack of access to research affected patient care, and participants reported needing to access research on a day-to-day basis. However, they also found that due to time constraints, participants often turned to synthesized information resources (such as the Cochrane Library), as well as to sites such as Google and Wikipedia to find information (O'Keeffe et al., 2011). More recent research by Moorhead et al. focussing on clinicians' access to medical research found that a third of participants (involved in a trial where they were given free access to normally paywalled medical research), accessed research more than once a week, and that providing full access created more interest in accessing research than the partial access they had previously (Moorhead et al., 2015). This emphasised the importance of accessing the most up-to-date research, suggesting that embargoes could negatively affect healthcare provision (Moorhead et al., 2015). Research from the field of nursing has focused on both technical and conceptual access to research use, including nurses' lack of confidence with technology, lack of time (Pravikoff, Tanner, Annelle, & Pierce, 2005), and lack of understanding of statistical analysis (Majid et al., 2011). These studies do not necessarily mention OA, but discussion around databases such as PubMed and the use of technology provided by health libraries suggests that OA would be relevant. There have also been studies suggesting that nurses and other healthcare practitioners do not feel confident discussing research with educated, "critically-minded" patients (informed patients will be discussed in more depth in later sections) (van Bekkum et al., 2013).

2.12.2 The general public and health information

However, it is not just healthcare professionals who benefit from increased access to research literature. It is now well established that many people use the Internet to search for health information. A 2013 study from the Pew Research Centre in the USA reported that 71% of internet users had searched for health information in the preceding year (Fox & Duggan, 2013), and the Oxford Internet Survey estimated the UK level to be 69% (Dutton, Blank, & Groselj, 2013).

The field of *consumer health informatics* has developed over the last twenty years, analysing the impact that ICTs have on health care provision and the way members of the public search for and use health information (Bath, 2008; Eysenbach, 2002; Eysenbach & Jadad, 2001; Lewis, 2005). Here, the ‘patient’ is reconfigured as a ‘consumer’, in order to reflect the increased power, choice and autonomy that information is perceived to provide (Brennan & Safran, 2005). The term *Health Information Seeking Behaviour (HISB)* is also commonly used when analysing how members of the public search and access health information on and offline (Lambert & Loiselle, 2007), and *ehealth* is used in a range of studies looking more generally at the potential for new technologies to support healthcare (Oh et al., 2005).

Members of the public use internet information both to complement and to clarify advice from a clinician, or to challenge advice they disagree with (Kivits, 2004; Tan & Goonawardene, 2017; Tustin, 2010; Weaver et al., 2009). Online health information seeking can occur both before and after speaking to a clinician (Li, Orrange, Kravitz, & Bell, 2014), and some health information seekers do not intend to discuss their findings at all (Stevenson, Kerr, Murray, & Nazareth, 2007). Research has suggested that a possible reason for this is that the confidential nature of the internet encourages people to search for information on conditions that might be sensitive or stigmatising (Korp, 2006; Renahy & Chauvin, 2006).

Higher social class (Nölke, Mensing, Krämer, & Hornberg, 2015), ownership of a computer and higher education level have all been found to increase the likelihood that someone will go online to search for health information (Weaver et al., 2009). Gender and race are also influential, with women more likely to search than men (Bianco, Zucco, Nobile, Pileggi, & Pavia, 2013) and white people more likely to search than people of other racial groups (Weaver et al., 2009). Other studies have reported that many health information seekers are acting on behalf of another person, especially parents and those acting as carers for someone with a chronic health condition (Abrahamson, Fisher, Turner, Durrance, & Turner, 2008; Bianco et al., 2013; Sadasivam et al., 2013).

These studies provide a useful overview of health information seeking behaviour, and set a discussion of open access to health research in a wider context. Unfortunately, they rarely differentiate between different sources of health information, which makes it difficult to analyse whether participants are searching for scholarly literature opposed to other forms of advice and information. However, some research does hint at an engagement with scholarly literature For example, a 2006 literature review by McMullan stated that 33% of searches on the National Library of Medicine's database were made by the general public (McMullan, 2006). More recently, a study evaluating patient information websites found that 52% of the 109 articles referenced could only be accessed by institutional subscription, and the authors commented on the importance of providing fully referenced scientific papers on such sites (Di Pietro, Whiteley, Mizgalewicz, & Illes, 2013). More generally, the Pew Research Centre found that 26% of Internet users had experienced hitting a paywall when looking for online health information. Out of those, only 2% agreed to pay, with the others either trying to find the information elsewhere or giving up entirely (Fox & Duggan, 2013). Although the survey did not specify what kind of paywalled information people were trying to access, it is reasonable to assume that peer reviewed literature may have been included in this category.

More recent research has suggested that interest in formal medical literature may vary by condition, with Versteeg and Molder finding that that in a comparison between groups of patients with different conditions, it was more common for patients diagnosed with ALS to feel they needed to keep themselves informed about new research more than patients diagnosed with ADHD and Diabetes (Versteeg & te Molder, 2019). This is because ALS is a condition with no effective treatment, and patients rely on trial participation. Similarly, a survey of patients diagnosed with Ataxia (another rare disease), found that 65% of respondents stated that they knew how to find scientific literature related to their condition (Sheard et al., 2019).

Other sources of information referenced in the literature were patient advocacy and information websites (Di Pietro et al., 2013; Korp, 2006), online forums (Sudau et al., 2014; Willis, 2014) and social media (Antheunis et al., 2013). It is worth considering these sources when thinking about open access, as evidence suggests that peer reviewed literature may be referenced, shared, circulated and discussed in these online spaces alongside other forms of experiential and lay knowledge (Di Pietro et al., 2013; Willis, 2014).

2.12.3 Chronic health conditions and the "informed patient"

Online health information seeking has often been linked with the management of chronic health conditions (Clarke et al., 2015; Korp, 2006; Wagner, Baker, Bundorf, & Singer, 2004; Weaver et al., 2009). It is now recognised that doctors are unable to keep up to date with the increasingly vast body of medical research, and therefore patient condition-specific expertise should be recognised and valued (Muir Gray, 2002). As well as finding information to take to their doctors, patients diagnosed with chronic health conditions have also been found to make online connections with other people with the same diagnosis and draw on lay expertise to help manage their condition (Korp, 2006). UK health policy has featured content dealing with disease self-management for a number of years. In 2001, a Department of Health report outlined how health policy should respond to chronic health conditions with a "new era," of patient-doctor partnership, with patients taking on some of the responsibility to become informed and manage their own conditions (Department of Health, 2001). Online health information seeking is strongly linked, therefore, to the concept of the "informed," "expert" or "empowered" patient. It is generally theorised that informed patients become "empowered" through their access to information, and are therefore able to make active, informed choices about their healthcare and challenge the dominance of medical practitioners (Kivits, 2004). The term "expert patient" has a similar usage, although it can also refer to patients who have undergone official, structured education programmes designed to help them self-manage their conditions (Snow, Humphrey, & Sandall, 2013). All three terms are frequently used within health, information and sociology literature, as well as within health policy and industry reports, to refer to the shift from the patient as passive consumer of expert information, to an equal partner in healthcare decisions (Department of Health, 2001; Henwood, Wyatt, Hart, & Smith, 2003; A. James & Hockey, 2007; Kivits, 2004; Mondry & Boxall, 2014; Snow et al., 2013).

Nettleton, Burrows and O'Malley (2005) categorised research on the informed patient as either "celebratory" – that which sees increased use of the internet for health reasons as empowering, and enabling an equalising of power relations between medical practitioners and patients; or "concerning," – expressing doubts about the quality of online health information, levels of expertise needed to be able to understand and judge it, and the extra time and work generated for medical practitioners (Nettleton, Burrows, & O'Malley, 2005). Most research that recognises the potential of the internet and digital technologies in healthcare also identifies barriers and challenges for online health information seeker

2.12.4 Critiques of the "informed patient"

Critiques of the model of the informed patient focus on several major areas. Firstly, whilst the internet offers the possibility of challenging medical expertise by allowing access to both expert and lay sources of information, patients have reported concerns about the quality of online information and their own ability to judge it (Kivits, 2004). These concerns are supported by the research finding that online health information sites often use references to scientific information (such as medical research articles) to legitimise their content, but that these references are often either false or misleading (Di Pietro et al., 2013; Korp, 2006). Whilst it is important to consider how attempts to ‘police’ online health information might risk dismissing alternative lay insights into health and wellbeing (Korp, 2006), it is also necessary to be aware of potential problems arising from such a diverse online environment. Carman and Workman (2017) have criticised the drive to encourage patient partnership with the “research evidence” itself, instead encouraging partnership with “those who fund, conduct, disseminate, or utilize such evidence.” This can be seen as moving away from patients relying on their own ability to interpret information, and towards partnerships with healthcare professionals and researchers so that they receive the appropriate support.

The problem of ‘information overload’ has also been identified, with some studies suggesting that too much online information can cause patients to report feeling overwhelmed and stressed, rather than empowered (Henwood et al., 2003; Lambert & Loiselle, 2007; Longo, 2005). Longo, interviewing patients in 2005, reported several cases in which his participants actively decided not to search for information in order to maintain their peace of mind (Longo, 2005). It has also been argued that not all patients are comfortable with taking on such responsibility for their own healthcare, and would prefer to trust the advice of their doctor (Henwood et al., 2003).

Other studies have raised concerns that a focus on online health information, and the drive to create informed patients, means that those who struggle with ICTs and with reading and processing complex amounts of information are ignored, or positioned as a less successful form of patient (Korp, 2006; Muir Gray, 2002). Research has also observed cultural barriers to the type of shared decision making promoted by the informed patient model, stemming from historic distrust in the healthcare system (Hawley & Morris, 2017). In this way, already existing inequalities risk being strengthened or increased.

Research taking a critical approach to the model of the informed patient argues that it does little to challenge the dominance of a biomedical model of health, and in fact serves to reinforce it (Fox, Ward, & O'Rourke, 2005). Obesity research is an example in which the biomedical model has been contested – voices from within and outside the academy have argued that conceptualisation of obesity as a major health problem is unhelpful and stigmatising, and have reservations about a great deal of medical research, including the involvement of the pharmaceutical industry in promoting lucrative new weight loss treatments (Cooper, 2016; Fox et al., 2005; Rothblum & Solovay, 2009). There are similar critical debates around psychiatric research which are reflected in the growth of the 'mad studies' discipline (LeFrancois, Menzies, & Reaume, 2013).

2.12.5 The "informed patient" and the clinical encounter

Appointments with GPs and specialist health professionals are seen as central sites of analysis within the consumer health literature – researchers are concerned with how patient information seeking has shaped the clinical encounter, and how health professionals react to the concept of the informed patient (Kivits, 2004).

It has now been more than twenty years since an editorial piece in the British Medical Journal reported that most of the medical profession were unprepared for the wave of patients now accessing health information online (Coiera, 1996). The article laid out some concerns relating to this new “information age;” variation in quality of online health information, unreasonable demands on the healthcare system from informed patients, and even an increased risk of litigation for doctors (Coiera, 1996). Since then, researchers have produced a substantial body of literature dealing with how interactions with online health information have affected the clinical encounter (Broom, 2005; Caiata-Zufferey & Schulz, 2012; Clarke et al., 2015; Hu, Bell, Kravitz, & Orrange, 2012; Iverson, Howard, & Penney, 2008; McMullan, 2006; Murray et al., 2003; Stevenson et al., 2007; Tan & Goonawardene, 2017; Townsend et al., 2015).

Studies have explored the benefits and challenges arising from online health information from both clinicians’ and patients’ perspectives. Highly cited literature reviews conducted in 2006 and 2007 found that online information gave patients the opportunity to communicate more effectively with clinicians and to participate in decision making (McMullan, 2006; Wald, Dube, & Anthony, 2007). However, they also emphasized the sheer amount of online information, and the associated difficulty patients had in processing and discriminating between different information sources. These reviewers also outlined the ways in which clinicians responded to Internet-informed patients, which ranged from dismissing the patients’ findings outright to helping to set their information sources into context and ultimately working in partnership to make health decisions (McMullan, 2006; Wald et al., 2007). A more recent review of 18 studies (Tan & Goonawardene, 2017) found that patients who searched for online health information had a better experience when meeting with physicians, and that physicians were generally receptive to discussing online health information. However, sources of conflict were identified, such as when physicians and patients interpreted information in different ways.

Other studies have used qualitative interviews and focus groups in order to empirically explore both physician and patient perspectives in more depth (Sommerhalder, Abraham, Zufferey, Barth, & Abel, 2009; Stevenson et al., 2007; Townsend et al., 2015). Unsurprisingly, these studies found that there was no single perspective amongst physicians and that views varied depending on the context. However, physician participants generally agreed that their role had changed significantly faced with the proliferation of online health information (Sommerhalder et al., 2009). From patients' perspectives, researchers have commented on a reluctance to challenge medical expertise. Online information was seen as supplementing the doctor's advice rather than opposing it, and it has been suggested that patients mainly use the internet to clarify their understanding of advice provided by their doctor (Kivits, 2004; Stevenson et al., 2007). However, it should be noted that in the focus group/interview environment, participants may have been guided in their responses by the 'correct' attitude to have towards medical expertise. As other researchers noted serious problems which arose when patients refused to submit to the physician's expertise, it seems impossible that all clinical encounters were as smooth-running as some studies suggested (Sommerhalder et al., 2009). This resonates with certain critiques of the 'empowered patient' model which note that the patient remains empowered only until the moment they disagree with medical orthodoxy, at which point they become "non-compliant," and therefore a problem to be dealt with (Wilson, 2001).

As discussed previously, it is very difficult in these studies to determine when the "information" discussed is peer reviewed literature or not. Nunn and Pinfield (2014) focused solely on searching for peer reviewed literature, and found that participants reported varying responses when they took their findings to their doctors; some felt dismissed, whereas some had positive responses, with examples of doctors suggesting or recommending they looked at a journal article (Nunn & Pinfield, 2014).

2.12.6 The patient activist

Closely associated with the figure of the informed and empowered patient is the 'patient *activist,'* – patients who utilise their acquired expertise to influence or subvert political, medical or financial decisions, often around research direction, drug availability or treatment (Ganchoff, 2008; Williamson, 2008). Epstein (1996) documented and analysed the practices of patient activists during the AIDs crisis, in which men and women diagnosed with HIV used protest and direct action combined with high-level engagement with scientific knowledge to influence decisions about the direction of pharmaceutical research (Epstein, 1996).

A 2016 study explored how patient activists with diagnoses of rare diseases used online spaces to find and share information, suggesting that increased access to online medical research might be relevant to this population (Vicari & Cappai, 2016). However, there are also possible complexities to consider when thinking about how patient activists use online information. In his popular exposé of the pharmaceutical industry, *Bad Pharma,* Goldacre noted that patient advocacy groups are often funded by pharmaceutical companies, and that they use media-friendly "star patients" as a marketing technique to advertise their products (Goldacre, 2012). It is possible that the patient activist and the informed patient could, more generally, be seen as an attractive customer to the pharmaceutical industry. This is demonstrated by a 2014 research report produced by a private health consultancy, whose advice to its clients were that empowered patients “want more contact with industry…want to be directly involved with pharma companies, act as advocates for treatments and be involved in consultative panels” (Mondry & Boxall, 2014).

2.12.7 The informed patient in OA advocacy

Despite limited discussion within the literature, it seems clear that the concept of the informed patient could productively be examined in relation to open access to medical research.

A 2016 article tells the story of Jill Viles, an “Iowa housewife” who researched her own rare genetic condition to such an extent that she gained a level of expertise required to collaborate with scientists and suggest new directions for treatment. An article in the online magazine, *ProPublica,* described her experience:

> “Almost as soon as she arrived on campus, she hit the library. She spent more time there than in classes, about 25 hours a week as she recalls it. Twenty-five hours a week just poring over every textbook and scientific journal she could find on muscle disease. She did this for months, going article by article, like a police officer driving up and down every street doing a grid search” (Epstein, 2016)

Highlighting the amount of effort required for a lay person to develop medical expertise, the article specifically cited scientific journal articles as sources, and even linked to an open access copy of the article that Viles used to find out about her condition (Epstein, 2016). The article positioned Viles as the ideal “informed patient,” and emphasized her hard won mastery of scholarly literature.

Stories such as Viles’ have been used by OA advocates to demonstrate an urgent need for open access to research. Websites and blogs such as US based *Alliance for Taxpayer Access* and UK based *Who needs access? You need access* both host personal stories which fit the model of the informed and proactive patient. Similar to the *ProPublica* article, these blog posts also emphasize the hard work and determination required to research your own condition through reading “hundreds of journal articles,” the serious problems caused by encountering paywalls, and, possibly most importantly, the potential for effective collaboration with clinicians and researchers if full access was granted (Sommer, 2008; Taylor, 2015). These personal narratives show how the figure of the informed patient can capture the public imagination and be leveraged effectively in arguments relating to increased access to research.

However, the complex debates around online health information seeking and the informed patient outlined in the previous sections suggest that it is important to think critically about these patient stories and to focus on barriers and challenges, as well as the possibilities offered by increased open access to research. This research interrogates how open access to scholarly literature fits into the broader landscape of health information, and how the model of the “informed patient,” can be applied to the experiences of lay readers accessing medical research.

2.13 Open access to education research

Education has been chosen as a second disciplinary focus in the current research. It is normally located within the social sciences, but has an interdisciplinary foundation, drawing on the disciplines of sociology, psychology, philosophy and history of education. It seeks to interrogate the nature and purposes of education, how people learn, and the social and political context of education systems (Bartlett & Burton, 2016).

2.13.1 Evidence-based practice

In recent years there has been interest from policy makers in evidence-based practice in education. A UK government-commissioned report on the subject was written by Ben Goldacre, well known for his support of evidence based medicine and in particular the use of randomised controlled trials (RCTs) (Goldacre, 2013). Goldacre argued that too many educational decisions are made without the use of research evidence, and has advocated for more RCTs to test educational interventions and develop the “best evidence” for practitioners and policy makers to use in decision making (Goldacre, 2013). Many education researchers in both the UK and abroad are in support of this, and have argued for similar ‘what works?’ approaches (Gorard, 2010; Slavin, 2008). Organisations such as the Education Endowment Foundation (EEF) in the UK, and the What Works Clearinghouse in the US have been set up to fund large scale, quantitative trials and review, assess and synthesize existing evidence (Slavin, 2008). The EEF makes it clear in their publication policy that they support open access to their research, both stipulating that researchers write a clearly accessible evaluation report which will be published on their website and offering extra funding to pay APCs so that “schools and other education researchers can easily access them" (Education Endowment Foundation, 2015).

There are suggestions that some teachers also see open access as a way to facilitate evidence-based practice. Online practitioner newspaper, *Schools Week,* reported that, in January 2015, a petition was started by a teacher to ask for free access to research (Scott, 2015). The petition argued that:

> *"If we truly want our teachers to be at the forefront of evidence-based research and to drive improvement in teaching and learning through research-informed practice in global education, it is imperative they can take part fully in educational research and debate."* (Lien, 2014)

The petition gained 772 signatures and many supportive comments from other teachers (Lien, 2014). Nothing was reported online about English government's response to the petition; however, in Scotland, the General Teaching Council has trialled a scheme in which teachers receive free access to a collection of closed-access education journals (General Teaching Council for Scotland, 2015). These examples suggest that there is currently both governmental and practitioner interest in open access as a way to improve evidence-based practice.

However, responses to Goldacre (written as blog posts as immediate responses to a high profile report) suggests a level of reservation about his proposals which needs to be taken into account when considering open access to education research. Many researchers felt that a focus on RCTs was not suited to an educational context, and could not adequately explore the complexities of education (Allen, 2013; James, 2013; Whitty, 2013).

These responses signal to long-running disputes within the field about different research methodologies, and a criticism of the ‘what works’ approach in education. For example, education researchers have argued that a ‘what works’ approach risks ignoring both wider socio-economic factors that shape education (Møller, 2017), and the importance of values in teaching (Cain, 2016). There is a large body of work by qualitative researchers who criticise the use of quantitative methods, which they see as being imported directly from the hard sciences without sufficient consideration of the social, economic and cultural contexts of education (Howe, 2004; Lather, 2004; Nolan, 2014). These critics often not only reject such research methods in their own work, but see them as actively intrusive and harmful when taken into practice, especially if government funding is directed towards them over and above other types of research (Lather, 2004). Several researchers have problematized the idea of communicating to lay readers in clear, accessible language, suggesting that such a façade of objectivity is deceptive when many qualitative researchers reject the idea altogether (Giroux, 1992; Lather, 1996)

Such critiques should be considered when interrogating the question of open access to education research, as they suggest that it is not simply a matter of communicating clear, replicable findings to practitioners and policy makers and expecting them to implement them within schools.

2.13.2 Education researchers and open access

Willinsky began his academic career in the field of education, and although his work does not focus specifically on education, it is clear that he envisaged open access to education research as being integral to his public knowledge project (Willinsky, 2002). In *If Only We Knew,* he uses an anecdote to exemplify how education research could be used outside academia (Willinsky, 2002). In his example, a group of teachers and parents in a school which is undergoing restructure, discuss a case study and interviews from another school going through similar changes and use it to inform their questions and actions (Willinsky, 2002). Although the example is only hypothetical, It is possible to draw out two interesting reflections on Willinsky's philosophy of open access. One is that the parent-teacher group is reading a *case study,* suggesting that access to qualitative research can be just as beneficial as statistical evidence. Willinsky developed this idea in his later work, explicitly criticising the "what works?" approach, and arguing that the "full range" of educational research should be available to lay readers (Willinsky, 2006). The second is that he explicitly included parents as possible lay readers of research. Education researchers often focus on the question of communicating research to practitioners but Willinsky expressed his unease with what he termed "the tyranny of the professional" (Willinsky, 2002). He aimed to open up discussion of research as widely as possible in order to include parents and members of the public. Parents as a possible stakeholder group were also identified by Wright (although again only hypothetically), who suggested that the education database, ERIC, could be an "invaluable resource for taxpayers, parents and teachers" (Wright, 2010).

Aside from Willinksy's work, there are several articles which discuss education researchers' views on opening up research to practitioners and public (Ellingford, 2012; Furlough, 2010; Quantz & Buell, 2019; Rockel, Bromhead, & Bregmen, 2011). Ellingford's 2012 doctoral study surveyed education faculty staff at US universities to find out their views on publishing open access. One of her survey questions asked about “freedom for the public,” as a motivator for OA, and her findings showed strong support for public access, especially among newer and non-tenured staff (Ellingford, 2012). As the study was purely quantitative it gave a useful overview of the views of a large sample of researchers, but did not provide any in-depth analysis of their attitudes. Furlough called for more qualitative research to be carried out in the area, to explore education researcher perspectives in depth, and to identify which non-academic stakeholders would benefit from open access to research (Furlough, 2010).

The “public good” argument in favour of open research seems particularly relevant for disciplines, such as education, which hope to influence policy and practice. There have been several case studies of educational journals promoting open access as a way to reach a wider audience (Quantz & Buell, 2019; Rockel et al., 2011) Rockel et al. identified a practitioner group – early years teachers – who were less likely to be engaged with current research due to the privatised and fragmented nature of the sector. They envisaged OA as an opportunity for allowing early years teachers to draw on ideas from outside their own workplaces (both in terms of geographical location and across disciplines) (Rockel et al., 2011). The authors’ focus on providing new, challenging and sometimes uncertain ideas suggest that they do not see OA as contributing to the “what works?” approach discussed earlier, but rather as a way of opening up a conversation about education and allowing early years practitioners to reflect and critique research and their own practice (Rockel et al., 2011). Similarly, Quantz and Buell (2019) founded a journal which aimed to open conversation with audiences in marginalised communities whose voices were not visible in education research, and championed open access and accessible writing as a way to do this.

Furlough (2010) suggested that access to such a “conversation” may not only benefit practitioners but a wider public. Interestingly, he also conflated discourses of democracy and consumerism – OA offers the change to participate democratically in an important political conversation but also promotes individual choice around matters of education, which suggests a more marketised model (Furlough, 2010).

2.13.3 Teachers’ use of research evidence

It is noticeable that the literature reviewed in the previous sections largely focuses on the perspectives and theories of education researchers. It includes little empirical data exploring the perspectives of the practitioners and public that education researchers hope to communicate with. However, there is a separate body of literature which does focus on teachers’ perspectives. These studies are generally qualitative or mixed methods in approach, and a mixture of survey and interview data is common (Cain, 2016; Martinovic et al., 2012; Schaik et al., 2018; van Ingen & Ariew, 2015; Williams & Coles, 2007a, 2007b). Schools have also carried out their own research in this area (Judkins, Stacey, McCrone, & Innis, 2014).

“Research literacy” is named by the British Educational Research Association as a vital skill for practitioners in its advocacy of the development of a “research rich environment” (British Educational Research Association, 2014). Textbooks for trainee teachers demonstrate the importance of being able to critically read research, including an understanding of the qualitative/quantitative debates outlined in the previous sections (Shank & Brown, 2007). However, studies often emphasise that only a small amount of teachers actively engage with research publications, and there still exist significant barriers to access (Cain, 2016; Marsden & Kasprowicz, 2017; Schaik et al., 2018).

A heavily cited UK study on teacher research literacy was carried out by Williams and Coles, and involved surveying, interviewing and conducting focus groups with teachers and head teachers in England, Scotland and Wales (Williams & Coles, 2007a, 2007b). In several studies, Williams and Coles explored teachers' use of research from an information literacy perspective, and their research has been published in both education and LIS journals. They highlighted the drive for teachers to engage actively with research, but their findings show that enthusiasm for using research among their respondents varied according to context, and there were still significant barriers to engagement (Williams & Coles, 2007b). They also found that their participants were more confident about *finding* research information but less confident about *using* it (Williams & Coles, 2007b). More recent studies have also identified barriers, such as a lack of skills and confidence, and a failure to see its relevance in a practical context (Marsden & Kasprowicz, 2017; Schaik et al., 2018)

Open access is not always mentioned by name in these studies, and in fact most were clear about the fact that having access to research was “not enough” to encourage research engagement (La Velle & Flores, 2018). However “lack of ready access to research in one place” (Williams & Coles, 2007b) and articles hidden behind paywalls (Hammersley-Fletcher et al., 2015) have been identified as barriers to teachers accessing research. In addition, participants in several studies expressed a desire for digested overviews of relevant research, rather than having to read a whole article, which suggests that the provision of lay summaries might be useful in this context (Barwick, Barac, Akrong, Johnson, & Chaban, 2014; Emmons et al., 2009; Williams & Coles, 2007b). Marsden and Kaprowicz (2017) specifically recommend increased open access and the provision of one page lay summaries in order to make education research more accessible to language teachers. In general, intermediaries who could translate research and make it more accessible to practitioners were seen as essential to research engagement (Coldwell et al., 2017; Tripney et al., 2018). The importance of open access to those working as research intermediaries has not been explored.

As well as lack of access, researchers have found structural and systemic barriers to research engagement. For example, teachers felt that they were not given enough time to read and reflect on research on top of an already heavy workload (Barwick et al., 2014; Hammersley-Fletcher et al., 2015; La Velle & Flores, 2018; Williams & Coles, 2007b) and that unsupportive senior management meant that teachers were less likely to engage with research (Judkins et al., 2014). Recent reports focusing on evidence-based practice within schools (Coldwell et al., 2017; Tripney et al., 2018) emphasise the importance of developing supportive workplace cultures in order to encourage research engagement.

Teacher participants in these studies also criticised a top down approach to research dissemination, and felt that there was too much of a distance between research produced at universities and the practitioners who are told to use it to implement change (Barwick et al., 2014). Research has suggested the development of closer relationships between teachers and researchers in order to combat this (Schaik et al., 2018). Practitioners who conduct and publish their own research can also be seen as a way in which this top-down approach can be challenged, and there have been attempts to start OA journals to publish and disseminate the results of practitioner-based research (Gilchrist, 2015). The use of OA in this way blurs the line between academia and practice.

2.14 Sci-Hub and "pirate" open access

The bulk of this literature review focuses on official ways of disseminating, accessing and using research. However, unofficial and pirate research access cannot be ignored. In November 2015, an online letter which has now been translated into several different languages, was signed by several academics and artists. They stated that "our knowledge commons grows in the fault lines of a broken system" and advocated support of online file sharing (Barok et al., 2015). It draws on similar sentiments to Alan Swartz' "Guerrilla Open Access manifesto," which claimed that academics and librarians had a moral imperative to share research with those without access through file sharing and donated log-ins (Swartz, 2008).

There has been limited research on scholarly information sharing via social media, using hashtags such as #icanhazpdf on Twitter (Gardner & Gardner, 2015, 2017; Liu, 2013). This research hints at the potential for non-academics to use these methods (for instance Liu's 2013 study identified #icanhazpdf tweets from journalists and bloggers), although, in practice, the most frequent users were seen to be academics and students (Gardner & Gardner, 2015; Liu, 2013).

Considering the potential of illegal access on a wider scale, the term "Biblioleaks" has been coined by Dunn, Coiera and Mandl (2014). They discussed a hypothetical situation where paywalled articles were “leaked” in the same way as pirate music, film and television. The article explored what the consequences of such a leak would be, and identified clinicians and members of the public as readers who might benefit from it. The article was generally positive towards the potential of a leak, arguing that there would be very few negative effects for the writers of research articles, and great benefits to others who do not have subscription access to journal articles (Dunn et al., 2014).

Since the publication of the Biblioleaks article, the website Sci-Hub has gained significant media attention, both in the scholarly communications blogosphere and in the mainstream press; the story was even picked up by *The New York Times* and the UK tabloid newspaper, *The Daily Mail* (Murphy, 2016; Stewart, 2016; Waddell, 2016). Sci-Hub was created in Kazakhstan by student Alexandra Elbakyan in 2011, in frustration that she could not access the research papers she needed for her degree in neuroscience, and it automates the process of sharing journal articles (Russell & Sanchez, 2016). Sci-Hub is believed to function by donated user credentials (although there is dispute online around how it accesses these details), and stores the papers online so they can be accessed instantaneously and for free through the Sci-Hub site. Ironically, it has become better known after a law suit by Elsevier charged it with copyright infringement and theft (Russell & Sanchez, 2016). Russell and Sanchez (2016) have pointed out that, despite disagreement with Sci-Hub’s methods, the ideological arguments in favour of Sci-Hub are similar to those advocating for OA. Media representation of Elbakyan and Sci-Hub has used the image of a scientific Robin Hood, stealing from the rich to give to the poor (Oxenham, 2016; Ruggiero, 2016). The use of such imagery and interest by the mainstream press suggests that unlocking the world’s scientific knowledge is an attractive idea for the general public. Although scholarly discussion of Sci-Hub tends to focus on the figure of the non-Western academic struggling to access paywalled content (Bodó, 2016), the figure of the lay reader has also been mentioned. Priego, despite misgivings around the ultimate potential of Sci-Hub to create systemic change, has cited access to life-saving medical or legal research as more important than commitments to legality (Priego, 2016). On the other hand, a statement by the Association of American Publishers has used the figure of the lay reader to warn about the potential dangers of Sci-Hub, arguing that the lack of quality control, and information being released “to parties not intended to have this technical knowhow,” could risk public health and safety (Association of American Publishers, 2016).

Again, there has been little empirical work on non-academic readers who use these unofficial sharing mechanisms, but recent research has indicated that its use is increasing (Bohannon, 2016), and that a high percentage of the world’s paywalled literature is now available on Sci-Hub (Himmelstein, Romero, McLaughlin, Tzovaras, & Greene, 2017), so this thesis will consider their use to be a potential part of a wider landscape of public research access.

2.15 Chapter overview

This chapter has reviewed the literature dealing directly with open access outside academia, discussing how open access is framed as a right, a public good and a form of accountability. It has also introduced attempts to measure the benefits and reach of open access outside academia. It has demonstrated that there is a small but growing body of empirical work investigating exploring the influence of open access outside academia, to which this thesis aims to contribute.

It has also reviewed literature relating to conceptual inaccessibility of academic publications, and the argument that OA should focus not only on paywalls but also on making research more understandable. In order to explore this, the chapter has provided a brief overview of literature relating to science communication and the role of research intermediaries.

Finally, it has discussed literature from health and education which place open access and research-use outside academia in the context of health information seeking and research-engagement in practice.

The chapter closed by situating open access alongside research piracy, including the use of sites such as Sci-Hub, and arguing that piracy should be considered alongside open access as part of the scholarly communication landscape impacting on audiences outside academia.

3 Methodology

3.1 Chapter introduction

This chapter will outline and justify the study's methodological approach, and will provide more detail about specific aspects of the chosen methods. It will discuss ethical issues arising during the research process, and limitations of the study.

3.2 Research philosophy and methodology

Qualitative research is a way in which to explore the "understandings, experiences and imaginings" of research participants, and to pay attention to meanings formed through social processes and discourses (Mason, 2002). Qualitative researchers collect rich data, and conduct in-depth analysis in order to explore their research questions (Charmaz, 2006). A qualitative approach was chosen for this research, in order to explore the question of open access outside academia through the experiences and perspectives of research users, researchers and research intermediaries.

The study was guided by Clarke's 'Situational analysis' (Clarke, 2005; Clarke et al., 2015) which is based on Grounded theory, particularly the constructivist form of Grounded theory developed by Charmaz (2006).

3.2.1 Grounded theory

Grounded theory has roots in symbolic interactionism (Charmaz, 2006; Clarke, 2005); understanding social reality as being formed through interactions, with meaning being generated through these interactions (Denzin, 2004). Traditional Grounded theory aimed to challenge the dominance of quantitative, positivist research by outlining a systematic methodological approach based on these ideas. It uses an inductive approach, where the researcher starts with data, and uses it to generate theory, rather than formulating a hypothesis which can be tested (Glaser & Strauss, 1967). Central tenets of traditional Grounded theory include:

- simultaneous data collection and analysis
- using the data to create analytic codes
- constantly comparing the data at all stages of analysis
- using "theoretical sampling" rather than aiming to have a sample that is representative of the population

Adapted from Charmaz (2006)

Grounded theory is one of the most well-cited forms of qualitative methodology in the research literature, although there is significant variation in how it is implemented in practice (Vasconcelos et al., 2012). Even the foundational Grounded theorists (Glaser & Strauss, 1967) eventually diverged, with Strauss further developing the theory with Juliet Corbin (Strauss & Corbin, 1990, 1997).

An example of divergent approaches to Grounded theory is the treatment of existing literature and theory. A traditional Grounded theory approach is to delay the literature review so that the researcher's view of the data is not skewed or "contaminated" by existing theories (Glaser & Strauss, 1967). However, this has been disputed by many researchers for practical and theoretical reasons (Charmaz, 2006; Ramalho, Adams, Huggard, & Hoare, 2015; Thornberg, 2012). This study will use an "informed Grounded theory," approach which recognises that it is impossible for researchers to approach a topic with no preconceptions (Thornberg, 2012). Existing literature and theory can help to inform analysis, and what is seen to be important is that the researcher keeps an open and critical mind about the literature and does not attempt to force the data into existing theories during the initial stages of coding (Charmaz, 2006).

Critiques such as this are part of a wider attempt by Grounded theorists to introduce more reflexivity and an acknowledgement of the subjective role of the researcher in collecting, coding and analysing data (Charmaz, 2006; Clarke, 2005).

3.2.2 Constructivist Grounded theory

Constructivists ask epistemological questions about whether social reality can ever be directly accessible through research (Flick, 2004). A constructivist approach to social interactionism argues that meaning and perspectives are “constructed” through shared interactions within social worlds. Charmaz therefore writes that the theories developed through qualitative research can only ever be an interpretation of the world, rather than an “exact picture” of it (Charmaz, 2006). For example, constructivist Grounded theorists acknowledge that a researcher’s prior knowledge and positionality have an effect on the codes they construct, whereas in traditional Grounded theory codes were thought to emerge objectively from the data (Charmaz, 2006), to be “discovered” by the researcher (Glaser & Strauss, 1967).

Epistemologically, this study takes the constructivist position that objective reality cannot be accessed through research. However, it also agrees with Miller and Glassner (2011) that knowledge about the social world *can* be accessed through qualitative research, or, more precisely, that qualitative research can give researchers “access to the meanings people attribute to their experiences and social worlds” (Miller & Glassner, 2011). Indeed, Clarke’s Situational analysis draws inspiration from the essay, *Situated Knowledges*, in which Donna Haraway grapples with the tension between challenging the façade of scientific objectivity by acknowledging the constructed nature of social reality, whilst wanting to retain some shared meaning in discussing the ‘real world’ in order to make meaningful change (Clarke, 2005; Haraway, 1988).

3.2.3 Epistemological position on research publications

As this study takes the circulation of research publications as its focus of enquiry, it is necessary to provide more detail about its epistemological and ontological position regarding research publications themselves. Frohmann outlines the paradoxical nature of the traditional scientific research literature; the majority of which is read and cited by very few people but yet holds the symbolic power of representing science itself: “communicating scientific information with an immediacy lost in the reworked, edited, sanitized, and often adulterated form of the secondary, tertiary, and popular literatures of science” (Frohmann, 2004, p. 5). Frohmann argues against this view, and instead presents research publications themselves as arising from a set of socially situated and contingent practices, drawing on ethnographic work by sociologists of science such as Knorr-Cetina and Star (Bowker & Star, 1999; Knorr-Cetina, 1999). Research publications also act as ‘trust technologies’; a way in which institutions and technologies work together to stabilise and legitimise scientific knowledge and establish trust among the public (Haider & Åström, 2017). There exists a large body of research which pushes back against the image of scientific knowledge as universal, stable and inherently trustworthy, stemming particularly from feminist and postcolonial approaches (Haraway, 1988; Harding, 1998), but this tends to face criticism that knowledge (and publications) arising from this research do not count as a “legitimate scientific document(s)” (Frohmann, 2004). The recent ‘Sokal Squared’ hoax (Lindsay, Boghossian, & Pluckrose, 2018),’ where fraudulent articles were submitted to journals in postmodern, gender and queer studies in an attempt to expose poor peer review, have been read as an attempt to discredit the legitimacy of particular strands of cultural studies which intend to disrupt conventional notions of science, knowledge and expertise (Phipps, 2018).

This study recognises the complexity described above, and resists the portrayal of research publications as making universalised knowledge claims (Frohmann, 2004), Instead, it acknowledges that research publications and the system of scholarly communications that make them visible is socially constructed (Charmaz, 2006), historically and socially situated (Fyfe et al., 2017). This includes practices of making research more ‘open’ or ‘closed’ (Lawson, 2019; Peters & Roberts, 2016). This position applies to both this thesis, as a research publication itself, and the research publications discussed by participants throughout.

3.2.4 Situational analysis

Clarke developed Grounded theory into Situational analysis by drawing on Anselm Strauss’s work on social worlds and arenas (Strauss, 1978) to conceptualise society as consisting of “layered mosaics of social worlds” (Clarke, 2005). Individuals participate in different, overlapping social worlds in different ways, and form shared understandings through this participation (Clarke, 2005).

Clarke also draws on a range of theoretical work in order to emphasise this idea of knowledge as situated, socially embedded and partial in its nature. She describes Situational analysis as pushing Grounded theory “around the postmodern turn” in the first version of her book (Clarke, 2005). In an updated version of the text, this is changed to “the interpretative turn,” to acknowledge that she is influenced by a range of postmodern, poststructuralist and interpretative theories, and is not tied to one particular viewpoint (Clarke, Friese, & Washburn, 2017). Engaging with interpretative and postmodern theory means that a researcher conducting a Situational analysis project is encouraged to look closely at difference and variation found in the data, as well as analyse discourses and acknowledge the influence of power and hierarchy on the situation of enquiry (Clarke, 2005; Clarke et al., 2015). Particular attention is also paid to the non-human and material aspects of the situation, influenced by the sociology of science, and science and technology studies (Kalenda, 2016).

She also acknowledges critiques of postmodernism, particularly the claim that some postmodern analysis lacks depth, and that it can tend towards nihilism which can stifle the possibility of constructive change (Clarke, 2005), and this may have been why she changed focus to the broader “interpretative turn” in more recent work.

She proposes the use of cartographic (mapping) techniques in order to focus data analysis on the “whole situation of enquiry” rather than individual interactions and social processes (Clarke, 2005; Clarke et al., 2015). This is especially useful for a field of enquiry such as open access, which involves a number of different stakeholders who hold different and sometimes conflicting opinions (Šimukovič, 2016).

Key considerations in Situational analysis are:

- The mapping of key social worlds/arenas
- The mapping of important discourses
- The identification of implicated actors – Clarke argues that some voices will not be present in the data, but are still present in the discourses of other participants.
- The mapping of positions taken within the data – Clarke suggests that positions are unlinked from individual participants, opening up the possibility that an individual participant (or a policy document) may in fact express conflicting positions on a topic.
- A focus on difference, multiple perspectives and complexities within the data
- The identification of human and non-human elements within the data, and the relationships between them.

Adapted from Clarke (2005).

Clarke was the main methodological influence behind the research philosophy and analysis in the project, but as she assumes a good working knowledge of Grounded theory, Charmaz was also be used to provide guidelines to selecting a sample, conducting interviews, creating initial codes, before moving onto the mapping exercises proposed by Clarke.

3.2.5 Situational analysis in use

Both Charmaz and Clarke are clear that Grounded theory offers a set of guidelines, and a “toolbox” for to how to conduct research rather than a recipe to be strictly followed (Charmaz, 2006; Clarke, 2005),

Situational analysis has been widely used in health, to explore topics such nurses’ experiences and practices (Jacobson, Zlatnik, Kennedy, & Lyndon; Mills, Chapman, Bonner, & Francis, 2007), patient activism (Ganchoff, 2008), public health campaigns (Gagnon, Jacob, & Holmes, 2010) and experiences of domestic violence and emergency healthcare (Reisenhofer & Seibold, 2013). These researchers have drawn on Clarke’s work in different ways; with some using interviews with participants (Reisenhofer & Seibold, 2013), some applying the methodology solely to texts (Gagnon et al., 2010), and others using a mixture of texts, diaries and interviews/participant observation (Fisher, 2014; Jacobson et al.; Mills et al., 2007). Sizes of research project varied between small, in depth studies with very few participants (Reisenhofer & Seibold, 2013), to larger studies with between forty and fifty participants (Jacobson et al.). There were also a range of approaches to Clarke’s theoretical underpinnings, with some studies taking a critical, discourse analytic approach, drawing on Foucault (Gagnon et al., 2010), and others explicitly rejecting the postmodern elements of Clarke’s writing (Mills et al., 2007). All of the studies reviewed used at least some of Clarke’s mapping techniques, although not all used all of them. Situational analysis has also been used in a more limited capacity in information studies (Grace & Sen, 2013; Sen & Spring, 2013; Vasconcelos et al., 2012) and in scholarly communications (Šimukovič, 2016). The variation in methods and approaches in studies drawing on Situational analysis demonstrates the flexibility of Clarke's methodology, but emphasise its suitability for a qualitative project exploring different perspectives, experiences, practices and discourses from a range of stakeholders.

3.3 Methods

The remaining sections of the chapter will introduce the methods used in this research project, including discussion of sampling, participant recruitment, interviewing, transcription and analysis. It will reflect on a pilot study of six initial interviews, and present the changes that were made after the pilot study. It will also present ethical issues that arose from the study, and questions of reliability and validity in grounded theory.

3.3.1 Sampling

Initially, a purposeful, heterogeneous sample of participants was selected, in order to reflect a diverse range of perspectives. Coyne (1997) argues that all sampling in qualitative research can be counted as "purposeful" as it is always selected to fit the needs of the study rather than to survey a representative subset of the population. However, there are different subtypes of purposive sample such as "snowball sampling," "convenience sampling," "maximum variation sampling" and "theoretical sampling" (Patton, 1990). In reality, sampling in qualitative research is often shaped by pragmatic decisions about what is available to the researcher (Coyne, 1997), and a range of different recruitment methods were used in order to achieve a sample that contained "information rich" cases related the phenomena under investigation (Patton, 1990). A "sample universe" was identified, with criteria set for who could legitimately be included and excluded in the sample (Robinson, 2014)

The initial criteria were as follows:

- *Participants with direct experience of the production and dissemination of scholarly research (researchers, publishers, research funders etc.) These participants will have at least some interest in engaging non-academics with research.*
- *Participants with direct experience of accessing and using research for non-academic reasons (both professional and personal).*
- *Participants must be primarily based in the UK, although they may have lived or worked elsewhere*
- *The research interests of participants must be in the fields of health and education*
- *Participants must not be in roles based within university libraries, or identify solely as advocates for open access and open science*

The delineation of the sample universe was deliberately kept broad, to allow for theoretical sampling after coding and analysis had begun (Charmaz, 2006). The aim was to recruit an intentionally heterogeneous sample, as this is consistent with a Grounded theory approach (Robinson, 2014). However, in order to provide at least some consistency of perspective among participants, exclusion criteria were maintained, and would-be-participants who did not fit these criteria were rejected from the study.

For the most part, prospective participants who were turned away were scholarly communications staff such as librarians, and those with a strong interest in open science advocacy. Scholarly communications is itself a discipline, practice and community (or multiple communities) (Gilliland et al., 2019), and scholarly communications practitioners, researchers and advocates would have been able to contribute useful perspectives to the study. Indeed, the researcher and her supervisory team participate in this scholarly communications community themselves. However, it deliberately did not include this perspective as the aim was to explore attitudes towards open access from participants who did not centre open scholarship in their work, but who had experience that would be relevant to the discussion of open scholarship. Future research in this area, however, may benefit from including the scholarly communications/library perspective, especially considering the potential invisibility of the library's role when people access online publications (Pinfield, Cox, & Rutter, 2017).

Criteria also excluded participants who accessed research material outside the fields of health and education, and those who had only accessed research that had been translated and or adapted for a public audience. This was the subject of some discussion among participants, as they often did not understand the reasoning behind seeking only to talk to people who had accessed and read journal articles and academic books. One participant in particular, a retired GP, expressed confusion that the research was only targeting people who had accessed formal, peer reviewed research publications, advising that findings would be much richer and more diverse if participants were recruited who read about research in the press and on the NHS website. Other participants, although responding initially to a call that specified that they had to have experience in accessing formal research publications, disclosed apologetically once they had begun the interview that they did not *often* access such material, or that although they had accessed it, they *preferred* to read coverage of research findings in the press or on charity websites.

Discussions around sampling with the participants were of value in and of themselves, as they contributed to several of the key themes of the project; including the (understandable) lack of knowledge about how research is made open access, and why researchers might be interested in studying it. Negotiating the sampling process with participants emphasised to what extent research data was constructed through interactions between researcher and participants, and how it is impossible (and undesirable) it is for the researcher to be neutral and objective (Charmaz, 2006).

3.3.1.1 Participant recruitment

It was necessary to use different recruiting strategies for each participant group as there was no single or easy way to access the different populations under investigation. The following table briefly outlines the different recruitment strategies used.

Table 2: Recruitment strategies

Health Information Seekers	• Emails to patient support groups for a variety of chronic conditions • Snowball sampling approach
Educational Practitioners	• Emails to local schools • Emails to teacher mailing lists • Call outs on social media

	- Snowball sampling approach
Medical charities	- Direct emails to a list of London-based medical charities, with the help of the British Library
Researchers	- Emails circulated around university departments in the North of England - Direct emails to researchers - Call outs on social media - Snowball sampling approach

3.3.1.2 Recruitment difficulties

Participant recruitment in qualitative research is a dynamic and non-linear process (Peticca-Harris, DeGama, & Elias, 2016), and often requires researchers to “restrategise” part way through the process. Recruitment challenges may be even greater for a PhD project, as researchers are less likely to have established relationships with gatekeepers and access to extra resources and research staffing (Namayego-Fuma et al., 2014). This was certainly the case for this study, with recruitment for HIS and MC participants progressing relatively easily, but difficulties encountered with EP and Researcher participants. EP participants were initially contacted by emailing schools in the local area and a group for research-engaged teachers based at a local university. No response was received using this method. The call for participants was also shared via Twitter and Facebook. Social media is now a widely used tool for participant recruitment, benefiting from its low cost and ability to reach potential participants over a wide geographical area (Marks, Wilkes, & Blythe, 2017). However, only one response was received through the call for participants being shared on social media, requiring the researcher to directly contact a professional organisation for teachers on Twitter. This led to another response, and an offer to share the call for participants among her social networks, which has led to more responses – an example of “snowball sampling” (Browne, 2005). The researcher also drew on personal contacts, one of whom had access to a mailing list of teachers. This experience has stressed the importance of finding a “go-between” or intermediary in participant recruitment (Peticca-Harris et al., 2016). It also became clear that it was not always possible to recruit participants from the local area, and therefore Skype needed to be used as an interview tool more than first envisaged.

Similarly, difficulties were encountered recruiting researchers in health and education. When only two responses were received from mass emails to relevant departments, the researcher drew on contacts given by her supervisory team, call-outs on social media and personal contacts. The sample eventually only included three health researchers, which it was felt did not reach saturation (Mason, 2010) to the same extent as the other groups, despite the data being generated from the interviews being rich and pertinent to the research questions (Patton, 1990).

Peticca-Harris et al. discuss the emotions and frustrations inherent in encountering this type of difficulty in qualitative research. Spending time sending hundreds of emails and receiving no response, or making initial contact only for the respondent to then stop communicating can make particularly a novice researcher question the worth of her research approach (Peticca-Harris et al., 2016). However, the methodological literature in this area suggests that negotiating participant recruitment is a key part of the “complex, messy reality” of qualitative research (Ruecker & Svilha, 2020)

3.3.1.3 Description of sample

Table 2 provides an overview of the sample. Job titles have been changed for reasons of anonymity. Age was only collected for some participants, as for some of the more professional interviews, it did not seem appropriate to collect age as a demographic. However, the age brackets for participants who did provide a year of birth have been included for information. 30 interviews were conducted altogether, but 31 participants are listed as MC3a and b were interviewed together.

Table 3: Description of sample

Participant acronym	Reason for inclusion in the study	Occupation (HIS only)	Highest qualification	Gender	Age bracket (if known)
HIS1	Chronic health condition	Business	BA (Business)	M	30-40
HIS2	Teenage daughter with chronic health condition	Education	Masters (education)	F	40-50
HIS3	Chronic health condition	Healthcare (retired)	Nursing qualification	F	51-60
HIS4	Chronic health condition	Healthcare (retired)	Masters (medicine)	F	61-70
HIS5	Chronic health condition	Social work (retired)	Masters (social work)	F	71-80
HIS6	Past health problems, general interest in medicine	Community education	No formal qualifications	M	
EP1	Language teacher		Masters (Education)	M	31-40
EP2	Secondary school English teacher		Masters (Linguistics)	M	31-40
EP3	Primary school maths teacher		PGCE	M	21-30
EP4	Secondary school maths teacher		PGCE	F	31-40
EP5	Secondary school history teacher with responsibility for research engagement		Currently studying Masters (Education)	F	
EP6	Educational consultant		BA, withdrew from MA early	F	51-60
EP7	Service evaluator for educational charity delivering literacy teaching		MA (Education)	F	31-40
EP8	Research engagement support for a multi-academy trust		Masters (Social Research)	F	51-60
MC1	Research grant manager for medical charity		PhD (Science)	F	
MC2	Research communicator for medical charity		Masters (Science Communication)	F	
MC3a	Research grant manager for medical charity		PhD Science	M	
MC3b	Research communicator for medical charity		Masters (Science Communication)	F	
MC4	Research communicator for medical charity		BA (Biological Sciences)	F	
MC5	Research grant manager for medical charity		PhD (Science)	M	
MC6	Research communicator for medical charity		PhD (Science)	F	
MC7	Research grant manager for medical charity		PhD (Science)	M	
MC8	Service manager for medical charity		BA (Sociology)	M	
HR1	Medical researcher			M	
HR2	Nursing researcher			F	
HR3	Public health researcher			F	
ER1	Educational researcher (Russell Group)			F	
ER2	Educational researcher (research organisation)			F	
ER3	Youth researcher (Post-92)			F	
ER4	Educational researcher (Post-92)			F	
ER5	Educational researcher (Russell Group)			F	

3.3.1.4 Adding the ‘research intermediary’ category to the sample

When this study was initially proposed, the aim was to explore the perspectives of research-users and researchers. The three categories, HIS, MC and EP were the research-users that would make the bulk of the sample, and a smaller sample of researchers would be interviewed to provide an alternate perspective. However, in the initial data collection and analysis phase, a new category became evident, that of the research intermediary or knowledge broker (Meyer, 2010), individuals who were research-users, but were also involved in making research more accessible and useful for other groups of users. More research intermediaries were recruited based on a theoretical sampling approach (Charmaz, 2006).

It also became evident that there was not a clear boundary between ‘inside’ and ‘outside’ the academy, with participants moving between the two. Whilst this was conducive to a conceptualisation of overlapping and porous social worlds (Clarke, 2005), it made it difficult to neatly separate the participant groups for analysis. The two main examples of this were EP2, who had extensive experience as a secondary school teacher, but had started a PhD in education just before the interview took place, and ER5, who had recently moved from a temporary research contract in a university to a research intermediary role in the third sector. Movement in both directions is common, for various reasons such as the precarious nature of the academic job market (Herschberg, Benschop, & van den Brink, 2018; Jones & Oakley, 2018), and the fact that educational researchers often have experience as teachers before they begin doctoral study (Leonard, Becker, & Coate, 2005) Other participants (especially in the MC group) held dual roles as research-users (accessing research themselves) and research intermediaries (making research accessible to others). There is a benefit to this in that some participants were able to draw comparisons across domains. Table 4 indicates which participants have been placed in which category.

Table 4: Participant categories

Participant acronym	**Research User**	**Research Intermediary**	**Researcher**
HIS1	X	X [informal]	
HIS2	X	X [informal]	
HIS3	X		
HIS4	X		
HIS5	X		
HIS6	X	X [informal]	
EP1	X		
EP2	X		X [recently started a PhD]
EP3	X		
EP4	X		
EP5	X	X	
EP6	X	X	
EP7	X		
EP8	X	X	
MC1	X	X	
MC2	X	X	
MC3	X	X	
MC4	X	X	
MC5	X	X	
MC6	X	X	
MC7	X	X	
MC8	X		
HR1			X
HR2			X
HR3			X
ER1			X
ER2			X [works for an educational research organisation]
ER3			X
ER4			X
ER5	X	X [moved from research contract to intermediary in third sector]	X

3.3.1.5 Theoretical sampling

Following the constant comparative analysis proposed by Grounded theory, theoretical sampling was conducted, meaning that it was possible to return to expand the sample after initial analysis of a pilot study in order to explore the theoretical concepts that arose (Charmaz, 2006). The primary way that theoretical sampling was used was to explore codes related to knowledge brokering and research intermediaries by recruiting EP and ER participants who were engaged in this type of activity. Although theoretical sampling is strictly defined as relating to codes and categories rather than "characteristics of the sample" (Coyne, 1997), as half of the HIS participants were retired healthcare and social work participants, it felt important to recruit someone outside that category to increase variation in the data. HIS6 was recruited for that purpose. An example of a recruitment email can be seen in Appendix B.

3.3.1.6 Saturation

The concept of saturation refers to the point where a qualitative researcher finds that if they collect more data it will not necessarily generate new codes and findings (Glaser & Strauss, 1967). As there is no strict guidance on sample size for qualitative research (Mason, 2010), saturation is used to justify the sample used. In some aspects, it was felt that the sample in this study reached saturation, particularly in the EP, MC and HIS participant groups, as by the last interviews in these groups new codes were not being constructed. However, due to recruitment difficulties described above, the health researcher group would have benefited from more interview data being collected.

3.3.1.7 Reflecting on the sample

Participants in the sample were in general highly knowledgeable and articulate about their area of expertise, whether this was their own health condition, the subject they taught, or their area of work. A principle of sampling in qualitative research is to locate “excellent” participants to obtain “excellent” data, rather than to try and recruit a high number of participants (Morse, 2007). Participants fit Morse’s characteristics of excellent participants; as being experts in the “experience or the phenomena under investigation; they must be willing to participate and have the time to share the necessary information; and they must be reflexive, willing and able to speak articulately about the experience” (Morse, 2007). They also were able to speak in fluent English, although English was not all of their first language. Criteria like this have been criticised as exclusionary, especially by researchers working with disabled participants, and alternative methodologies have been developed in order to try and challenge this (Ashby, 2011; Harris & Roberts, 2003). This thesis acknowledges therefore that interviewing participants who were able to engage with formal research publications, which are widely acknowledged to be accessible only to a subset of the population (Neylon, 2015), and who are also able to reflexively and articulately discuss that experience means that that the study captured only a small and privileged subset of the population. This is reinforced by the educational level and professional experience of the majority of the participants (see Table 2).

3.3.2 Interviews

Semi-structured interviews were conducted based on the advice offered by Charmaz; using open ended questions based on the participants' first hand experiences, and perspectives drawn from these experiences (Charmaz, 2006). Interviews were considered to be relational dialogues between interviewer and interviewee, taking place in specific social settings and context, all of which shaped the data produced (Mason, 2002). Appendix A contains all four interview schedules.

3.3.2.1 Use of face-to-face, telephone and Skype interviews

Face to face interviews are seen as most suitable for gathering rich data in qualitative interviews, as the researcher is able to observe non-verbal responses from the participant (Sturges & Hanrahan, 2004). However, researchers have also identified situations in which using telephone interviews is appropriate. These include hard to reach participants, time and cost restrictions, and an alternative mode of interviewing for participants who feel uncomfortable talking about sensitive topics face to face (Sturges & Hanrahan, 2004).

The literature on qualitative methods emphasises the materiality of the interview process, with the form of interviewing (face to face, telephone, Skype) affecting the interview in significant ways (King, Horrocks, & Brooks, 2019). For example, it has been suggested that communication via telephone may make the interview more transactional and task-oriented in nature than a face to face interview, and Skype interviews may be affected by call-quality and delays (King et al., 2019). Therefore, a face to face interview was initially the preferred method in this study. An educational researcher participant (herself experienced in conducting qualitative interviews) chose to have a face-to-face interview in a university cafe despite being short of time, because she felt that face-to-face interviewing produced more meaningful data. However, other research has suggested that telephone or Skype interviews may encourage participation, and do not make a significant difference in data quality (Sturges & Hanrahan, 2004). In the case of this study, it was impossible to recruit a big enough sample of EP and Researcher participants from the local area to enable face-to-face interviews for all of them. EP participants also required their interviews to take place in the evening, which made Skype a preferred choice.

An email discussion took place between the researcher and participants to judge whether or not Skype was an appropriate means of conducting the interview. For some participants, it was clear that they were not confident or comfortable using Skype, and in those cases the researcher contacted their telephones using her Skype account so that she could still record using a Skype recording app. Overall, 20 interviews were carried out face to face, 8 interviews were carried out via Skype with video, and 2 interviews were carried out on the phone, without video.

3.3.2.2 Scheduling interviews

Interviews were scheduled at times and places convenient for participants (Warren, 2011). The EP participant group in particular required interviews to be scheduled in the evening, as they could not participate when they were at work. It is common in qualitative research for the scheduling process to be disrupted or delayed, as participants have busy lives and can sometimes forget or decide not to participate (Warren, 2011), and this occurred during the study, with potential participants not replying to scheduling emails despite showing initial interest.

The location of the interview was a negotiation between researcher and participant (Warren, 2011), dependent on geographic location, time and the participants' wish for confidentiality. It was decided that the researcher would not go to participants' homes for safety reasons, although on reflection this would have increased accessibility for participants who were unwell or had mobility difficulties or childcare commitments (Harris & Roberts, 2003). Face to face interviews were either held in coffee shops, in participants' workplaces or in the researcher's department, all which had their own positive and negative aspects. For example, coffee shops provided a pleasant, informal atmosphere and were useful in cities other than Sheffield, or where participants did not have space in their workplaces. However, background noise was a problem for a several interviews conducted in coffee shops (Jacob & Furgerson, 2012) and in at least one case the researcher had to change the location of the interview at the last minute when it was clear that the background noise would be too loud for the recording device used.

3.3.2.3 Conducting interviews

Interviews were semi-structured (DiCicco-Bloom and Crabtree, 2006), based on a schedule of open-ended questions, but leaving space for other questions to emerge as the interview progressed. Interview questions were constructed in order to both fit the research topic and the participants' experiences (Charmaz & Belgrave, 2012; Stroh, 2011). This was especially important as the researcher's interest (open access) was likely to be of secondary importance to participants who were more interested in their own experiences of consuming and producing research. Interview questions also had to be tailored to the different participant groups, and therefore five different interview schedules were created (HIS, EP, MC, ER, HR). Interview schedules were adjusted for several participants who indicated in advance that they had experience as both research users and researchers, in order to capture their dual role.

Interviews lasted between 45 minutes and 1 hour 30 minutes, with most lasting around 1 hour. The interview kept to the schedules, using prompt questions if necessary, but allowing enough flexibility to follow up on topics of interest. Occasionally, participants started to talk about an area that was not as relevant to the interview, and in those cases the researcher gave them space to do that before nudging them to return to the schedule. In many cases, the data that came from those digressions provided interesting perspectives and useful contexts. However, as participants usually only had limited time, it was important that all the areas on the interview schedule were covered.

Questions were open ended, in order to encourage a two-way conversation (Stroh, 2011). Qualitative interviewing is a craft that takes practice, and the researcher's style was refined throughout the interview process. It was noted that in earlier interviews, the researcher interjected too often, rather than giving the participant chance to express themselves and gather their thoughts. This can disrupt the flow of the conversation and close down fruitful avenues of discussion (Stroh, 2011).

Stroh (2011, p.12) argues that the closing question on an interview schedule is important so as to ensure that the interviewee recognises that the interview is closing, rather than "drifiting to an end." The final question in the interview schedule was therefore "Is there anything you'd like to ask me, or anything that I haven't covered?" Participants varied in the responses to this, sometimes bring up an area that they felt hadn't been covered in the interview, and sometimes asking questions about the intended outcome of the research

3.3.2.4 Technological failure

Remote interviewing using Skype risks being disrupted by technological failure (King et al., 2019). This unfortunately happened in one interview (EP3). The participant's WiFi did not work, and he requested to be interviewed by phone at the last moment. As this was at an early stage in the interview process, the researcher had not prepared a way for phone calls to be recorded, and the participant had already rescheduled once and did not want to reschedule again. The researcher made the decision to go ahead with the interview and take field notes during and after the interview. The notes were written up directly after the interview whilst impressions of the interview were still vivid (Tessier, 2012).

3.3.3 Pilot study

Five pilot interviews were carried out prior to the main data collection. It was anticipated that pilot interviews would represent a range of stakeholder groups, but due to difficulties recruiting EP participants, the majority of pilot interviews were HIS participants. Pilot interview schedules were categorised using Patton's six types of interview question (Patton, 2015)

- Background/Demographic questions
- Experience/behaviour questions
- Opinion/value questions
- Feeling questions

- Knowledge questions
- Sensory questions.

The pilot interviews were then reflected on using the following questions:

- Is the language in the interview questions accessible and free of jargon/technical language?
- Are the questions relevant to the participant being interviewed?
- Will the questions allow unexpected issues to be explored?
- Do the interview questions relate to my research questions?

Checklist adapted from Bryman (2008).

The interview schedules were revised based on these reflections, and subsequent discussion with the project's supervisory team. For example, a question based on knowledge and understanding '*what do you understand by the term, open access?'* was included, as it had been evident from the pilot that understandings of scholarly communications were varied and sometimes incorrect.

Initial coding from the pilot study also showed that there was a previously unexpected focus on research intermediaries, especially from Participant HIS1 and HIS2 who described acting as informal intermediaries for other patients. It was decided that research intermediaries and knowledge brokering practices would become a key focus for the study.

Based on the pilot study, a changed strategy for recruiting EP participants was also formulated, including a decision to use more Skype and telephone interviews. It was also decided to try not to use noisy coffee shops as interview locations as there had been some problems with background noise.

The pilot data has been included in the main study.

3.4 Coding

Interviews were recorded and transcribed, and initially coded according to Charmaz, in depth and line-by-line. Gerunds emphasised actions and processes, rather than overarching themes (Charmaz, 2006). Coding was carried out with the help of NVivo software. Table 5 is an example of this initial coding.

Table 5: Initial coding

Transcript (HIS6)	Initial Coding
Interviewer: So you use the internet to […]search for titles of books or papers, right? Respondent: Yes it's a location tool. The way computers and index cards are used in libraries - this, this is a remote way of doing it… *Interviewer: So would you use a Google search?* Respondent: Google I think has the most powerful algorithm. You can use boolean search functions and being able to separate the crap with these - I only return PDFs. *Interviewer: That's a good trick actually, I only learnt that recently. So you've kind of mentioned this, but do you come across websites and articles that ask you to pay? Do you come across paywalls?* Respondent: Yes I do. *Interviewer: You've mentioned Elsevier. Anything else that you noticed that has paywalls?* Respondent: Yes I see it I see them largely as an invasive species. Doing incredible damage to a lot of people. For example there was a seminal paper […] about species in biological systems, this is a landmark paper. It's been around for decades. And it used to be available and now it's not. *Interviewer: It used to be available online or it needs to be available in the library?* Respondent: Online and I first encountered it in hard copy. In the library. But now they're putting a pay wall around it. These landmark works.	**Comparing internet searching to libraries** **Using Google** **Valuing Google** **Using search strategies** **Encountering paywalls** **Criticising publishers** **Perceiving publishers as harmful** **Going backwards (openness)** **Enclosing research** **Accessing hard copy research** **Criticising paywalls**

After initial coding, Charmaz recommends focused coding, which is the process of returning to initial codes and drawing comparisons between them (Charmaz, 2006). An example of focused coding can be found in Table 6:

Table 6: Focused coding

“If I'm interested in finding out about a particular topic, **I might do a Google Scholar search**” (EP1) “I think **most of our teachers start with Google Scholar**, and then work their way from there” (EP5) “**I used things like Google Scholar as well**, Google Books, erm... but yeah there was always that frustration that you felt very blocked off from what was a very private and very inaccessible and very expensive world” (EP2)	Using Google Scholar *Description: Codes relating to using Google Scholar as a tool to find research publications*	Searching for research online *Description: Codes relating to using the internet, including generic and scholarly search engines to locate research publications*
“Autism research is relatively easily and widely **available on the net** to read” (HIS2) “Yeah, I mean **usually we just try to get what we can online**” (MC8)	Using ‘the internet’ *Description: Codes related to using ‘the internet’ without describing specific search technologies*	
“I would find an article but didn’t really feel I could use the statistic in the headline so **then I would google the name of the person**” (EP4) “Really random; **I put in a few key words [into Google]** and I go” (EP6) “So then I tried through **just simple Google searches,** you know, to type in ‘[chronic condition] and diet’ or ‘causes of [chronic condition]’ or ‘non-drug treatments for [chronic condition]’ and that sort of thing” (HIS2)	Using Google *Description: Codes related using Google to find research publications*	

3.5 Analysis

After this initial coding, analysis was carried out using Situational analysis. Clarke recommends three analytic mapping exercises:

1. Situational maps *"lay out the major human, nonhuman, discursive, historical, symbolic, cultural, political and other elements in the research situation of concern and provoke analysis of relations between them"* (Clarke, 2005). Clarke calls the initial situational maps "messy" maps, which are later turned into "ordered" maps. She advises that the researcher creates the first messy situational maps after conducting the literature review and before data collection.
2. Social worlds/arenas maps *"lay out the collective actors and the arena(s) of commitment and discourse within which they are engaged in ongoing negotiations"* (Clarke et al., 2015). For example, social worlds/arenas given in Sen and Spring's Situational analysis of young people experiencing long term illness include "Nurses", "Support Groups" and "Young People" (Sen & Spring, 2013)
3. Positional maps *"lay out the major positions taken and not taken, in the data vis a vis particular axes of difference, concern and controversy around issues in the situation of inquiry"* (Clarke, 2005).

Chapter 4 presents the analysis in more detail, including examples of mapping exercises.

3.6 Quality and rigour

The concepts of quality and rigour in qualitative research are debated amongst researchers, from those who believe that the evaluations that are commonly used for quantitative research (objectivity, reliability and validity) should be directly transposed onto qualitative research, to those who reject evaluation criteria altogether (Steinke, 2004). However, Steinke lists several core evaluation criteria for evaluation of qualitative research which were implemented in this study.

- The research process has been documented so that an external reader will be able to follow the research decisions made – for example, what questions were asked in the semi structured interviews, what sample was selected and how the interviews were transcribed. Examples of coding and mapping have been explained in detail.
- Initial coding and analysis were seen by the supervisory team.
- The research has an empirical foundation, following the codified Grounded theory and Situational analysis methods proposed by Charmaz and Clarke.
- The subjectivity of the researcher has been discussed, as will any difficulties experienced in the data collection and analysis stages.

Chiovatti and Piran (2003) also suggest that the use of direct quotations as evidence is a form of rigour in Grounded theory, and chapters 5 and 6 use direct quotations throughout to evidence the study's findings.

Steinke (2004) also recommended that the initial themes identified in analysis are communicated back to participants in an accessible way for them to comment and disagree. This recommendation was not followed. This was partly because it was felt that participants had already given up enough time to be interviewed, especially the EP, MC and Researcher participants who were clearly busy and often overworked. It was also partly pragmatic, as initial transcription took longer than the researcher anticipated, so the time lag was too great to communicate back to participants. The lack of communication back to participants can be identified as a limitation to the study, and if similar studies were conducted in the future it would be prioritised.

3.7 Ethical issues

The following sections outline ethical issues that arose during the study. Ethical approval was applied for and granted before data collection had begun, following the University of Sheffield's research ethics policy (https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/). See Appendix D for proof of ethical clearance. An amendment was applied for before data collection begun for the MC participant group, in order to allow data to be used both in this thesis and in a report for the British Library.

3.7.1 Anonymity and confidentiality

One ethical issue that arose during the research process was participant anonymity and confidentiality. Wiles, Crow, Heath and Charles (2008) argue that anonymity and confidentiality are closely related concepts, with anonymising data being only one way of operationalising confidentiality. Other ways include not discussing personal information with individuals outside of the research team, and making sure that participants cannot be identified even when the data is anonymised. Researchers can be put in a position where they have to choose between faithfully reporting findings, or leaving out information in order to protect participant identities (Lancaster, 2017). Full anonymity can be particularly difficult when participants come from a small community, or hold roles that make them easily identifiable. This was the case with some of the participants in this study, and several expressed that they would be identifiable in their professional communities if too much information was provided. The following steps were taken in order to protect confidentiality:

- Exact job titles were not used
- Details that could identify particular workplaces were omitted (eg. the type of research funded by a particular medical charity)
- Geographical locations were omitted
- Researcher participants' areas of specialisation were not mentioned, or slightly adjusted
- If participants indicated that they did not want a particular section included (for example, if they were criticising their workplace), it was not included
- Participant information was only discussed within the supervisory team

In some qualitative studies, researchers use pseudonyms rather than codes for participants. However the choice of pseudonyms has been recognised to be more than a practical activity, as names reflect assumptions about characteristics such as social class, gender, race and age (Allen & Wiles, 2016). As participants had not been given the opportunity to choose their own pseudonyms, the researcher felt uncomfortable about imposing pseudonyms on them without their consent, and therefore codes (EP, HIS, MC, HR, ER) along with numbers were used to identify the different participant groups.

3.7.2 Informed consent

Informed consent in research is based on the ethical principle of respect for “the dignity and worth of every human being and their right to self-determination” and is one of the major mechanisms for protecting research participants – initially for medical research involving human subjects (Miller & Boulton, 2007).

Participants were all emailed a consent form in advance (example in Appendix C) which outlined the aims of the study, what was going to happen to the interview data, and potential risk of harm. They were informed that they could withdraw from the study at any point, up until analysis of the data had begun. No one withdrew from the study, although one potential EP participant did not attend the interview, which was due to be held over Skype, and did not respond further to emails.

The researcher spent ten minutes at the beginning of each interview talking through the consent form with the participant, explaining each section and giving them the opportunity of asking any questions. There is often the assumption when discussing informed consent that the participant will understand the aims of the research after having it explained to them by the researcher and/or consent form (Warren, 2011). However, questions that participants asked throughout the interviews suggested that this was not always the case. For example, the participant who questioned why the research was only interested in people who had accessed formal research publications and not science journalism did not have a clear understanding of the concept of open access, although the researcher had explained the term at the beginning of the interview.

Miller and Boulton (2007) argue that informed consent is often associated with the regulation and bureaucracy of research. This was perceived in interactions with participants, who, for the most part waved the researcher through the form without questions, and appeared amused that discussion of open access might cause them psychological distress. However, others did ask questions, particularly around anonymity, and at least one took the opportunity to ask the researcher about her hypothesis and research design during the discussion about the consent form.

3.7.3 Research with vulnerable participants

In order to gain ethical approval for the study, the researcher reflected on the needs of 'vulnerable' research participants. The University of Sheffield acknowledges that all human participants in research may be vulnerable, but that some groups must be considered more vulnerable, to "physical harm," "social standing and reputation," or "psychological and emotional distress" (University of Sheffield, n.d.-a)

The policy cites both disabled people, and people who are frail or in poor health as vulnerable research populations. It also states that if the research focuses on areas such as "physical or mental health conditions," the risk of harm could be increased. This could be seen to include the HIS participant group, the majority of whom had a diagnosis of a chronic health condition.

The concept of vulnerable populations has been problematised, with the term and implied relationship being seen as paternalistic and overprotective. This is especially been raised as an issue by communities (such as disabled people) who are commonly treated in this paternalistic manner by researchers (Gustafson & Brunger, 2014). It also erases other power differentials; a participant with a chronic health condition may be more vulnerable to harm in some ways, but may hold more power in context due to characteristics such as gender, race and professional status (Gustafson & Brunger, 2014)

Bearing this complexity in mind, a number of steps were taken to make it easier for ill or disabled people to participate in the research (Harris & Roberts, 2003), and to mitigate against harm. First, a choice of interview venues was provided, and the researcher checked the accessibility of venues beforehand. Inaccessible interview locations is a noted barrier for participation in research for research experiences (Harris & Roberts, 2003). Two participants in the HIS group required an interview venue with lift access, one choosing a café, and the other preferring to use the researcher's department for reasons of anonymity. Secondly, it was made clear to the participant that they could pause the interview at any time. Several HIS participants did pause the interview, one to get up and walk around the room as she was unable to sit for long periods of time, and another as she became upset talking about her daughter's health. In these cases, the researcher stopped recording and checked that the participant wanted to continue before restarting the interview. Thirdly, no direct questions about health and illness were asked. Instead, questions focused on experiences of research access and participants were free to give as much or as little information about their experiences of ill health or disability as they wished. Most HIS participants were happy to discuss their experience of chronic health conditions and how they related to research information seeking.

3.7.4 Illegal activity

A third ethical concern was discussing illegal activity with participants. The copyright infringement involved in sharing research publications, and particularly using pirate sites such as Sci-Hub is technically illegal, although very common (Bohannon, 2016; Harrison, Nobis, & Oppenheim, 2018). The University of Sheffield ethics policy notes that there is a long tradition of social science research into illegal activity, and that researchers are not required to disclose as long as it was considered not to cause “serious and immediate harm to others”. (University of Sheffield, n.d.-b) It was considered that pirating research publications did not pose that kind of threat, and therefore could be discussed. The researcher did not probe participants if they seemed unwilling to discuss the use of pirate sites (which was the case for one of the MC participant group). The original ethics application for this study stated that no direct questions about the use of pirate sites would be asked. However, as the use of Sci-Hub has grown in the intervening years, a direct question would be asked if this research was carried out again, as it would be important to the understanding of the situation of enquiry.

3.7.5 Research data

Research data management was reflected on as part of the application for ethics approval. The interview recordings and transcripts, and maps created from the data are stored on the researcher’s University of Sheffield filestore, and backed up to the researcher’s University of Sheffield Google Drive. The transcripts and codes are stored on NVivo. It was decided not to share the transcripts openly, for reasons of confidentiality, informed consent, and risk of misrepresentation by other researchers. If they had been shared, they would have needed to be heavily redacted due to concerns about anonymity. However, it is felt that the original decision not to share was overcautious, and could have been an option if built in at the beginning of the research process (Bishop, 2009).

3.7.6 The British Library

An amendment to the ethical approval for this project was made when the researcher undertook an internship with the British Library. The British Library was also interested in the perspectives of research users outside the academy in order to develop its open access policy and practice, and agreed that data collected during the internship could be used in this thesis. It was therefore able to act as an intermediary (Peticca-Harris et al., 2016) in order to put the researcher in touch with medical charities. The entire MC participant group was recruited as part of this project, with the help of Torsten Reimer and Matt Hunt at the British Library. The researcher observed that participants were much more responsive when she was able to add the British Library’s logo at the bottom of her email than when she was approaching organisations as a PhD student. A revised consent form was created and approved by the University of Sheffield, and participants were informed that the research data would be used both in a report for the British Library, and for this thesis and future publications. They were also given the opportunity to ask any questions. Participant details were shared only with the named individuals at the British Library, and were fully anonymised in the report that was shared with British Library staff.

3.8 Reflexivity

Qualitative research calls for reflexivity or “critical self scrutiny” in interviewing, including reflecting on the interviewer and participants roles during the interview process (DiCicco-Bloom & Crabtree, 2006; Mason, 2002). Power dynamics can be seen to vary; from research with marginalised and “vulnerable” populations, where the power may be in the hands of the researcher, to elite interviewing where the researcher might occupy a less powerful role (Lancaster, 2017). Lancaster argues, however, that generalisations about power dynamics should be avoided, as they are “fluid and context dependent.” In this study, power dynamics varied, as in some cases the researcher was in the more powerful position, whereas in others (for example, interviewing retired clinicians, and more senior researchers) it seemed that due to being a novice researcher and student, the participant held the more powerful role. This was especially felt when participants questioned the research design of the study, or were particularly critical of open access, and the researcher had to take care to remain open and avoid a defensive reply.

It was clear that participants’ perceptions of the researcher shaped some of their responses (Charmaz, 2006). The participants knew that the researcher was an information studies PhD student with a background in librarianship, and without a background in either education or medicine. This was made clear to identify where the gaps in the researcher’s knowledge and experience were.

ER2, working for a third sector organisation that produced ‘high impact’ educational research, started talking about how the employees at her organisation were all very experienced researchers:

> *“ER2: They are really experienced researchers but don’t hold some of the labels that perhaps universities give or… you know, I don’t want belittle your own studies.*
>
> *Interviewer: No, no, don’t worry! I talk to lots of people without PhDs who are researchers, so that is fine.”*

ER2 self-censored from talking too dismissively about the ‘labels’ or qualifications such as the doctorate, perhaps not wishing to offend the interviewer, who she knew was undertaking her own PhD research. Although the interviewer was keen to reassure her that she did not judge someone’s ability as a researcher by their qualifications, the interaction demonstrated how the interview data is shaped by identities and assumptions. If the interviewer was not a PhD student, ER2 might have said more, or expressed her ideas in a different, or less guarded way.

Similarly, HIS5 (a retired nurse, living with a chronic health condition), talked about perceptions of researchers:

> *“There’s a tendency, I suppose, for research to be done by – don’t take this the wrong way! – by boffins!” (HIS5)*

Researcher participants, on the other hand, recognised the interviewer as being connected to open access and the library, and were apologetic as they described not prioritising open access in their publishing decisions, or about ignoring communications from the library about OA. These comments demonstrate how the interviewer’s identity shaped the way participants discussed the subjects of research and researchers throughout the interviews.

3.9 Limitations of the study

Limitations to the study have been touched on throughout this chapter, but will be reviewed in this section.

The first limitation acknowledges the difficulties in recruiting researchers leading to only a very small sample of health researcher participants. Although the interviews carried out in this area provided rich data, it was felt that it did not reach saturation and was hard to draw robust comparisons with the educational researchers (Mason, 2010). The second limitation was that the researcher failed to communicate research findings back to the research participants in order to check findings, as recommended by Steinke (2004). The third limitation was that neither triangulation of methods or investigators was carried out (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014). The use of multiple methods, and multiple investigators to take part in coding and analysis is widely recognised as a way of triangulating findings. However, research has tried to mitigate against the lack of triangulation be providing evidence of direct quotation, as well as detailed description of the research process and analysis in order that readers develop an understanding of researcher decisions. The final limitation is that as a relatively small, qualitative study, the findings cannot be generalised to a whole population, although it does offer rich insight into meanings and perspectives in specific contexts. It is recommended that future research in the area involves a mixed methods approach in order to provide a different perspective on the questions.

3.10 Chapter overview

In this chapter, the research philosophy and methodology of the study have been outlined, highlighting its constructivist epistemological approach and use of situational analysis as a theory/methods package (Clarke, 2005). The methods used in the study have been outlined in detail, including discussion of qualitative interviewing, coding and the key ethical issues that arose. Limitations to the study have also been discussed.

Chapter 4 presents the three mapping exercises proposed by Clarke in more detail, and gives examples of and reflection on situational, social worlds and arenas and positional maps (Clarke, 2005).

4 Mapping

4.1 Chapter introduction

This chapter presents examples of the mapping exercises outlined in Chapter 3; situational maps, social worlds/arenas maps, and positional maps (Clarke, 2005). It acts as a bridge between the methodology, and the findings chapters, aiming to illustrate the analytic steps taken by the researcher in order to be open about how she approached analysis of the dataset, as well as presenting examples of maps to illuminate how findings have been influenced by the theories incorporated in Clarke's "theory/methods package" (Clarke, 2005). The maps are accompanied by critical reflection, which was developed through the 'memo-ing' (Clarke, 2005) that was carried out during the process of analysis

Maps were created by going 'back and forth' between the interview transcripts and the initial codes assigned using NVivo. This approach of coding data before starting a situational analysis has been documented by other researchers using the method (Aldrich & Laliberte Rudman, 2015).This "back and forth" movement is an essential component of analysis in all interpretations of Grounded theory (Charmaz, 2006).

Although all three types of maps were produced and are presented here, the chapter is largely focused on the first two types (situational maps and social worlds/arenas). Along with Mills (2007), positional maps were not found to be as analytically useful, as Clarke's instruction to separate "positions taken" from the contexts of individual participants did not fit with an approach that was otherwise emphasised situatedness and context. The graph format of the positional maps also seemed too rigid, and it became clear the data was being forced into them in order to find conflicting positions, meaning that it lost some of its nuance. As one of the tenets of grounded theory is that data is not forced into existing theories (Charmaz, 2006), positional maps were not developed to the extent of the other two mapping exercises.

4.2 Constructing maps

The maps were produced in the following order: messy situational maps, ordered situational maps, social worlds/arenas maps and finally positional maps, following the order suggested by Clarke. This was because the messy situational maps laid the groundwork for future maps, a way of thinking through all the elements in the situation of enquiry, and the relations between those elements. Clarke advises starting messy situational maps at the literature review stage, but because of timings in deciding on a methodology, this was not possible. However, messy mapping begun as soon as data had started being collected.

The social worlds/arenas maps were constructed using the collective and organisational elements identified in the situational maps; these elements were reconceptualised into social worlds (Strauss, 1978) in order to explore where the overlaps and boundaries between these worlds were positioned. The positional maps were constructed using the discursive elements in the situational maps. The ordered situational maps listed key discourses, whereas the positional maps compared them to each other, and focused on areas of disagreement and contestation. Once all maps had been created, the researcher looked back and forth from transcripts, initial coding and all three maps in order to structure the findings chapters into themes.

4.2.1 Memo-writing

An important element of Situational analysis was the act of ‘memo-writing’ (Clarke, 2005). This is an analytic tool which is also used in other forms of Grounded theory, and described by Charmaz as the creation of “informal analytic notes” that allow the researcher to engage with and reflect on their material. It plays an important role in elements such as theoretical sampling.

> “Memos catch our thoughts, capture the comparisons and connections you make, and crystallize questions and directions for you to pursue. Memo-writing creates an interactive space for conversing with yourself about your data, codes, ideas and hunches. Questions arise. New ideas occur to you during the act of writing. Your standpoints and assumptions can become visible” (Charmaz, 2006).

Memos were written throughout the data collection and analysis and saved together in what Clarke calls a “memo-bank.” The following quotes are examples of memos that were written as new interview data was added to situational and social worlds/arenas maps.

> *“I have just interviewed a researcher who recently left her research job to work in a government funded organisation supporting practitioners with research evidence. She talked to me about moving from an academic institution with generous subscription access to one with a constrained budget, and much less access to research around education, learning and development, which is what she wanted (this links to other comments about restricted scope as a problem – Chartered College, & I still think only looking at PubMed must restrict a little?). It made me think about the blurry borders between the social worlds of academia and practice; where both human (workers) and non-human actors (journal articles subscription access) move across and between worlds. Knowledge, experience, values and attitudes from one social world shape experiences in another – for example she carried her values around open access over from her previous job” (Extract from a memo)*
>
> *“Temporality is coming up a lot in the data, around changes to info needs and access over a careerspan/lifespan. One of my first interviewees was a doctor and now has retired and become a patient diagnosed with a chronic health condition, and is carrying on in the same way as she did when she was at work but doesn’t have as much access. Participants in all groups have experience of this, losing and gaining access over time” (Extract from memo)*

In these memos, the researcher has reflected explicitly on elements of the situation that appear in the mapping exercises (social worlds, human and non-human actors, and temporality), and has drawn links between the different interviews and participant groups. The memos were written at different times during the research process; one just after conducting an interview with a researcher, and one during analysis. Charmaz writes that writing memos throughout the process can help to “record the path of theory construction” and they were used throughout all three mapping exercises (Charmaz, 2006, p. 164).

4.3 Situational maps

The aim of the situational map was to identify all the elements in the situation of enquiry, divided into categories such as individual, collective, non-human, sociocultural, political, economic, organisational, temporal, spatial and discursive (Clarke, 2005).

4.3.1 Deciding which elements to include

Clarke suggested a range of different elements to include in situational maps, but noted that her methods were a toolbox which can be adapted to different research projects (Clarke, 2005). Therefore, researchers using Situational analysis have adapted the situational maps to their specific project. For example, in Khaw's study of leaving an abusive partner, extra elements were added such as 'Violence elements' and 'Mothering elements' (Khaw, 2012). Identifying which elements were most appropriate for this study was an iterative process. For example, this research did not initially include 'practices' as an element, but after creating the first versions of messy situational maps, the researcher found that practices such as 'searching' "browsing" and "sharing" were common as participants described their information seeking behaviour (Eysenbach, 2002). It was also found that as coding had been carried out (following Charmaz), using gerunds, that many of the codes translated into activities such as "searching" and "sharing' and "writing."

Figures 1 and 2 are images of messy situational maps created from the HIS and EP participant data, and Figure 3 is a messy situational map created from MC data and copied onto MS PowerPoint in order to distinguish the colours more clearly.

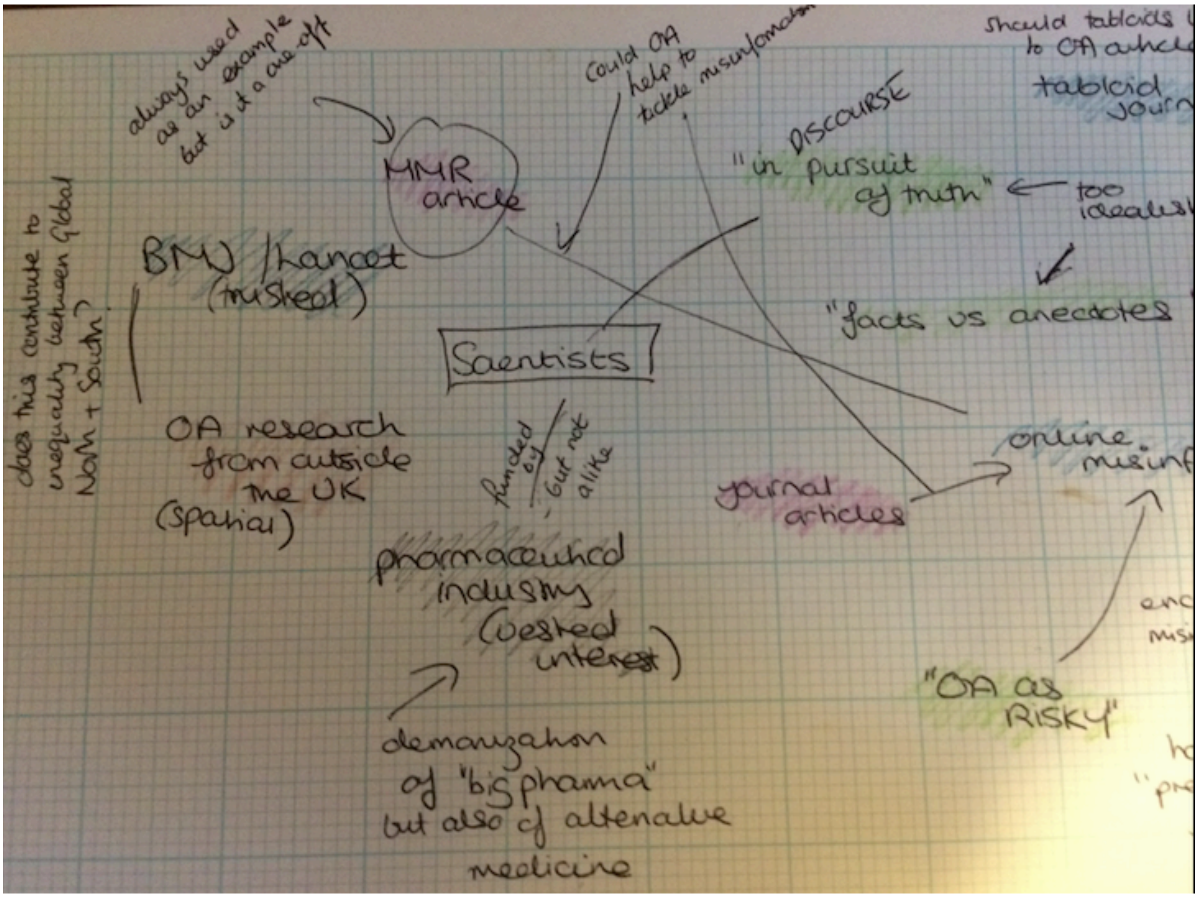


Figure 1: Part of messy situational map (HIS data)

Figure 2: Part of messy situational map (EP data)

Figure 3: Messy situational map copied onto MS PowerPoint (MC data with example of relational analysis)

On the map, different elements are marked with different colours. The key for the Figure 3 is as follows:

- Individual elements (red)
- Collective elements (light blue)
- Organisational elements (green)
- Sociocultural elements (peach)
- Political and economic elements (purple)
- Temporal elements (green brown)
- Practices (brown)
- Spatial elements (grey)
- Non-human elements (black)

4.3.2 Relational analysis

Laying out the different elements in this way allowed for connections to be drawn between them more easily than if they were listed in separate sections. Lines have been drawn between the different elements and notes (memos) have been made on what the links represent. Clarke describes this process as ‘relational analyses,’ advising the researcher to systematically draw lines between different elements and writing notes to “specify the nature of the relationship by describing the nature of the line” (Clarke, 2005, p. 102).

In Figure 1, the map enabled reflection on a number of discourses relating to whether OA medical research counters online misinformation, or contributes to it. It also raised questions about whether research published in well-known journals such as the BMJ and the Lancet was valued by cautious health information seekers above research published in other venues, particularly in the Global South. Both these ideas are discussed in more depth in the Findings and Discussions chapters.

In Figure 2, relationships are drawn between intermediaries and various other elements, in order to explore their key position in the situation of enquiry. Time (or lack of it) is also highlighted as a key element, as are power relationships between classroom teachers and senior leadership teams within schools.

In Figure 3, lines are drawn between elements to show an example of relational analysis more clearly – as the 'messy' maps are often too messy to follow. The relationships highlighted in this image help form an analysis of how previous experience as a researcher can help staff in medical charities gain access to research publications (legally and illegally), embed themselves within the 'research' social world, and form a network of contacts that they can draw on for access. The following are the memos attached to these relationships:

> *Relational analysis A: Temporal elements are important as people gain and lose institutional access over course of career – eg. move from research career to research communicator, but previous experience means they know workarounds for gaining access*
> *Relational analysis B: MC staff are part of research community; they have previous colleagues, friends and family members who are researchers and who they can ask for access*

> *Relational analysis C: Previous experience as a researcher also means they know about illegal workarounds & pirate sites like Sci-Hub, common knowledge among researchers but not those outside academy.*

Drawing links between the different elements was particularly productive, as it allowed the researcher to describe relationships that were not necessarily obvious. For example, the relationship between changes in workplace/role over the course of a career, and the way in which medical charity staff are often still embedded in a research community, may not have been visible laid out as codes on a transcript.

Relational analyses were generally made starting from individual or collective elements, or non-human elements (eg. doctor, patients, journal articles) and links were then made to the more abstract concepts (eg. sociocultural, political, economic). Relationships could be positive, negative or neutral.

Messy and ordered situational maps were created for all research-user participant groups (MC, EP and HIS), and a single map was created for both health and education researchers. This is partly because of the small health researcher sample and partly because initial coding suggested that researchers from both disciplinary areas discussed shared concerns (eg. publishing, the REF, the payment of APCs, public engagement activities). The next section will present four ordered situational maps, followed by a description of the key areas of analysis

Table 7: Ordered situational map (health information seekers)

Ordered situational map (health information seekers)	
Human elements (individual) • Individual patient with diagnosis of a chronic illness • Friend or family member (with access to an institutional login) • Friend or family member (with medical condition) • Individual doctor (GP or specialist) • Colleague • Individual researcher or scientist • Ben Goldacre (brought to public attention that many medical research studies are not published) • Andrew Wakefield (author of a now discredited paper linking the MMR vaccine with autism)	**Sociocultural** • Belief in the value of science as the pursuit of truth • Belief in the good intentions of scientists • Distrust of the pharmaceutical industry, and of alternative medicine. • Valuing well-known journal titles, such as the *BMJ* and the *Lancet* • Valuing facts over anecdote • Importance of peer review • Societal perceptions of different health conditions (eg. stigma) • Changes in the doctor-patient relationship • Concern about online misinformation relating to health
Human elements (collective) • Members of patient support groups • Members of “patient panels” • Doctors and other health professionals • Journal publishers • Pharmaceutical sales representatives • Authors of scholarly publications • Authors of ‘pseudoscientific’ publications • Interested members of the public • HIV patients (during the AIDs crisis) • Research ethics boards • Contributors to online forums and Facebook groups	**Political and economic** • (Mis)understandings of the economics of scholarly publishing • High cost of journal subscriptions and paying for individual articles • Concern about copyright infringement if research publications are shared • Concern about funding from pharmaceutical industry
Organisational • Medical charities • Universities • Pharmaceutical companies • Libraries (academic, national, public, hospital) • Academic publishers (eg Elsevier) • Clinical trials, biobank projects	**Temporal** • Length of time taken to read a full journal article • Saving time by reading lay summaries or abstracts • Changes (in research needs, in levels of access) over career spans or life spans • Lack of time to discuss research during the clinical encounter • The internet enabling a faster, more efficient way to access research publications compared to libraries • Delays in publications being made OA • Wasting time by reading tabloid journalism or pseudoscience
Implicated actors • Patients (at risk from misinformation)	**Spatial**

• Patients (uninterested in research) • Members of the public with an ‘agenda’	• Distrust of research that comes from outside the UK • Libraries as spaces that are able/ not able to facilitate research access • The clinical encounter (doctor’s office or hospital)
Practices • Searching online (‘Googling’) • Paying or not paying for an individual research publication • Avoiding paywalled research and finding information elsewhere • Sharing PDFs via email • Asking others for access • Discussing research (with fellow patients, with health professionals) • Reading (journal articles, abstracts, books, newspapers) • Browsing (charity websites, copies of ‘the Lancet’) • Looking up jargon, • Linking to research on social media • Visiting the library • Following links	**Discourses** • Discursive constructions of doctors (eg. hard working, under pressure, paternalistic, un/willing to discuss research with patients) • Discursive constructions of patients (eg. informed patients, demanding patients, low value patients, patients at risk from misunderstanding/misinformation) • Discursive constructions of researchers and scientists (eg. in pursuit of truth, hard working, dedicated to science, contrasted with pharmaceutical representatives) • Discourses related to research publications (eg. reading takes practice, inconclusiveness frustrating, scientific language necessary for precise communication, easy to misunderstand) • Discourses related to OA (eg. OA as public good, OA as democratic, taxpayer funded research should be OA, OA as good idea in theory but limitations in practice, OA as risky)
Non-human Information, academic journals and journal articles (open and closed access), Sections of a journal article (methodology, findings, bibliography), lay summaries, patient information materials, data (personal and research), information, knowledge, algorithms, electronic devices, PDFs, Paywalls, websites (publisher, university, charity, NHS), books, Google, Google Scholar, search terms, institutional login details, library catalogues, social media platforms, online forums, NICE guidelines, charity publications, newspapers (tabloid and broadsheet), treatments and medicines, health conditions and parts of the body	

Table 8: Ordered situational map (medical charity staff)

Ordered situational map (medical charity staff)	
Human elements (Individual) • Charity staff member with responsibility for research (research management or science communication) • Senior manager/director • Colleague, friend or family member (with access to an institutional login • Colleague, friend or family member (who needed access to research) • Researcher or scientist funded by the charity • Journalist • Member of the public	**Sociocultural** • Feeling close to a researcher community • Identity as science communicator • Concern about online misinformation relating to health • Trust in own organisation's screening and peer review processes, showcasing own organisation's research • Disciplinary differences • Researcher attitudes towards OA • Public health campaigning • Scientific/Research methodologies • Constructions of expertise (scientific vs lived experience) • Evaluating research (journal name, citations etc.) • Science journalism • Attitudes towards copyright
Human elements (collective) • Donors • Charity staff (service delivery, healthcare, marketing, phone line, finance, comms) • Journal clubs • Patients with a particular condition • Parents • Members of "patient panels" • Patient advocates • Charity funded researchers • Research groups (focusing on a particular condition) • Doctors and other health professionals • Academic publishers • Interested members of the public • Contributors to online forums and Facebook groups • Government advisors	**Political and economic** • Understandings of the economics of scholarly publishing • Mechanisms for funding Gold OA • High cost of journal subscriptions and paying for individual articles • Use of charitable funding – funding medical research • The right of donors to access charitable funded work • Assessing impact of research funding • Soliciting donations using research • Are academic publisher profits justified? • OA driving innovation in industry • OA policy development • Wanting government advisors to be able to acess research
Organisational • Medical charities • Libraries and Information Services (in charities) • Universities/academic departments • Academic publishers • NGOs • Private companies • Clinical trials • Public Libraries • The press • Hospitals	**Temporal** • Speed of advancement in science • Embargoes stopping immediate reporting in the media • Length of time taken to read a full journal article • Uncomfortable about asking busy colleagues for access • Institutional access running out • Saving time by reading lay summaries or abstracts • Changes (in research needs, in levels of access) over career spans or life spans • Previously having been a researcher • Research lifecycle/ Grant making lifecycle

Implicated actors • Donors (have a right to OA) • Patients and parents (engaged) • Patients (at risk from misinformation) • Patients (uninterested in research) • Members of the public with an ‘agenda’ • Researchers (poor communicators as they are working at such a high level)	**Spatial** • Equity of access for the developing world • Not wanting to use Sci-Hub in the workplace • Scottish government more easily influenced than UK
Practices • Searching PubMed and Europe PMC • Using subscription databases • Funding APCs • Using browser extensions • Using #icanhazpdf • Using Sci-Hub • Talking to publishers • Writing summaries • Writing literature reviews • Commenting on press releases • Asking someone with an institutional login for access • Answering emails from patients • Linking to open access articles • Soliciting donations (using research) • Critical appraisal • Contacting researchers • Writing funding bids	**Discourses** • Discursive constructions of researchers (e.g. resistant to OA, happy to publish OA, skilled communicators, unskilled communicators, experts in their field) • Discursive constructions of patients (eg. informed patients, demanding patients, patients at risk from misunderstanding/misinformation, experts in their own condition, latch onto false hope) • Discursive constructions of academic publishers (e.g. making unnecessary profits, supportive of OA, just trying to run a business, resistant to OA) • Discourses related to research publications (e.g. hard to find, difficult to read, reading takes practice and training, of particular interest to patient communities, used as evidence, PubMed indexing everything needed, exclusive audience for publications) • Discourses related to OA (e.g. OA benefiting developing world, OA driving innovation, must be supplemented by science communication, donor funded research should be OA, taxpayer funded research should be OA, OA as risky, OA should change research evaluation criteria, OA linked to open data, OA good in theory but limited in practice)
Non-human academic journals and journal articles (open and closed access), books, book chapters, Sections of a journal article (methodology, findings, bibliography), lay summaries, patient information materials, data (personal and research), information, knowledge, algorithms, electronic devices, PDFs, Paywalls, websites (publisher, university, charity, NHS), Google, Google Scholar, browser extensions (OA Button, Unpaywall) search terms, institutional login details, library catalogues, social media platforms, repositories, PubMed, Europe PMC, databases, Sci-Hub, Wikipedia, Academic SNS, APCs, online forums, charity publications, newspapers (tabloid and broadsheet), treatments and medicines, health conditions and parts of the body	

Table 9: Ordered situational map (educational practitioners)

Ordered situational map (educational practitioners)	
Human elements (individual) • Classroom teacher (different subjects) • Headteacher • Educational consultant • Evaluator • Research support staff (intermediary) • Education researcher • Teacher educator • Teacher-researcher • Part time masters student (Education)	**Sociocultural** • Belief in evidence-based practice • Criticism of evidence-based practice • Different disciplinary cultures (within schools) • Belief that educational research is disconnected from practice • ‘Research-engaged’ cultures in schools (or lack of) • Proximity to world of academia • Fake news and misinformation
Human elements (collective) • Senior leadership team • Professional bodies for teachers (community of research engaged practitioners) • Professional journal committees • Multi-academy trusts (community)	**Political and economic** • Funding of schools, and cuts to provision • Third sector funding
Organisational • Schools • Multi-academy trusts • Educational charities • Subject specific organisations • Universities • Educational Research organisations (EEF and NFER) • Chartered College of Teaching	**Temporal** • Lack of time to read research publications • Lack of time given by workplaces for research engagement • Time taken to read a journal article • Time between lessons
Implicated actors • Parents • Pupils • Colleagues (uninterested in research) • Colleagues (not confident in reading research	**Spatial** • Classrooms • Supporting geographically dispersed schools with research
Practices • Searching online (‘Googling’) • Paying or not paying for an individual research publication • Avoiding paywalled research and finding information elsewhere • Following researchers on social media • Looking for underlying statistics • Sharing PDFs via email	**Discourses** • Discursive constructions of teachers (eg. overworked, lack of time, interest/lack of interest in reading research publications, ‘professional’ identity, practical) • Discursive constructions of researchers (alienated from practice, understanding of practice, part of community, source of expertise, not in ‘real world’)

• Downloading PDFs and saving them on a hard drive • Asking others for access • Discussing research with colleagues • Reading (journal articles, abstracts, books, newspapers) • Browsing (magazines, practitioner journals) • Linking to research on social media • Visiting the library • Following links • Creating lay summaries and sythesising research • Running training sessions	• Discourses related to research publications (eg. not applicable in a classroom context, written for/not for practitioner readership, theory/practical divide, overly quantitative, poor representation of teaching staff,) • Discourses related to OA (eg. OA as a benefit, research should be OA, OA as democratisation of knowledge, OA as good idea in theory but limitations in practice, OA not solution for research engagement) • Discourses related to research engaged practice (range from very important to ‘buzzword’ deployed by management but not supported, good idea in theory but no time in practice, annoyance, burden on top of an already heavy workload)
Non-human Information, academic journals and journal articles (open and closed access), Sections of a journal article (methodology, findings, bibliography), , algorithms, electronic devices, PDFs, Paywalls, websites (publisher, university, charity, EEF), books, Google, Google Scholar, search terms, institutional login details, library catalogues, social media platforms, online forums, pirate websites, downloads, third sector publications, newspapers (incl. specialist press), magazines, practitioner journals, printouts of articles, educational resources, ‘evidence’, blogs	

Table 10: Ordered situational map (health and education researchers)

Ordered situational map (health and education researchers)	
Human elements (individual) • University researcher • Researcher in the third sector • Patient • Doctor, nurse, other healthcare staff • Teacher, youth worker, community worker, other practitioner • Policymaker (health and education) • Researcher in industry • Individual researcher or scientist • Journal editor • Student (trainee practitioner)	**Sociocultural** • Disciplinary communities (fitting in/not fitting in) • Changes in the doctor-patient relationship • Need for impactful research • Pressurised HE environment (the REF) • Certain research outputs valued over others (e.g. articles over book chapters) • Concern about online misinformation relating to health • Power dynamics in research environments (e.g. precarity, lack of agency when junior in hierarchies, divisions between researchers with and without a PhD)
Human elements (Collective) • University media team • Journal editorial board • Library staff/scholarly communications staff • Patient groups • Policymakers offices (policymakers + staff + interns etc.) • Interested members of the public • “Predatory journal” publishers	**Political and economic** • OA funding (particularly taxpayers/charitable funds going towards APCs) • Austerity and public sector cuts – affecting education, youth work, community work etc.
Organisational • Medical charities • Universities • Libraries (university, medical) • Academic publishers • Educational research organisations (EEF, NFER) • Schools • House of Commons, government orgs	**Temporal** • Speed of traditional publishing/peer review compared to the speed of policymaking (too slow) • Becoming more disillusioned with OA over time • Length of embargoes
Implicated actors • Patients (at risk from misinformation) • Patients (uninterested in research) • Members of the public with an ‘agenda’ • Policymakers • Teachers, youth workers, community workers	**Spatial** • Tension between educational researchers situated within the university and those just outside (contract researchers etc.)
Practices • Writing journal articles • Writing books/book chapters • Writing separate outputs for non-academic audiences • Sharing on social media • Ignoring emails	• **Discourses** • • Discursive constructions of patients (some informed, but likely to misunderstand medical research, at risk of harm from misunderstanding/misinformation)

• Paying APCs • Depositing publications in an institutional repository • Writing a lay summary • Changing the way you write	• Discursive constructions of practitioners (enthusiastic but very busy, facing systemic barriers, disinterested and arrogant, know-it-all) • Discursive constructions of researchers (expert in their own area, un/skilled at communicating with the public, positioned within a hierarchy, divides between theorists/practice based researchers, lecturers/contract researchers Russell group/post 92) • Discourses related to research publications (eg. journal articles designed for communication among peers,, scientific language necessary for precise communication, easy to misunderstand, allows author to explore more than a report, monographs expensive & inaccessible) • Discourses related to OA (eg., OA as good idea in theory but limitations in practice, OA as risky, OA bureaucratic burden, OA waste of money, OA enforced without discussion, OA not the best way to engage public, Green OA better than Gold)
Non-human Information, academic journals and journal articles (open and closed access), Sections of a journal article (methodology, findings, bibliography), monographs, book chapters, institutional repositories, academic social networking sites, lay summaries, patient information materials, grey literature (research reports), blogs, knowledge, the REF, policies, impact case studies, emails (spam, from the library), PDFs, paywalls, websites (publisher, university, charity, NHS), books, Google, Google Scholar, library catalogues, social media platforms, online forums, , charity publications, newspapers (tabloid and broadsheet), treatments and medicines,	

4.3.3 Reflections on ordered situational maps

The maps were particularly helpful in drawing out the following elements of the situation of enquiry; discourses, non-human elements, temporal/spatial elements and ‘implicated actors’.

4.3.3.1 Discourses

Clarke has centred the discursive in her methodology; as she has attempted to push grounded theory “around the postmodern turn” (Clarke, 2005). She draws from Strauss (1978) who conceptualised social worlds as “universes of discourse,” but also on social constructionist and Foucauldian conceptions of discourse. Discourse is seen, therefore, not merely as representation, but as a “construction of meaning” that has the power to shape and constitute social reality (Clarke, 2005). Clarke suggested mapping “all the major discourses in the situation of interest” in order to see conflicts and contested areas, and which discourses were present and hidden (Clarke, 2005, p. xxxvi).

Maps for different participant groups showed that some discourses were more prominent than others. For example, discourses related to science, truth and facts were much more prominent among HIS participants than the EP participants, with educational research more likely to be discursively constructed as information which might or might not be applicable in a practical context. This impacted upon the way that participants related to research, and how they decided whether or not to trust it.

In other cases, different (and sometimes conflicting) discourses were present within participant groups. For example, EP participants nearly all drew on discourses related to evidence based or research informed practice (Coldwell et al., 2017), but presented them in very different ways. Some saw it as central part of their practice and professional identity, whereas others felt it was a frustrating buzzword adopted by policymakers and senior management, but unsupported with time and resources within schools.

It was notable that key discourses present in open access advocacy (Bacevic & Muellerleile, 2017; Davis, 2009) were not present as much as might have been expected. These include a public right to OA, and the need to be accountable to the public. Some participants did draw on these discourses (for example, some mentioned taxpayer funding), but many others did not. Instead, they felt they were lucky to have the access they did, and saw it as a benefit rather than a right.

4.3.3.2 Non-human elements

Clarke has also drawn on arguments from Science and Technology Studies which propose that the human and non-human are “co constitutive,” meaning that “together they constitute the world and each other” (Clarke et al., 2015). This seemed particularly appropriate for scholarly communications research, as one of the central enablers of open access was non-human; the technological advances that could be harnessed in order to make the world’s research knowledge available to anyone with an internet connection (Suber, 2012). Digital technologies, which are now central to most key aspects of scholarly communications (Borgman, 2007), shaped participants’ experiences of research production and consumption, fitting with Clarke’s description of “nonhuman actors [that] structurally condition the interactions within the situation through their specific material properties and requirements and through our engagements with them” (Clarke et al., 2015, p. 93). The ‘non-human’ elements category was the biggest category on all four situational maps. For example, types of research publication were identified as key non-human elements, and highlighted that participants did not focus only on journal articles, but also books, book chapters and grey literature, as well as online news sites, charity websites, Wikipedia and the NHS. Systematically listing the different types of publication mentioned by participants showed the variation within the data, and resisted an analytic focus on journal articles only. Focusing on the non-human also made visible elements that did not appear as often in the data; notably scholarly communications infrastructure such as repositories and the payment of APCs. Instead, it became clear that search engines such as Google and Google Scholar played an important role in shaping how research was found and provided access to free/open access versions without participants knowing where they came from.

4.3.3.3 Sociocultural, political and economic elements

The identification of sociocultural, political and economic elements enabled the question of open access to be situated in a wider context. Many of these elements related to the context of Higher Education more broadly; for example, disciplinary and sub-disciplinary cultures and how they shape the way research is produced and communicated (Knorr-Cetina, 1999), and the current pressurised, marketised and compliance-focused environment that many researchers are working in (Andrews, 2019). These elements were not always visible from the perspective of research users outside the academy, but played a pivotal role in shaping perceptions and choices related to open access.

The political and economic impacts of funding cuts and austerity were mentioned as having impacted on the environment outside the academy, particularly decimating services and professions such as youth work, but also having an impact on overwork and underfunding within schools. These elements acted as major barriers to research access and engagement.

4.3.3.4 Spatial/temporal

Time is key to questions of open access and open science, with one of its major drivers being to increase the speed of research dissemination (Peters & Roberts, 2016). It appeared in the mapping exercises in this context, with some discussion of the slow nature of the traditional academic publishing and peer review processes. It was also mentioned in the context of embargos, especially when embargoed publications prevented participants from linking to research publications from press releases or charity websites. However, the most prominent temporal element was “lack of time” as a barrier to research access. This was particularly important for the EP group, and was presented as a much greater barrier to research access than paywalls were.

Spatial elements were also important, particularly those related to geographical location. Although participants were situated in the UK, open access is often perceived to be a global phenomenon, with aiming to enable the “world-wide distribution of the peer reviewed journal literature” (Budapest Open Access Initiative, 2002). Therefore, participants did mention potential beneficiaries of open access elsewhere in the world (for example, nurses in Pakistan and NGOs in the Global South). These were very much implicated actors within the text (Clarke, 2005), and it was important to consider discussion of them alongside recent critiques of open access that highlight how the scholarly publishing system favours the Global North (Haider, 2007; Piron, 2018).

4.3.3.5 Implicated actors

Clarke has instructed the researchers undertaking Situational analysis to identify “implicated actors”; actors who are only present in the data as discursive constructions (Clarke, 2005). The mapping of implicated actors was particularly useful to trace how a non-academic research readership was imagined by participants (Bacevic, 2017). For example, although patients’ and teachers’ voices were present in the data through the HIS and EP participant group, they were also implicated actors, constructed through the perspectives of medical charities and researchers. Patients and teachers (particularly those not interested or not able to read research) also appeared as implicated actors in the HIS and EP data, as these participants compared themselves to their colleagues and fellow patients, and discussed interactions that they had had in the workplace, at face-to-face patient support groups and online. The voices of other implicated actors, such as policymakers, parents and pupils, did not appear at all in the data.

4.3.4 Overview of situational maps

Overall, situational mapping allowed the researcher to map specific areas of the situation (such as temporal) may not have been highlighted by coding alone. It also enabled a focus on variation, as it encouraged the inclusion of all elements within the data rather than just those that appeared in multiple interview transcripts (Clarke, 2005).

4.4 Social worlds/arenas maps

Social worlds/arenas maps aim to locate the situation of enquiry more broadly, in order to “get a grasp of the big picture” (Clarke et al., 2017). Instead of focusing solely on the actions of individuals, they concentrate on meaning-making social groups (Clarke, 2005), with individuals participating in each group’s activities. Social worlds have their own sites, technologies and discourses (Strauss, 1978).

Discussing whether Clarke’s conceptualisation of the ‘situation’ differs from the ‘field’ in other approaches, Aldrich and Laliberte-Rudman (2015) have argued that Situational analysis was particularly useful for them due to a lack of predefined boundaries of what they were trying to explore. This was also the case in this study; creating social worlds and arenas maps allowed open access to be located in the overlapping “mosaic” of industries, sectors, professions and social groupings which would not have been immediately obvious when faced with the initial research question (Clarke, 2005).

Clarke has emphasised that social worlds are not static, nor do they have firm boundaries (Clarke, 2005). This draws on Strauss’s original conception of social worlds as mutable and constantly evolving: “parts of them falling away and perhaps coalescing with segments of other groups to form new groups, in opposition, often, to the old" (Strauss, 1978, p. 121). This meant that Situational analysis was a suitable analytic approach to map dynamic situations (Vasconcelos et al., 2012). Bearing this in mind, the social worlds/arenas maps presented here represent only a snapshot of the overall situation, and that many of the social worlds identified will change and evolve based on developments in areas such as technology, organisational change or policy. For example, a patient support group currently sharing research articles on Facebook may dissolve or move location to another platform, the Chartered College of Teaching was a very new organisation when this data was collected and may now have evolved and changed its services, and the Research Councils UK became UK Research and Innovation (UKRI) during the course of the study. Open access policy is also dynamic, and as this thesis is submitted, is expecting to change significantly with the implementation of Plan S (Coalition S, 2018).

Social worlds/arenas theory assumes that arenas are characterised by dissension (Vasconcelos et al., 2012), and contested positions expressed through discourse (Clarke et al., 2015). This is the case with open access, which is an area where different social worlds have conflicting priorities and opinions (Moore, 2017; Šimukovič, 2016). For example, in the Academia/UK Higher Education arena (Map 1), charity research funders and medical researchers had different and conflicting priorities on providing open access for a non-academic audience, and different positions again on whether an APC system is the best way to implement it. Similarly, in the ‘Primary, Secondary and Special Education’ arena (Map 2), busy classroom teachers in primary and secondary schools differed from consultants and support staff and senior leadership teams who promote the importance of research engagement.

Clarke also asked the creators of social worlds/arenas maps to attend to power and power imbalances (Clarke, 2005). Power was reflected on throughout the analytic process, and the descriptions of each map reflects on how power is enacted in the situation.

The social worlds/arenas map also explored how research publications travel within and between social worlds, by looking closely at the following elements:

1. Technologies and organisations that facilitate research access within and between social worlds
2. Factors that enable research publications to travel between social worlds, or which cause ‘friction’ (Neylon, 2013)

Please note, when reading the social worlds/arenas maps, the italicised words are social worlds, which are positioned within wider arenas (their porous boundaries represented by dashes). The circles with solid lines (e.g. pharmaceutical industry, NHS) are social worlds that featured in the data, but participants were not part of them.

4.4.1 Description of social worlds/arenas map (health)

The health social worlds/arenas map was created using the interview data from the health information seeker (HIS), medical charity staff (MC) and health researcher (HR) participant groups. Maps were created by hand for all three groups, drawn using Microsoft PowerPoint and then merged to create one map for the area of health. Memos were written throughout the mapping process, charting the characteristics of the social worlds (including organisations, technologies and activities), overlaps between social worlds, flows of research publications between and within social worlds, and the socio-technical factors that cause barriers or friction. Sections of the map with example memos are presented in Figures 3, 4 and 5. These are designed to focus in more closely at particular elements of the social worlds.

4.4.1.1 Medical charity arena

The map sketches out three major arenas in the situation of enquiry. The first is the medical charity arena, which contained multiple social worlds centred around the activities of individual condition-specific charities, as well as the professional worlds within each charity (e.g. managing research funding, communicating research, patient engagement, and delivering library and information services, and healthcare services). Research grant management and research communication were the most prominent activities in this study. Staff in these areas participated in multiple social worlds simultaneously (Clarke et al., 2015), being situated in their individual charities, each with its own remit, and also as charity and/or science communication professionals. They had often moved through several organisations in different sectors (charity, HE, academic publishing) before taking up their current roles. This allowed them to participate in social worlds in the academic arena, understanding disciplinary cultures, and norms relating to research and publishing. They also played a crucial and active role in shaping the academic arena, providing not only research funding but also implementing policies which require researchers to make their work open access as a condition of their grant. The financial and policy clout of these social words can be seen as forces which remove friction from accessing research publications. However, as participants in the charity arena, specifically as research users themselves, they had less power. They needed to access research on a daily basis to support their work activities but had no, or limited access to research publications. Their dual position elicited particular frustration.

4.4.1.2 Academia/UK Higher Education arena

The medical charity arena overlaps with the academia/UK higher education arena, which contains multiple social worlds, such as disciplines and departments. Different disciplinary social worlds (e.g. biomedical research, nursing), and the priorities of research funders and institutions shaped the way research was carried out and disseminated, including perspectives on open access. This arena overlapped to some extent with the NHS, with some health researchers having experience in clinical and research positions. Health researchers tended to see academic journals as facilitating communication within their own social worlds, and favoured other forms of research communication to connect with non-academic audiences.

4.4.1.3 Public arena

The ‘public’ arena is the third on the map, and was made up of patients (who have ongoing relationships with health services and healthcare professionals), and health information seekers, a broader category that is engaged in looking for information about their own or another’s health. Smaller social worlds were formed around different chronic health conditions, including on and offline patient support groups. Social worlds were also formed around medical research and clinical trials, which allowed patients to participate as lay experts and communicate with both clinicians and researchers. The public library was seen as an organisation which had the potential to enable research access to the public, but with limitations. Medical charities were also prominent organisations in the public arena, providing accessible research information to patients and health information seekers. The public arena overlaps with both the medical charity and academic arena, as researchers and practitioners in these worlds could also be patients and health information seekers.

The pharmaceutical and alternative medicine industries are positioned on their own, outside the other arenas. This study did not include interviews with representatives of these industries, and therefore they were seen as separate (and largely untrustworthy) social worlds by HIS participants in particular.

Google, Google Scholar, the news media, medical charities and patient organisations were identified as technologies and organisations that facilitated access to research across social worlds.

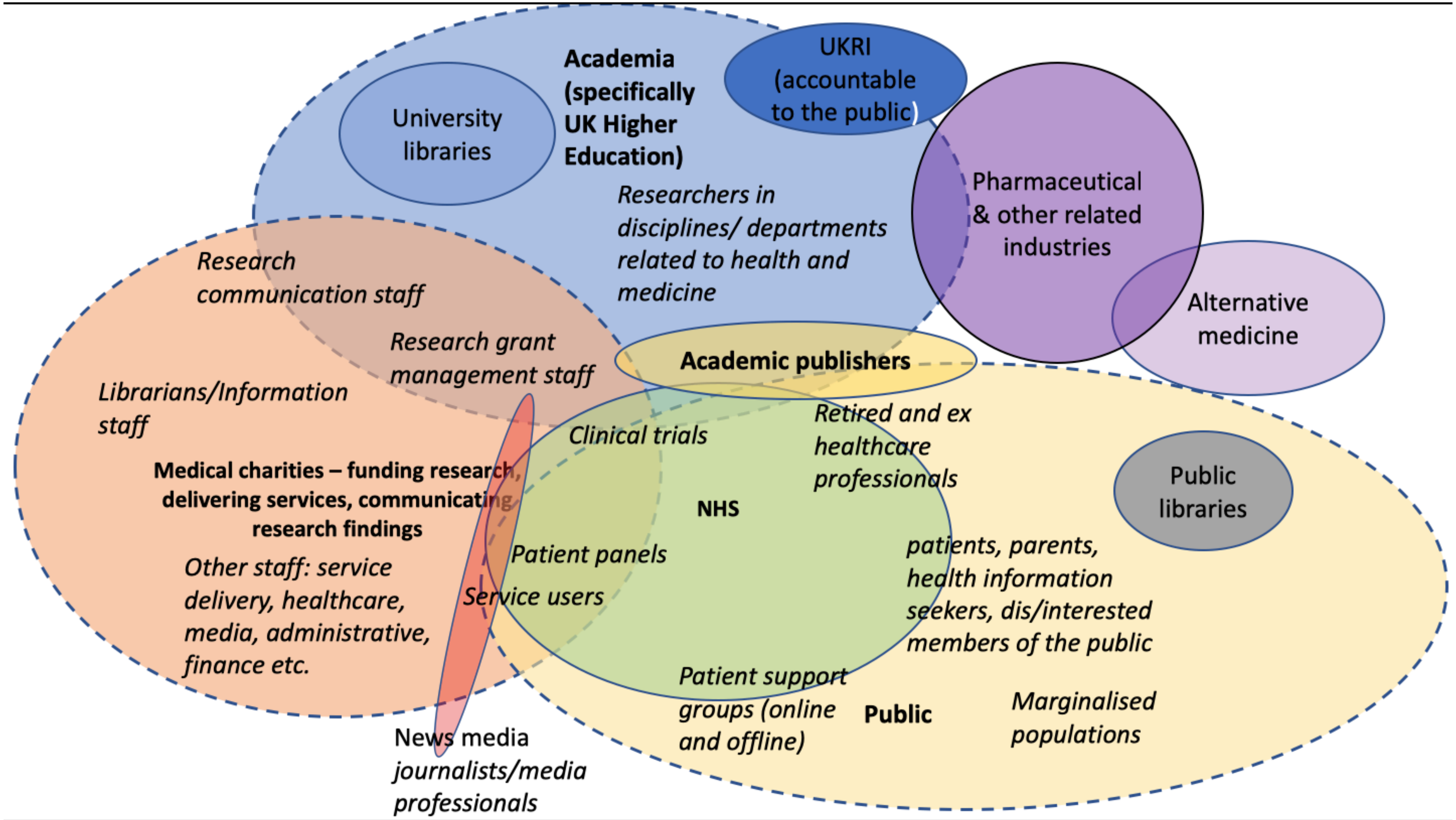
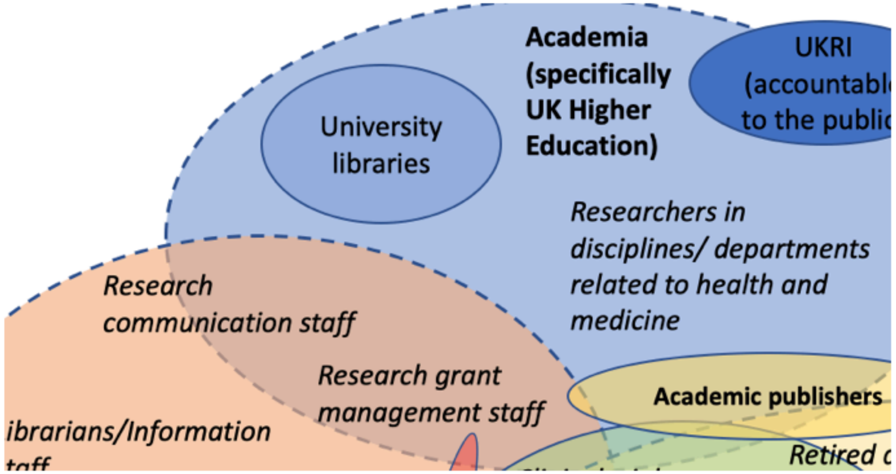


Figure 4: Social worlds/arenas map (health)



1. Repositories in university libraries make postprint versions of research publications available, which are accessed by staff in medical charities. They are used for a variety of reasons, including acting as a research intermediary between academia and the public. They may not be aware that the university library is involved in this work

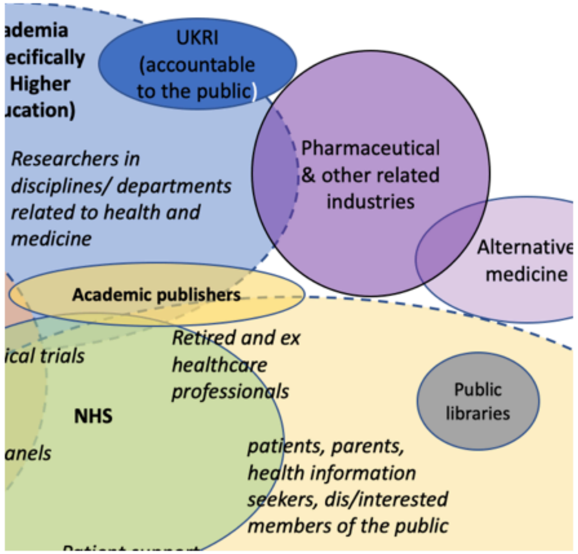
2. There is a significant overlap between research communication/research grant management staff in medical charities, university researchers and academic publishers, with many moving between these areas of work. Organisations such as learned societies also sit in this space. Their close proximity to academia means that they often have access to research publications through friends and colleagues, honorary positions at universities and good knowledge of workarounds and tools.

3. Medical charities provide funding to university researchers. Some also have open access policies which require researchers to make their articles open access as part of their grant conditions, and provide funding to the payment of APCs. Research grant management staff in charities access articles regularly in order to check compliance with their policy, and are particularly frustrated when other articles are not OA.

5. In social world of health/medical researchers, pressures are felt to publish in certain 'high impact' journals. They are generally ambivalent about OA, publishing OA when they have access to funds, but questioning the cost of APCs. They do not see that OA is the main way to share their research with wider publics.

6. UKRI provides funding to university researchers, and has an open access policy. As they are 'taxpayer' funded, they are accountable to the public

Figure 5: Detail of social worlds/arenas map (health)



1. HIS participants are concerned by how much medical research is funded by the pharmaceutical industry, and feel that this compromises the quality of the research publications that are produced. The pharmaceutical industry is the main 'bad actor' in the eyes of these participants; not (as in the traditional open access narrative), the academic publisher

2. Access to research publications for researchers in the pharmaceutical industry is mentioned only briefly by one participant. This may be because the participant sample in this study is focused on the third sector and patient perspective rather than that of industry.

3. The' Access to Research' scheme (an agreement between academic publishers and public libraries) is a means of facilitating access to research publications. However, it is mentioned by only one participant, who feels that being required to physically go to a public library would cause too much friction to be useful.

4. Information presented as 'research-informed' produced by the alternative medicine industry make HIS participants cautious about which publications to trust, provoking references to 'snake oil' and 'pseudoscience'. They do not link OA to low quality research, however; they do prefer known journal names (eg. BMJ) and research from trusted (elite) institutions.

5.The social worlds made up of patients/health information seekers are divided into segments or subworlds, coalescing around particular conditions, charities and support groups, forming communities with researchers and clinicians, and with a divide between patients who are interested in research and those that are not

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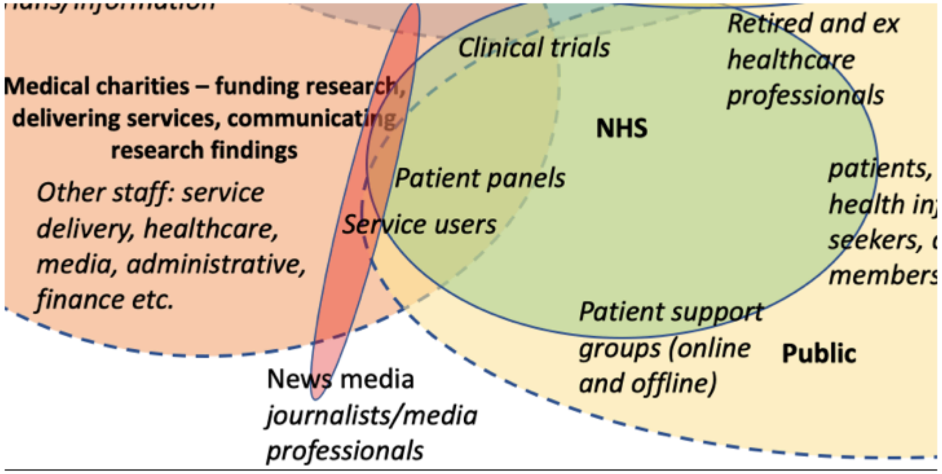
Figure 6: Detail of social worlds/arenas map (health)



1. News and media is perceived by many participants to be an important way of communicating research, although some feel that research reporting is biased and simplistic. Research communication staff and researchers are involved in writing press releases or working with media teams in order to communicate research to a wider audience. Occasionally these link to OA research publications) although this is not always seen as necessary

2. Patient support groups (on and offline) are a source of support and research information for HIS participants. Not all members of patient support groups are interested in research, but several HIS participants describe sharing and discussing research articles within a group

3. Medical charity staff who are not involved with the administration of research funding or research communication are seen to also benefit from open access and be a ‘public’ in their own right although one that needs extra support in reading and understanding research (provided in some case by workplace journal clubs)

4. Patients and health information seekers interested in accessing research publications are often also engaged in other aspects of the research process, such as being a member of a patient panel. This increases their expertise and faciliates contact with both researchers and clinicians

5. NHS staff are ”implicated actors” within the research data, except for when participants have previous experience as healthcare practitioners. In these cases, their experience working for the NHS shapes their perspective on open access

Figure 7: Detail of social worlds/arenas map (health)

4.4.2 Description of social worlds/arenas map (education)

The social worlds/arenas map for educational research was created from interview data from EP and ER participants. It outlines three arenas (primary, secondary and special education, academia/UK higher education, and research engaged practice). The third arena, ‘research engaged practice’ overlaps with the first two, as social worlds in this arena were made up of both practitioners and researchers. They also included those who were situated in both camps; for example, practitioner-researchers, knowledge brokers or intermediaries, and practitioners who were trying to enter academia.

4.4.2.1 Primary, secondary and special education

Social worlds within this arena included individual schools (primary, secondary, special, state, independent), or groups of schools (such as multi-academy trusts), and professional groups (e.g. *teachers, school leaders*). The social worlds of *teaching assistants, pupils and parents were* also present in the data, although as none of the research participants were from these social worlds, they were implicated actors.

These social worlds also included organisations in the third sector, where educational charities delivered services around aspects of primary, secondary and special education. The staff in these charities also participated in third sector social worlds, and often had previous experience working in non-educational organisations.

Many of these social worlds were located at a particular site (for example, all the employees of an individual school or multi-academy trust). Some discussions of research access were embedded very much in a particular site (for example, staff meetings where teachers were asked to discuss a research paper, or policy decisions based at a particular school/group of schools).

Other social worlds were not linked to a physical site; For example, small social worlds clustered around disciplines (e.g. English Language Teaching, maths), made use and felt attachment to of their own discipline-specific publications and websites, and connected with each other via social media. For the most part, each social world and subworld had its own activities, concerns, priorities and challenges. If participants did not have research access as their main responsibility, then it played only a small part in the daily activities and concerns of their social world.

4.4.2.2 Academia/UK Higher Education arena

In a similar way to the health social worlds/arenas map, disciplinary cultures and the priorities of institutions and research funders shaped the activities in this arena. However, the social worlds of individual education departments, and of education researchers as a disciplinary community had particular characteristics. For example, they were sharply divided into subworlds of qualitative vs quantitative researchers, lecturers vs contract researchers or education vs teacher education lecturers. Departments in Russell Group and post-92 universities also had different priorities and challenges. Tensions and negotiations were apparent between these different groups, with several researcher participants noting conflicts around their identities as researchers embedded in a practice based discipline.

Discipline-specific social worlds are represented as very small-scale (for example, a small group of researcher publishing in the same journal). The boundaries between disciplinary social worlds are also blurred, researchers situated within an education department, but whose work is in a different discipline altogether. This led to conflict around where they publish, and who they are trying to communicate with.

Research was a central activity in this arena, but teaching also appeared prominently in the context of teaching current/future practitioners. *Students* were therefore another important social world.

4.4.2.3 Research engagement

The third social arena has been labelled the ‘Research Engagement’ arena, and it is here that different social worlds from the first two arenas came together. Organisations such as the Educational Endowment Foundation (EEF) and the National Foundation of Educational Research (NFER) operated in this arena, as well as practitioners who were employed to support teachers with accessing and using research. Publications and technologies that facilitate communication between different social worlds in this arena are common, such as practitioner journals, Twitter chats, conferences and the educational press. Both human, organisational and non-human elements in this arena can be seen to act as ‘boundary spanners’ or ‘knowledge brokers’ (Long, Cunningham, & Braithwaite, 2013; Meyer, 2010). These activities took place with mixed degrees of success, with those who were involved in supporting teachers feeling that there was division between ‘teacher culture’ and ‘research culture’ (Labaree, 2003).

Individuals moved across and between social worlds, with practitioners enrolling as students, or researchers taking up roles in practice. It is in this arena where paywalls and lack of institutional access caused particular frustration where they existed, but also where the flow of research publications was enabled and facilitated by other mechanisms (proximity to people with institutional access, knowledge of tools and workarounds, piracy, use of grey literature). The social worlds in this arena were involved in both the production and consumption of research publications, as well as their translation and adaptation.

The Chartered College of Teachers (a relatively new organisation when this study began) was a key organisation in this arena. It enabled the flow of research publications between social worlds by offering access to educational journals with its membership fee, and several participants expressed their hope that it would create a professional community of teachers who were, among other things, engaged with research.

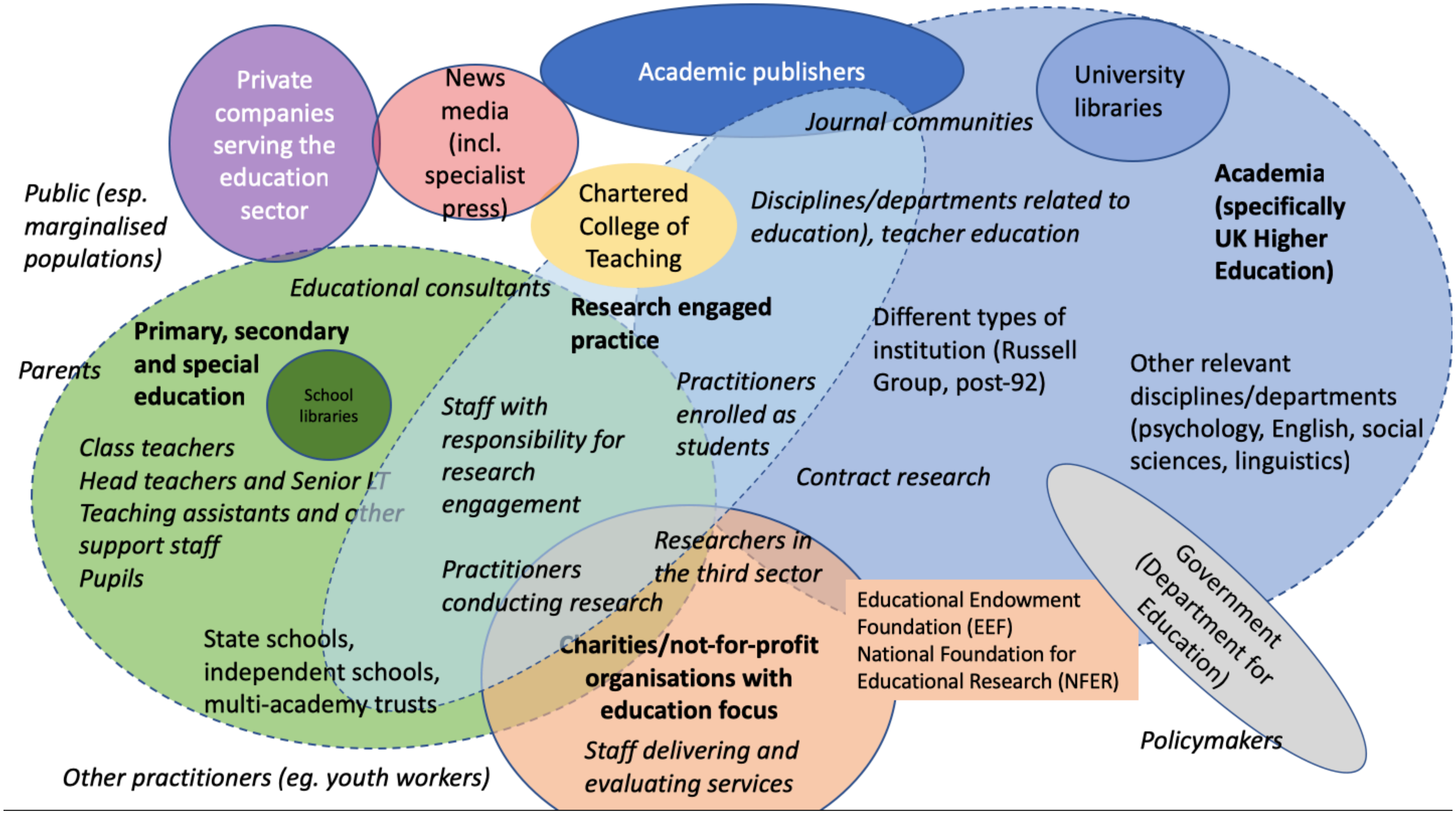
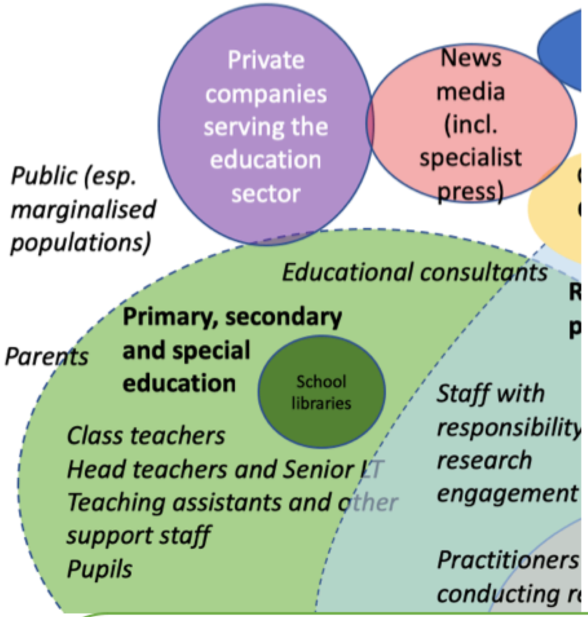


Figure 8: Social worlds/arenas map (education)



1. The "primary, secondary and special education" arena is necessarily simplified for the purposes of this study. Participants emphasise different school types (state, independent, academy), and the different social worlds within the arena (eg. class teachers for different subjects, senior management, pupils and parents), which all provide different contexts for research use and shape perspectives on open access.

2. 'Educational consultants' are represented in different ways. Whilst some teacher participants distrust consultants who they feel are trying to make money by imposing top down change with little evidence, another participant (EP6) is a consultant who had moved into freelance work when her fomer role had been cut. She is very interested in accessing research and engaging with researchers.

3. School libraries are present within the data as a means of facilitating access to research literature, although with the exception of an independent school, they are more associated with (out of date) textbooks than with academic journals. EP participants comment that subscriptions are far out of reach of most school libraries. Other participants do not associate school libraries with research access.

4. Several EP participants mention consuming research in the news & media, (including the Times Educational Supplement, and ER participants discuss writing for outlets such as *the Conversation.* Education journalism seen as useful way of communicating research.

5. Distrust of private companies serving the educational sector, especially those who present their own 'research informed' resources that appear to be research publications

6. Not very much interest in sharing educational research with the 'general public'; except for research which is applicable to a marginalised population (eg. LGBTQ+ people more widely, rather than just in a classroom context).

Figure 9: Detail of social worlds/arenas map (education)

1. The 'Research Engaged Practice' arena overlaps with 'Primary, Secondary and Special Education' and 'Academia', and brings together people from different social worlds with an interest in research engaged practice This includes staff embedded within schools, staff who are also postgraduate students, and researchers interested in working with practitioners.

2. Organisations such as the Chartered College of Teaching further the activities of the research engaged practice arena by providing access to some subscription content, and by organising events and conferences. One participant (EP5) mentions that CCT makes her feel more professional, and on a par with medicine. The subscription resources that CCT provide are found to be limiting by others, as they focus only on education rather than social sciences more widely.

3. Social worlds comprising of both practitioners and researcher coalesce around shared publications (practitioner journals), social media platforms, and shared values, commitments and research interests (eg. equality and diversity/antiracism, a particular subject area). Practitioners are able to draw on these contacts and communities to request access to research publications.

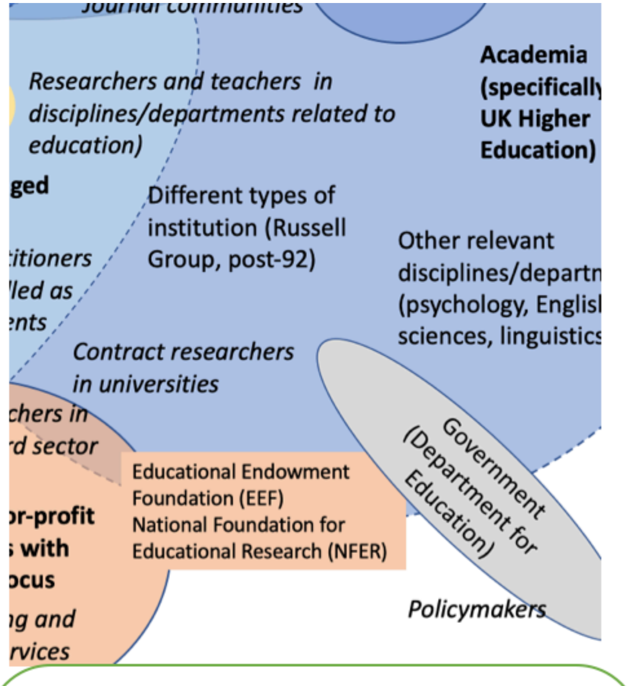
4. Practitioners who are in these social worlds may or may not want eventually to enter academia more fully. Lack of subscription access can severely hamper them if they try to write a PhD proposal without institutional subscription access. Several participants discuss making use of the login details belonging to friends or family members.

5. Some participants have a formal role supporting practitioners with research engagement or as researcher/evaluators themselves They need to access research publications on a daily basis but do not have access to research literature apart from on a personal or temporary basis (eg. as part time masters student).

Figure 10: Detail of social worlds/arenas map (education)

1. Education as a discipline and as a department is characterised by divisions, which impact on participants' views of themselves as researchers. They discuss divisions between post and pre 92 universities, contract and lecturing staff, teacher education and research staff, qualitative/quantitative research and feeling more at home in other disciplines than education.

2. All ER participants are interested in engaging with practitioners and policymakers, and are therefore situated to a greater or lesser extent in the 'research engaged practice' arena. They form links with practitioners through social media, through formal engagement events and by teaching future practitioners. Several participants have also had experience in practice which shape their perspective.



3. Despite commitment to engagement, ER particiants mainly agreed with open access in principle, but were focused on publishing in journals that were either highly regarded in their subdiscipline, or were a good fit for their research. Journals functioned as communities as well as publications for several ER participants.

4. A lot of education research is either funded by, or is carried out by the government or third sector instead of universities. The production of grey literature hosted on websites is common and the traditional scholarly communications system may be bypassed altogether. Especially the case if the aim is to influence policy.

5. The Educational Endowment Foundation (EEF) and National Foundation for Educational Research (NFER) are prominent organisations mentioned by several participants. EEF praised for providing clear, accessible 'open access' reports on its website, but criticised for centring randomised controlled trials at the expense of other forms of research.

Figure 11: Detail of social worlds/arenas map (education)

4.4.3 Overview of social worlds/arenas maps

Social worlds/arenas maps aided the researcher in visualising the situation of enquiry as a series of overlapping social worlds, rather than a strict division between ‘inside’ and ‘outside’ academia. They also helped to identify organisations and technologies that enabled the flow of research publications within and between social worlds, and factors that caused friction in this flow.

4.4.4 Positional maps

Positional maps include all the positions taken and not taken within the situation of enquiry. They do not show who/what articulated which position, as sometimes conflicting positions can come from the same person or source (Clarke, 2005). As stated in the introduction to this chapter, the researcher did not find positional mapping as useful as the other two exercises, and therefore only one positional map has been presented here.

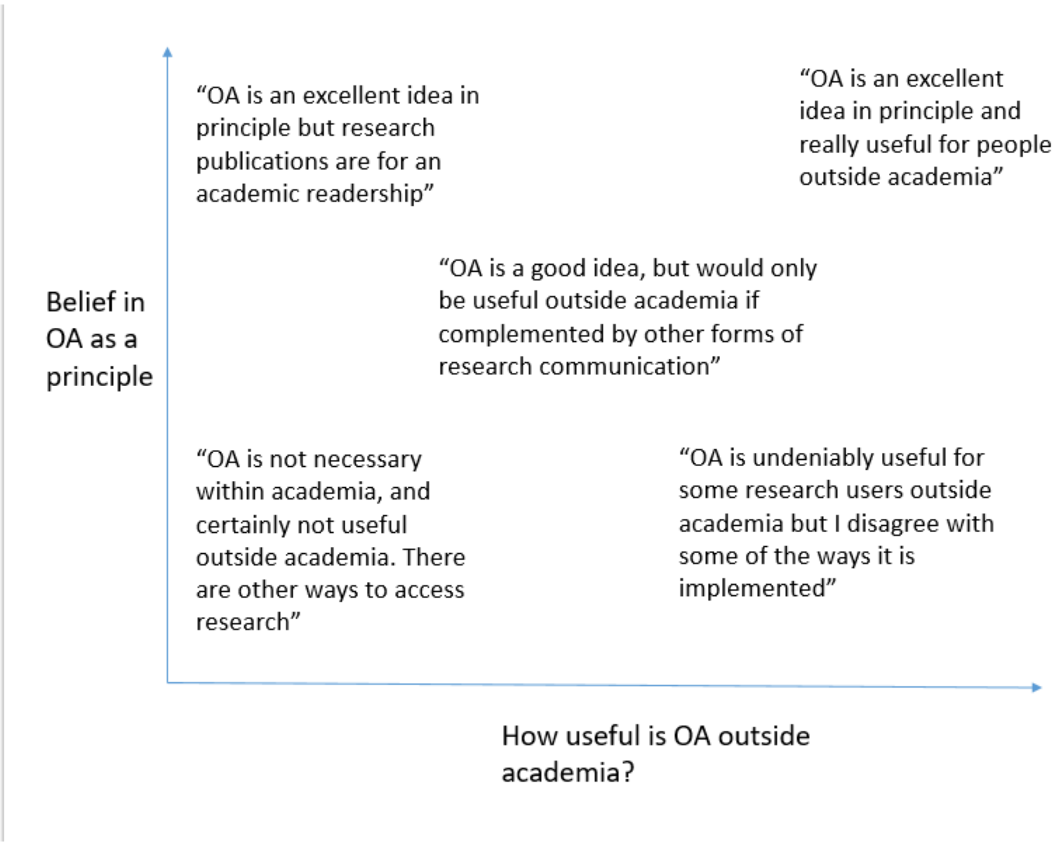


Figure 12: Positional map

This positional map lays out positions taken by participants on the central themes of the study. It has two axes; belief in open access as a principle, and how useful open access was felt to be outside academia. The map revealed a range of positions on these central questions, ranging from an anti-OA position that did not see any usefulness outside academia, to an enthusiasm both for OA in general and an acknowledgement that it would be used outside academia. Most participants took positions that were not at these two extremes.

Clarke has recommended that positions that are *not taken* within the data are also mapped. Therefore, although the top right position (enthusiasm for open access and belief in its usefulness) was included, it should be noted that it was never articulated without a series of caveats. These caveats focused on barriers to usefulness outside academia, or (from a researcher perspective) comment on how OA has been implemented.

The positions on this map were identified from discourses identified during situational mapping. In the case of this central theme it was useful to see positions laid out in this format in order to identify the range of disagreement in the situation of enquiry. It supports other researchers' arguments that OA is an area characterised by contestation and disagreement (Moore, 2017; Pinfield, 2015; Šimukovič, 2016). It also highlights one of the central findings of the study; that a belief in the general principle of OA does not necessarily correlate to agreement with the way it has been implemented in practice, nor with the belief that it is essential for research users outside the academy.

4.4.5 Chapter overview

This chapter has presented examples of the three mapping exercises outlined by Clarke; situational, social worlds/arenas and positional. It has introduced the rationale for each exercise, and a brief reflection on its usefulness for the current research. It has also indicated the key areas of analysis that were identified during each mapping exercise.

It should be noted that the mapping exercises heavily shaped the findings and discussion sections of the thesis, although it was decided not to structure these chapters around the three exercises. For example, a focus on non-human elements in the situational maps meant that the findings chapters present detailed analysis of how participants engage with search technologies, paywalls and other forms of material access. The social worlds/arenas maps led to discussion of boundaries, borders and overlaps between academia and 'outside', and the positional maps emphasised the level of disagreement and dispute inherent in all discussions of open access.

Attention paid to overarching concepts such as power and discourse in the mapping exercise means that these are also central concerns in later chapters – for example, Clarke's concept of the 'implicated actor' led to fruitful exploration of the idea of how researchers and intermediaries 'imagine' their publics. Therefore, although the next chapters are presented thematically rather than by type of mapping exercise, it is hoped that the influence of the situational analysis is clear throughout.

5 Findings: Perspectives of research users

5.1 Chapter introduction

Chapters 5 and 6 will present findings drawn from the coding and mapping exercises outlined in the previous chapters. Findings are structured around experiences of producing, translating and consuming research publications, in order to locate open access in the wider ‘situation of enquiry’:

This chapter will concentrate on the perspectives of research users (HIS, MC and EP participant groups), and how they find, access and share research publications. The first half of the chapter will outline motivations for accessing scholarly research in the areas of health and education. It will then move on to discuss perceptions of open access, and factors that both enable and cause ‘friction’ in accessing research publications outside academia. Barriers to both ‘material’ and ‘conceptual’ access are highlighted, and implications for open access noted. Following this analysis of research users, Chapter 6 will focus on perspectives of research producers and intermediaries.

5.2 Motivations for accessing research publications

A range of motivations for accessing research publications were identified across the three participant groups. The majority of motivations can be divided broadly into ‘professional’ and ‘personal’ although there was variation within those categories, and other motivations (such as ‘educational’) were also noted. Participants also reported wanting to use research publications as evidence to support a position or combat misinformation, and to share and discuss with peers, colleagues or health professionals.

5.2.1 Personal motivations

Unsurprisingly, the HIS participant group overwhelmingly reported personal motivations for accessing research. These were largely related to the desire to find out more information about a specific health condition or to research treatment outcomes so they could make informed decisions:

> *"Having a particular health problem, that sort of really was when I've looked into things in more depth. Because – the outcome, it affects you." (HIS3)*
>
> *"I developed alcoholism and drug addictions. And understanding what I was being told by Medics, how to navigate what my informed choices were was very important. And ultimately working out treatments that don't have pernicious side effects" (HIS6)*
>
> *"When you're a parent and your child has something, it is a very emotional thing because you think have I done something wrong when I was pregnant, did I not behave like was expected, so all of that was a huge burden and I thought I really want to find out" (HIS2)*

Sometimes the desire to read research publications was specifically framed as a reaction against the limitations of other forms of health information. HIS2, a mother whose pre-teenage daughter was diagnosed with a chronic health condition, described how she found that at the point of diagnosis, she was *"bombarded"* with too much information, but that the NHS patient resources did not provide her with the underlying *"facts"* and *"science"* that she needed to understand her daughter's condition. Similarly, HIS6 described what he perceived as the limitations of most health journalism:

> *"I want good quality information. I don't like pop articles because generally they're selling something – journalism… you can read a lot but learn little. And it rarely ever gives you insight into where else you can go to learn more" (HIS6)*

However, this was not the case for all participants; with both HIS4 and HIS5 choosing to read research translated by medical charities and in the mainstream press, as well as in medical journals such as the *BMJ*.

As well needing specific pieces of information, HIS participants also described looking for research as a way of coping psychologically with the stress of illness, with HIS2 commenting that she felt that she "*googled*" a lot because she was an anxious person, and HIS3 describing her own coping style compared to that of her sister:

> *"My understanding is that there are different coping styles for dealing with illness and a diagnosis, a major diagnosis. And my cognitive style is to basically know as much as I can about it. And my sister's also a medic and her attitude is you just do what the doctors say, so it's just to do with coping style. I like to know exactly what the lay of the land is" (HIS3)*

5.2.2 Professional motivations

The MC and EP participant groups described professional motivations for accessing research.

MC participants largely emphasised the importance of accessing research on a regular basis in order to carry out their jobs day to day. Those working in research grant management roles reported needing to monitor the impact of research funded by the charity (MC1, 7) as well as preparing (MC3a) and assessing (MC5) grant proposals. Those working in research communication roles accessed research publications in order to provide comment to the press and write accessible copy on websites and charity newsletters (MC2, 5). MC4 also ran a journal club with charity staff, and MC3b and 6 updated healthcare staff working at the charity with research information to improve their practice. A notable exception to these research-focused roles was MC8, whose job was in service-delivery. He accessed research much less than the other MC participants, but still described a range of professional motivations (needing evidence to support grant proposals, running reading groups with staff and service users, and making an informed contribution to panels involving NHS staff and/or academics).

The EP participant group also described professional motivations for accessing research, although, like MC8, they were embedded to a lesser extent into the day-to-day functioning of their jobs. EP5 and EP8 accessed research most frequently, as they were research intermediaries, holding roles where they were responsible for supporting other staff to be research engaged:

> *"I might be asked by a teacher saying that they're struggling to find anything that tells them – any research about say – erm – white working class boys reading – they're struggling to find things; they come to [me] and say "can you help us," so I will do" (EP8)*
>
> *"I think it's useful to have someone who can point in the direction of journals and bits and pieces" (EP5)*

The primary motivation for other EP participants was to spark ideas for new teaching methods (EP1, 2, 3, 4). However, they also described accessing research in order to find statistics to use when giving presentations to parents (EP3), to receive *"reassurance"* that their idea was not *"off the wall"* (EP1), to discuss research articles with pupils (EP3), to argue against seemingly *"common-sense"* approaches which were not evidence based (EP6), to research different methodologies for evaluating service delivery (EP7) and to find evidence to support a policy change within the school (EP5). The wide range of motivations suggests that it is not easy for researchers to know why a practitioner might be accessing their publications; and that they vary according to job role, type of educational setting and level of seniority.

5.2.2.1 Continued professional interest

Although all EP and MC participants were currently active in their jobs, the experience of retired HIS participants who used to work in healthcare and social work indicated that there could also be a motivation for practitioners (and indeed, academic researchers) to continue accessing research in periods of unemployment or after retirement.

5.2.3 Educational motivations

Several EP participants also mentioned motivations connected to formal education, either because they were currently enrolled as part time/distance learning students alongside their jobs, or because they were discussing periods of their lives where they hoped to enter the academy (e.g. trying to fill in a PhD funding application).

> *“So - when I was teaching I was trying to make sure that I was up to date with my field in terms of research, because I had this assumption and desire to one day return to the academic world. Erm... so I was conscious of that in terms of not wanting to fall behind as such” (EP2)*
>
> *“I noticed this a lot when I was considering applying for a PhD. I found it very difficult to write a decent proposal because I couldn't actually read whole texts, do you see what I mean?” (EP1)*

EP1 and EP2’s perspectives demonstrate the way in which in education (more so than in health in this dataset) the lines between the worlds of academia and practice are blurred, with practitioners crossing over to become researchers, and the other way round. At the point of interview, EP2 had just left teaching and had begun a

PhD, whereas EP1 had decided against further study and was focussing on his teaching position. However, when they were trying to keep ‘one foot’ in the academy, both had struggled, as, like the majority of participants in the study they had little or no formal access to online educational research publications.

5.2.4 Using evidence

In a more general sense, participants discussed wanting to use research as evidence to underpin decision making, to support a position or a belief, or to combat misinformation.

5.2.4.1 Decision making

The use of research evidence to underpin a decision or to persuade others to make a decision or to was commonly articulated by participants. In the HIS participant group, this formed part of the process of researching treatment options, whereas the EP participant group used it to make policy decisions such as how they carried out assessment.

> *“I had heard somewhere about some serious side effects [of a treatment] with regard to chronic pain syndrome and chronic fatigue syndrome, so then I thought OK, so I need to find this information. Looked at some sort of information and found that in Japan the programme has been stopped because of side effects but there was no tangible -, they just said because of evidence, so there wasn’t anything, I could not find it anywhere.” (HIS2)*

Here, HIS2 expressed her frustration that she could not find the evidence she needed to make a decision about whether her daughter should undertake that particular course of treatment. She wanted something tangible – research evidence that she could grasp hold of to help make a difficult decision.

HIS6 on the other hand discussed offering evidence to persuade healthcare professionals to take an alternative course of treatment when his friend was seriously ill, and EP5 searched for research evidence to support senior management at her school make decisions about policy:

> *“I brought in really really very well established papers on very well-known course of action […]and I asked well why – can I ask when you saw his condition start declining like this, why was not he pulled off your experimental drug and moved immediately onto this generic medicine” (HIS6)*
>
> *“Part of my job is helping SLT make school policy decisions based on what current educational research is saying. So […] they're asking me, you know, to go and research whether a certain behaviour policy is more effective for instance” (EP5)*

The interview data emphasised that such decision making did not take place in a vacuum. External factors, hierarchies and power relations affected participants’ capacity to make such decisions or persuade others to make them. For example, HIS6 received a negative reaction from his doctors, and EP5 discussed feeling uneasy that her SLT sometimes only wanted evidence to support decisions that they were already going to make.

5.2.4.2 Supporting a position or belief

Several EP participants explained that rather than seeking research evidence to make a decision, they were interested in supporting an idea or belief they already had gained through their experience in practice. EP1 described it as *“comforting”* that research supported his previously held belief. However, on reflection he also felt that he wasn’t *“open minded”* enough in the way he engaged with research, as it had never succeeded in changing his mind.

> *“I'm trying to think whether my mind has ever been changed... do you know what I mean - whether something has ever persuaded me differently... I don't think it has. That feels quite bad!” (EP1)*

EP6 also reflected on her tendency to use research to support a previously held position, suggesting that more access ought to encourage her to consider different perspectives.

> *“Listening to myself say that makes me a little self-critical that I'm a position where I'm kind of 'here's my position, I'm trying to find evidence to shore up my position' whereas in fact - erm - with more access you're in a better position to think well OK, this is my position, but maybe there's another position, or maybe there isn't” (EP6)*

Both these participants found themselves reflecting mid-interview on how they used research, finding themselves in tension between their experience of using research, and a dominant discourse of evidence-based decision making which expected them to be more open to changing their minds based on research evidence.

5.2.4.3 Combatting misinformation

Finally, participants also saw research evidence as able to combat misinformation; or claims that they perceived to be oversimplified or biased. This motivation was found across the education and health domains.

> *“We could end up throwing out the baby with the bathwater and going e-numbers are bad. But being able to read that one e-number is ascorbic acid, and this is positively good for us, is very good. And another one is a food colouring that has been banned by multiple countries because it causes hyperactivity – it’s important because the media conflates things.” (HIS6)*
>
> *“A lot of things […], they're not contested by people who research language, but they tend to be contested by Joe and Jane public. Because of the common-sense thing – ‘it must be bad for classes to have kids [who don’t*

> *have English as a first language] because it's going to take up too much time'. But there's no evidence for that!" (EP6)*
>
> *"I was at a conference the other weekend […] and a representative from [an organisation dedicated to educational research] was there, as well as quite a famous blogger - and we were talking about [a controversial topic in education] he said "there is no study to show that this is effective" and everyone's cheering and clapping, and the poor [research] rep said "well actually there is!" And you just haven't read it" (EP5)*
>
> *"Education seems to be something that everyone thinks they can have an opinion on, or can be an expert in, so they're quoting all kinds of things at you that they have read in the paper, which has been spun in some kind of annoying way... so maybe if educational research was more open everybody could become a bit better informed" (EP4)*

In these four quotations, participants introduce claims that they regard as oversimplified or false. HIS6 and EP4 explicitly blame the media for this kind of oversimplification – perceiving that the press conflate and spin the complex research findings in certain ways. EP6 and EP4 contrast research expertise with 'common-sense', held by a general public who consider themselves experts with little engagement with an issue other than via the news media. EP5 believed that this type of expertise could also be found in communities of practitioners and was reinforced by some popular education bloggers. All three participants felt that this type of claimed public expertise, reinforced by the press, risked taking up valuable time at best, and causing harm at worst. However, this should not be interpreted as a simple claim that more OA would automatically reduce misinformation or biased press reporting. EP5, for example, was clear that that practitioners at the conference had made the choice not to read the research article, rather than that it was not available.

Instead research publications were seen as practical tools which participants could use when engaging in discussions with people they perceived to be misinformed.

> *“Occasionally I'll think, oh, I'm not sure! How do I know? And sometimes there's been a frustration that I don't necessarily have the links to hand, to be able to say this paper and that paper” (EP6)*

Even EP4, who did speculate about the positive impact of research being made open, also highlighted the importance of having individual conversations (with pupils’ parents) about how research was presented:

> *“Having that kind of conversation - saying - trying to explain what the real data was saying and what - where that came from and how it got skewed” (EP4)*

5.2.5 Resisting ‘evidence based’

It is worth noting however that some participants resisted the idea of evidence altogether, or of certain types of evidence. This attitude was not found in the health sample, but was felt strongly by several participants in education. EP3 for example, argued that he was not interested in ‘*big data*,’ or in using research findings just because *“something’s been shown to work,”* preferring research that suggested examples and ideas for him to try out in context. EP6 was also critical of research that presented itself as objective evidence, describing how she started *“unpicking that thing that’s at the heart of ‘what works’ and ‘I don’t have a position’ and all the rest of it,”* and finding problems with the claims it made. She also preferred research that did not make universal knowledge claims, such as forms of qualitative ethnographic research.

The nuanced ways in which participants present their motivations for research use in this section suggests that although there is a strong link between reading research publications and finding ‘evidence,’ they should not be assumed to be synonymous.

5.2.6 Sharing and discussing research

The motivations for accessing research described so far have been mainly individual. However, some participants also described sharing and circulating research texts in group contexts. The publications were then used to spark discussion, and facilitated the sharing of information and ideas.

5.2.6.1 Patient support groups

The act of sharing research took place in specific on and offline contexts; such as in the workplace or in a support/discussion group. For example, HIS1 described sharing and discussing research articles with members of an (offline) patient support group centred around his own health condition, whereas HIS2 participated in a similar group on Facebook.

> *"See I was fortunate enough to – er – get hold of some research a while ago from a dietician, which was doing a trial into many different types of probiotics.. so we brought that into the group and had quite a lively discussion about it…" (HIS1)*
>
> *"So this Facebook group is a parent group for parents with children with [chronic health condition] […] And so through my work, I come across quite a bit of research anyway and I tend to post articles on there." (HIS2)*

Discussion of research publications was not generally the main purpose of a patient support group; with HIS participants also sharing personal experience of chronic illness, treatment and interactions with health professionals. For example, HIS4 separated her own research-using activities from the activities of the support group she attended and valued.

> *"We haven't discussed research, because I think some people wouldn't – well some people don't have access to a computer for one thing […] And people*

> *don’t tend to talk about research no […] I think it’s – they tend to – people will support each other if someone’s about to start on any particular treatment, or do you have – have you been on this treatment, and how have you found it?” (HIS4)*

Unlike HIS1, HIS4 made it clear that her patient support group valued other, more relational, kinds of information; based on personal experience of chronic illness, and rejected the suggestion that the patient support group might be a place to discuss research findings.

5.2.6.2 Workplace reading groups

Workplace reading groups, more firmly centred on reading and discussing research texts, were also mentioned. MC4 discussed how she had started a journal club in her charity workplace, aiming to engage staff members whose job roles did not require regular engagement with research *“from finance to fundraising”*. The group took a structured approach to reading the paper, using it as a tool for developing critical appraisal skills.

> *“We all select a paper which might be related to areas of people's work and we have people from finance to fundraising - not just research but people who deliver services. They're all part of this Journal Club” (MC4)*

Several educational practitioners (EP4, 5 and 8) reported either leading or participating in similar discussion sessions within their schools. Although in all these examples, participants talked positively about sharing and discussing research in a group setting, they also included caveats about the limitations of such discussions. These limitations primarily related to a lack of interest in discussing research articles from other members of the group; EP3, a primary school teacher who attended a mandatory research discussion groups in the time allocated for a staff meeting, reported a *“medium level of interest”* from group members, but noted that the interest did not continue outside of the designated discussion time. EP5 acknowledged that forcing teachers to participate in these groups could end up seeming *“tick-boxy”* and described how she was changing the attendance policy so that teachers could decide whether or not they attended. She hoped that this would mean that attendees were more enthusiastic. Similarly, HIS2 expressed frustration that her Facebook group did not seem to be an environment that encouraged discussion of research:

> *“I also ask people if they come onto anything interesting to share it. But that doesn’t work very well on the social media, yet I find that actually really quite challenging to get people involved in discussions” (HIS2)*

It is not always clear from participants’ accounts whether articles shared in these contexts are open access, or whether they were downloaded using one group member’s subscription access and shared amongst group members who did not have access. EP3, for instance, described how a tutor from the university provided printed copies of research articles for teachers who attended the discussion group.

It also varied whether or not group members read a full research article, a summary, or had been informed of the main findings of the research in some other way. Participants felt that for the most part sharing and discussing research was often more successful with a shorter, accessible summary than a full research article.

> *“Everyone will have read summaries of articles, and a lot of teachers will go and find articles to go and read for themselves. But I think that's much more their responsibility, if that makes sense” (EP5)*
>
> *“Most people – it sounds a little blunt – but they just can’t be bothered. They’ve got things to do - they want the information boiled down into kind of a*

> *five minute sort of presentation – discussion – sort of this is what I've found" (HIS1)*

The examples outlined in this section demonstrate that research is shared and discussed in different contexts, both in and out of the workplace. In both contexts, there is some evidence of research publications being shared both on and offline, and also evidence of summaries and translated research being shared. Participants can be seen in these contexts as acting as research intermediaries, as they make research knowledge accessible to their peers and colleagues

5.2.6.3 Sharing research with healthcare professionals

The potential for patients sharing and discussing research publications with healthcare professionals is a specific motivation often cited when considering the benefits of open access (Willinsky, 2006), and played a part in the experience of some of the HIS participants. For the most part, this experience was varied. Some participants reported very positive relationships with their clinicians, with HIS4 joking that she wore her consultants out with questions about research.

> *"My poor consultants[…], I'm always saying "Have you heard of this?" […] My consultant is extremely approachable. The best thing about him really that I can say to him "what about [drug name]? 'Cause I'd taken [drug name] which gives me nausea and I've taken folic acid[…] and I discussed it with my consultant by email" (HIS4)*

HIS4 (a retired GP), perceived there to have been a change in the doctor-patient relationship over the course of her lifetime, with the *"younger generation"* of doctors no longer believing themselves to be *"a kind of Godlike creature that imparted wisdom"* and instead forming more of a partnership with patients.

However, other participants had a less positive response from doctors.

> *"I wouldn't say they were dismissive of me but you got the impression you were reading stuff you weren't qualified to discuss*" (HIS1)
>
> *"there's a high degree of discomfort with people outside the trained faculty of medicine getting involved in the dialogue, unless its in the pub! If you're friendly and it's informal, people go "well I can talk about this…" In a professional setting, well people's jobs are at stake"* (HIS6)

HIS6 found that on an informal level, acquaintances who were healthcare professionals were happy to discuss research with him, but did not find them open to doing so when he brought research articles into the clinical encounter. He described a particularly difficult experience where he attempted to discuss peer reviewed papers with doctors treating a friend who was in hospital with liver failure.

> *"Here, the peer reviewed papers… and the organisational framework and the hierarchy of permissions made everyone freeze out and lock out these discussions. Now I can understand the fear; I can understand but human lives are at stake. His life was a low-value one, because he was an alcoholic"* (HIS6)

In this situation, HIS6 felt that a range of social factors, including the type of patient his friend was considered to be, his critical condition and the hierarchies within the hospital conspired against his attempt to use research evidence. He expressed sympathy with the hospital staff, blaming systemic factors rather than individual healthcare professionals, but was still angry and frustrated by the experience.

HIS5 and HIS2 also felt that some doctors responded differently to discussion of research depending on the type of patient they were talking to, influenced by power dynamics and professional cultures. She felt comfortable talking to clinicians as she used to work as a social worker at a hospital, but she reflected on the arrogance of doctors that she had met during her career who felt they were *"God of the department"*, and believed that her brother-in-law would not be able to assert himself in the same way:

> *"He's not well at the moment, and he'll rant and rave to us. But he won't say boo to a goose when he's actually talking to the doctors… It's the authority thing, isn't it? It's still there"* (HIS5)

HIS2 also felt there was a difference in talking to healthcare professionals about her daughter's chronic health condition and her own diagnosis of autism:

> *"I think there (with my daughter) you have the traditional relationship between the patient and the healthcare professional, which is "God" and "Down There," whereas in autism, especially in adult autism, most people self-diagnose before they go and access a diagnostic service" (HIS2)*

Here, she contrasted a very hierarchical patient-doctor relationship when talking about her daughter's condition, with a much more open attitude from doctors talking about autism, highlighting that ideas of a partnership between patient and doctor may vary according to context even with the same patient. She felt that this had a practical impact on how discussion of research was received in the clinical encounter.

> *"when I went to my autism assessment, I went in with my brand new book about women and autism… brand new, you know, probably the best research done for females – and there isn't really much – and I said 'erm have you read this?'! But they expect you to be like that, they deal with people like me all the time. And she said 'this is great, can I take a photocopy, we're going to order this" (HIS2)*

In this positive encounter, the healthcare professional not only welcomed HIS2 talking about research findings, but also used the patient's recommendation to add to their own evidence base.

It is worth noting that even a self-selecting research engaged sample such as the HIS participant group did not always want to talk to healthcare professionals about research. HIS3 stated that she was happy for her doctor to make major decisions about her knee surgery, and it was only after the decision was made that she went away to research what the possible impacts could be:

> *"I wasn't given the choice about whether I had both knees done together or individually because he just told me, and I went oh OK. And it was logical and it made sense"* (HIS3)

Overall, participants' experiences suggested that there was some motivation to access research in order to discuss it with healthcare professionals, and in that sense, open access would allow them to do this. However, interactions varied, and indicated that reactions vary dependent on the type of patient you are perceived to be and the context in which you were consulting a healthcare professional. This highlighted the existence of much larger societal barriers to engaging with medical research than can be solved by providing access to the research literature.

5.2.7 Supporting others to access research

Some participants accessed research in order to support peers or colleagues to make use of research themselves. These activities were either formal (with participants holding roles and responsibilities which required them to do so) or informal (with participants making the choice to do so). In the HIS group, several participants described themselves as being *"the one everyone comes to"* when it came to discussion of research, suggesting that some research users engaged in these activities despite not officially holding an intermediary role. Participants described pointing friends, family members and fellow patients in the direction of research, or supporting them to understand research.

> *"I've a friend who's had very bad experiences with male doctors; she has been on contraceptive implants which made her extremely anxious – it threw her into disarray. She couldn't find anybody who would engage, so I [looked at the research] and said, well you're not alone[…] persist in looking for an answer and try and strike up a dialogue" (HIS6)*
>
> *"If somebody puts an article on there… I also comment often when I say 'but that's from an American so and so, this will not be applicable here' and I just pull people back in and say 'be careful what you research" (HIS2)*

These two quotes offer different ways in which participants acted as informal research intermediaries. In the first example, HIS6 pointed a non-research-engaged friend in the direction of research, and used his own experience to advise on how she should approach dialogue with doctors. In the second, HIS2 advised a fellow patient who is already engaging with research by contextualising the study and highlighting its limitations.

Other participants, particularly in the EP group, held more formal roles as research intermediaries (EP5, 6, 8, ER5). EP5 was based in an individual school, EP8 supported a network of schools, EP6 ran freelance training sessions and ER5 worked for a third sector organisation supporting practitioners. They all delivered training sessions and answered enquiries from colleagues as part of their roles. Training focused either on delivering accessible sessions on a particular area of research literature (EP6), to supporting practitioners with searching for, finding and interpreting research publications (EP5, 8, ER5).

In some cases, supporting others to access research explicitly meant downloading research publications and sharing them with colleagues or peers. For example, EP7 described downloading a large amount of papers using her institutional subscription access, and saving them on her work server in order to make a *“kind of reading list type thing for staff”*. Similarly, EP8 described downloading papers to use in her training sessions with teachers and to answer enquiries. In other cases, it involved helping people to find freely available material on their own. For example, EP5 drew a clear separation between her own access (through her part time masters course), and that of her colleagues, who she taught to use Google Scholar.

> *“Most of our teachers start with Google Scholar, and then work their way from there. I usually go - if its something for my masters I'll go straight onto the university website, but we usually start from Google Scholar and go straight from there” (EP5)*

ER5 in particular articulated how important it was to teach the practitioners she worked with how to find free and open access material, and to make the scholarly communications system visible to those outside the academy.

> *“I want to teach them how to use Google Scholar, how to use Unpaywall, how to use repositories, where people are putting work…. and there’s the assumption I think that people… if they’ve been to uni, they know how scholarly communications work, and I don’t think they do” (ER5)*

The next section in this chapter looks more closely at perceptions of open access, and supports ER5's observation, emphasising how invisible this system seemed to many participants.

5.3 Open access

5.3.1 Perceptions of open access

At a basic level, the majority of participants understood that 'open access' to research meant research that was *"freely accessible online,"* which was perhaps unsurprising, as there was a brief explanation of OA provided on the call for participants. However, some expressed uncertainty about the details of why some research was accessible and some was not:

> *"Don't know if this is right, but I know that it's something to do with universities having to have a certain amount of the research that they publish accessible to the wider public, to show wider impact" (EP5)*
>
> *"Does academia.edu… where people put stuff up – I mean that's an example of it I'm guessing? Do you mean a particular forum?" (EP6)*
>
> *"I suppose the only way I'd come across it before is I think sometimes when I've gone into the University of X repository - erm - where some articles are made available there. Erm.. I think you're probably alluding to the fact that there's another another gateway into this which I'm not particularly aware of - I'd like to know more about! (laughs)" (EP8)*

Although EP5 had a basic grasp of why research might be open access, and linked it to the idea of wider 'impact,' for the university she thought that theses and journal articles would only be open access for a limited amount of time, which is usually not the case. EP6, on the other hand, associated open access immediately with academia.edu, and EP8 with her university's repository (which she had been told about by library staff). Both EP6 and EP8 acknowledged their understanding of OA was incomplete, and expressed a desire to know more about sources of OA research.

Open access is generally defined as “digital, online, free of charge” *and* “free of both copyright and licensing restrictions” (Suber, 2012). Participant understandings of OA focused heavily on the first part of the definition, and did not mention licensing at all. This does not mean that participants’ experiences had not been impacted on by open licensing – for example, licenses affect whether PDFs can be shared between multiple people, posted to academic networking sites or adapted into summaries or accessible resources. However, the lack of focus on licensing points to the need for specific research about the impact of open licensing outside academia.

Participants were not asked specifically about their understanding of mechanisms for making research publications open access (e.g. repositories, open access journals, preprints), but it was clear from their responses to other questions that there were varied levels of understanding across participant groups.

The MC participant group had a more detailed understanding than other groups of why some research was open access. As they worked in research funding organisations, several had printed out their organisation’s OA policy to refer to during the interview. Most were familiar with the Green and Gold routes, the payment of APCs, and how repositories functioned, especially Europe PMC. This may have allowed them to locate OA material more easily than others (through PubMed, Google Scholar and using browser extensions such as OA Button and Unpaywall), and certainly meant that they had more nuanced perspectives on the positive and negative aspects of the implementation of OA.

The HIS and EP participant groups did not have such a detailed understanding of OA. For many of them, ‘open access’ material was not necessarily restricted to peer reviewed journal articles and OA books, but encompassed anything that was freely available online and was related to research; including reports produced by a range of academic, government, third sector and corporate organisations, websites, clinical guidelines and teaching resources. Some participants in the HIS group were openly confused about why some research publications were paywalled and some were open access; with HIS3 asking for further information about repositories, only to ask *“but why bother to ask to pay at all, you know?”* Others speculated about the motivations for why academic publishers charged for access:

> *“Presumably someone has spent a lot of time doing this, and has got paid for it… so, I presume to recuperate that money, that’s why you charge money isn’t it?” (HIS1)*
>
> *“I mean maybe it’s to try and recoup some of the money that it’s cost for the research, I don’t know […] hopefully it’s not to put you off looking. I wouldn’t like to think it was that” (HIS4)*

The common-sense assumption made by HIS1 and HIS4 was that the scholarly publishing economy functioned by researchers being recompensed for their labour, through the sales of their publications. As such, they expressed sympathy for the process of charging for access. As Suber (2012, p. 10) asserts, the fact that this is not the case (researchers do not get paid for the articles they write; instead writing for reasons of career development or impact) is “nearly unknown outside the academic world”. Of course, this does not mean that open access is cost-free (see

Eve (2017) for discussion of costs and labour in scholarly communications). However, it does highlight the way that the complexities of scholarly publishing system do not necessarily translate easily outside the academy, and potentially impact on how non-academic users understand what they are accessing and reading.

5.3.2 Use of open access

It seemed likely that participants made use of at least some open access material. However, HIS4's description of her search process characterises the difficulty in ascertaining (through a qualitative interview) what type of material has been accessed.

> *"The internet is wonderful. Sometimes what I do is I copy the whole title and Google it and sometimes I get it free. Not always. It depends" (HIS4)*

A Google search like the one described by HIS4 would return search results from a range of open access journals, institutional and subject repositories, academic social networking sites and researcher webpages. However, without an understanding of the scholarly publishing system, it would be difficult for a research user outside the academy to identify when they were using open access material, and what kind of material it was. Using Google and Google Scholar played a major role in shaping this experience, and this will be discussed later in the chapter.

5.3.3 Political and ethical stances

As discussed in the literature review, the arguments in favour of OA are often characterised by strong political and ethical stances. These stances appeared in the interview data, but were not necessarily dominant themes. In general, MC participants expressed the view that the public (and especially their donors) had the right to access research that they had funded. This was sometimes discussed in the context of charitable funding; as their donors had contributed towards the research and therefore they deserved to access it. It was also pragmatic; as research funders their organisations had often contributed thousands of pounds towards research grants. It was therefore frustrating that they were expected to pay for access to publications as well.

> *"So, you know, we don't – we're not like a library – a university library… that is paying for subscriptions AND paying for open access fees" (MC1)*
>
> *"It is quite frustrating because obviously it's a little annoying to have funded some work; basically paid for it to be published and I can't see it!" (MC2)*

Other participants mentioned the use of taxpayers' money to fund research. A common argument in OA advocacy is that publicly funded research should be made available to the public (Davis, 2009).

> *"Like, I feel like don't I completely understand the justification for charging. But if it were the case that the publication costs were so high I'd like to see some evidence of it. When things are taxpayer funded, I have a real issue with that" (EP1)*

EP1 admitted that he did not know much about the finances of scholarly publishing, but felt that if public money was used, they should be more transparent. Others were even less sure about the role that taxpayers money played in research.

> *"Taxpayers money is used for all sorts of things. I didn't know it was used for – that there was specific research done with taxpayers money. But no, yeah, it's the same with any research – it ought to be available for the public"* (HIS3)

> *“Unfortunately in terms of medical research increasingly it’s not taxpayer funded and it’s one of the scandals of the modern age, that we’re giving over our medical care really to […] companies that have their own vested interest in what’s happening don’t they?” (HIS4)*

In the first quote, HIS3 explained that she had not known that research was funded through taxes, but she thought that no matter how it was funded, that it ought to be made available to the public. HIS4 dismissed the idea that research was funded by taxpayers altogether, instead pointing out the amount of research that was funded through private industry. Although they both thought open access was a good idea in principle, neither felt that as taxpayers they had been denied the right to access research that they had helped fund.

Participants seemed more likely to see research access as a benefit, rather than a right, with some describing themselves as lucky to have access.

> *“Sometimes I would use [my partner's] University of X account. I was very lucky to be able to do that” (EP2)*
>
> *“Yeah, I mean, I'm lucky because I get it as part of my uni but quite a lot of the stuff as an organisation, we are limited, yeah” (EP5)*

There was also very little suggestion that universities and publishers were behaving immorally by restricting access to research. Notably, even participants who had strong political views in other areas did not necessarily apply them to the scholarly publishing industry or to academia. For example, whereas the pharmaceutical industry was seen by some as unethical and potentially corrupt (HIS2, HIS5), researchers and the publishing industry were not singled out for criticism.

There were several exceptions to this. One was MC2, who cited an article that she had read in *the Guardian* about the profit margins of commercial publishers, and was shocked that at 40% they were *"more than Apple."* HIS6 was even more critical, describing academic publishers (and Elsevier in particular) as an "*invasive species,"* feeling strongly that they had "*hoovered up"* the papers that used to be available in libraries and enclosed them with digital paywalls. He viewed open access as an emancipatory project, which would allow people without university affiliation to participate in political and scientific discussion. EP7 on the other hand argued that academics who were interested in co-production and working with communities had a particular duty to publish open access and were hypocritical if they did not.

> *"I think the idea of academic knowledge vs community knowledge is a bit patronising if one partner in that doesn't have the choice of academic knowledge. It's not like a choice to have experiential knowledge – it's like, it's a matter of a massive paywall!" (EP7)*

Other participants commented that researchers should be held accountable for the research they produced, and that open access could be a way to do this. For example, both HIS4 and MC8 discussed needing a way for non-researchers to challenge unethical research, and to influence future research directions.

> *"One of the advantages of this ideal world in which you have the research out there and you have a kind of well informed, well-funded groups, challenging it and weighing the evidence and challenging for the world, would be lovely, 'cause then you could have a public mechanism of challenging what's happening" (HIS4)*
>
> *"the [new project] is is looking at physical and mental health but it's not really looking at [type of drug] and the impact on people's physical health. I feel like that's been sidelined. So it might be useful for me to be more informed in that discussion" (MC8)*

However, both also felt that there were barriers to being able to implement this type of mechanism, without more accessible research and support provided to read and interpret it.

Even when being critical of publishers and researchers that published in closed access journals, participants were not aware of the internal debates around different forms of open access (for example, the payment of APCs, the growth of hybrid journals or the popularity of open access mandates). This means that it was difficult for them to critically engage with the politics of scholarly communications in the same way as some researchers do.

5.4 Section overview

This section has presented participant perceptions of open access. Although there was widespread agreement with open access as a principle, a lack of understanding of how research was published and disseminated meant that they were unsure about why some research was open access and some was not. Access to research tended to be presented as a benefit rather than a right, even when discussing taxpayer funded research, and there was very little criticism of academic publishers or researchers that published in paywalled journals. There were some notable exceptions to this, with two participants in particular being heavily critical of academic publishers such as Elsevier and researchers who did not make their work OA.

The next section moves on to explore participants experiences of accessing research in more detail, highlighting factors that both enable and prevent material and conceptual access.

5.5 Material access

5.5.1 Levels of subscription access

Towards the beginning of each interview, participants were asked whether they currently had access to subscription resources. Whilst this was initially intended as a simple demographic question in order to provide context to their narratives, the amount of detail in many replies demonstrated that the distinction between “access” and “no access” was more complex than initially appeared.

5.5.1.1 Organisational access

Firstly, some organisations ‘outside the academy’ have their own subscription access to online resources through a library or information service. In general, participants did not report having access in this way (especially as the study did not include the experiences of NHS staff, who have access to subscription health literature). The exceptions to this were three MC participants, who had library and information services in their charity workplaces. MC1 felt that her library service did not subscribe to enough scientific journals to adequately support her work. MC3a, 3b and 4, however, spoke positively about their library service’s ability to source medical research if they required it. They saw their library service as an option to contact only if they could not find an OA version via PubMed or Google Scholar:

> *"So normally I would search it in Google, or I'd use PubMed, or that's the source I'd look for. And then look at which journal I could access it. And then if it's an article I can't access, then I would email our library service to ask them for that article" (MC3b)*

Although two of the EP participants also mentioned that their school libraries subscribed to some research publications, but these were extremely limited and generally more oriented towards the needs of pupils than teachers.

5.5.1.2 Individual access

Some participants also had individual access to some publications, predominantly through memberships of professional organisations. This was mainly the case in the EP participant group, where three participants had recently joined the Chartered College of Teaching. However, the majority of participants did not take out individual subscriptions to resources.

5.5.1.3 University library access

Participants across all groups perceived the most comprehensive access to research to be gained through HEI academic libraries. None of the HIS participants reported having this type of access, and only one of the MC group, who held an honorary fellowship university alongside his charity job. He found this to be very useful, but it meant that he was relied on to provide access for other colleagues. However, three of the EP participants had access to university subscriptions; two undertaking masters study (EP5 and EP8) and one having managed to negotiate an honorary fellowship in an education department after studying for a masters degree there, and holding a zero hours teaching contract, which at the point of interview she had just left in order to focus on her job in practice (EP7).

5.5.1.3.1 Institutional access at the edge of academia and practice

Looking closer at EP7's experience of negotiating an honorary fellowship so she could gain access to subscription resources highlights how difficult such opportunities would be for most people working in non-academic roles.

> *"[The fellowship] is for 3 years. I'm glad it's for three years because it was quite tricky to get set up. The criteria suggests that it would be somebody more well-known or notable than me! Or certainly they were a bit surprised that somebody who didn't have a PhD was even being suggested for it. So in terms of criteria indicating that it should be someone within the field - like somebody outside of academia, the way that it kind of went within the department… I think they were a bit too "but they're not an academic" which is like… which I find quite strange really when I think about it" (EP7)*

EP7 traced frustrating divisions between inside and outside the academy; showing how attitudes and cultures within the university can place barriers in the way of those perceived to be 'outside' its walls despite prevailing rhetoric around impact and engagement. In EP7's case, despite being nominated for a fellowship because of her work in practice, she encountered resistance from the academic department concerned when trying to negotiate access.

Demonstrating the blurred edges of academia and practice, similar negotiations were described by ER5 an education researcher whose research contract had come to an end and who had moved into another temporary role supporting practitioners:

> *"So - when I first left [my research post] my head of department said would I like to have university library access and do you want to keep your email address? I said yes, that would be great, so he signed a piece of paper, and we sent that off to the faculty. That got lost somewhere in the faculty; I had to chase them up about it. They said 'oh sorry, that needs confirming again… but by the way, it wouldn't ever give you library access'. Well, I said I don't want it then" (ER5)*

ER5’s discovery that library access could only be granted to those who left their academic role at professor level illustrated the temporary and contingent nature of institutional access, especially for those attempting to negotiate the current landscape of precarious and short term academic employment as early career researchers and casualised teachers, moving between short term contracts both in and outside the university.

However, the temporal aspects of research access also impacted upon those participants who saw themselves more firmly situated within practice. Many related stories of varied access over the course of a career, particularly those who had enrolled on postgraduate courses alongside their work.

> *“So officially I’m still enrolled as a student at the University of X, so I can still access… personally I can access all of you know – well, I’m a student, so – until I’ve graduated – until August, I’ve still got access to the library” (EP8)*
>
> *“[The Chartered College] is the most comprehensive search facility I’ve had since I stopped doing the […] diploma. That’s the thing about having that remote access and being able to use – I did that in 2006 or so – so I’ve had at least 10 years without access” (EP6)*
>
> *“In my previous job in a small learned society I hit paywalls a lot more often, and did find it very frustrating […] we had no subscriptions at all” (MC1)*

EP8 found her situation particularly difficult; her intermediary work relied on her having access to research publications to support teachers, but she relied on institutional access granted through her part time masters course, which was due to be cut off within months of being interviewed. As she did not feel that she could continue in her job without access, she was prompted to look around for other options; considering it lucky that the newly founded Chartered College offered access to education databases for 45 pounds per year *"as long as I keep paying my membership."* The Chartered College was clearly perceived as a positive solution, but EP8 emphasised that it was still contingent on payment, and was not useful if she wished to access research from other areas of the social sciences.

Unlike the EP group, HIS participants were less likely to reflect on changing access levels in the same way. This may have been because they did not work in roles that encouraged postgraduate study in the same way, or that more time had passed since they had engaged in formal education.

5.5.2 Other forms of access

Importantly, not having institutional or personal access to subscription resources did not necessarily mean that participants were cut off from research completely; as demonstrated by the workarounds discussed later in the chapter.

5.5.3 Searching for research publications

Participants were asked to consider a situation where they wanted to find a research publication; and to describe where they would go to find it. It was common for participants to respond that they went "online" (eg. *"We just find what we can online" (MC8));* after which they were prompted to give more details about which online tools and sources they would access first. The table below summarises the main sources mentioned by each participant group

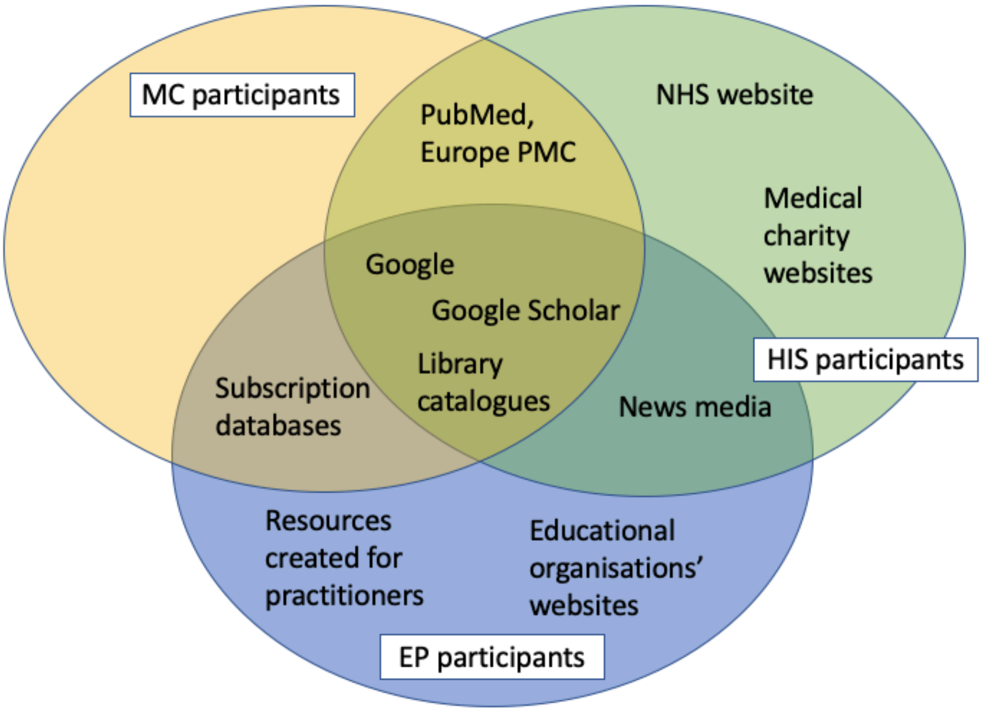


Figure 13: Key sources of research access

5.5.3.1 Google

For many participants, *"online"* was analogous to *"Google"* and a Google key word search was the most obvious means of finding research publications.

> *"I tried through just simple Google searches, you know, to type in "[chronic condition] and diet" or "causes of [chronic condition]" or "non-drug treatments for [chronic condition]" and that sort of thing" (HIS2)*
>
> *"We'd just Google [laughs, shakes head][…] [We] would just type in "asylum seekers" and "mental health" (MC8)*

Some participants were confident in manipulating their search practices to retrieve the information they wanted from Google – for example, HIS6 reported that he changed his advanced settings to *"only return PDFs"* in an effort to find more scholarly information, and EP4 described changing her search terms if she couldn't find the statistic she wanted. However, others were less confident about their search strategies. From the phrasing of the examples provided above, it was clear that HIS1 and MC8 felt that a Google search was not the most effective way of finding research publications. EP6 was even more explicit, making a comparison between her own search practices and the perceived expertise of a PhD student or researcher:

> *"[My search is] really random; I put in a few key words and I go… but it's nothing compared to doing a PhD and using search engines;[there] I anticipate you might construct what you're doing. I'm just wandering around in the forest collecting leaves!" (EP6)*

5.5.3.2 Google Scholar and Google Books

Despite sometimes expressing lack of confidence in searching, participants from all three groups felt that Google Scholar and Google Books in particular were valuable free resources, although Google Books only gave limited access to the full text.

> *"If I'm interested in finding out about a particular topic, I might do a Google Scholar search" (EP1)*
>
> *"I used things like Google Scholar as well, Google Books…" (EP2)*
>
> *"So whether that's [library catalogue], which is the University of X's library service search or Google Scholar depending on what it is[…] Yeah I don't know. Sometimes I find things that are actually just in books, and then you stick it in Google Books and you can't actually find the text that really annoys me quite a lot" (EP7)*

Google Scholar was cited as an important tool for teaching colleagues and peers how to find open access material, and MC1 mentioned that Google Scholar was useful for *"digging stuff out of institutional repositories"*. For others, the fact that

Google Scholar returned research publications from institutional repositories as well as publisher websites was evidently not obvious. A brief explanation of this was given to several participants during their interviews, and they expressed surprise and interest in finding it out.

5.5.3.3 Library catalogues

Participants who had institutional subscription access stated that they regularly searched academic library catalogues (although several mentioned that they turned to the library catalogue only if they were not able to find an open access version through Google Scholar). Other types of library catalogues were also mentioned. For example EP2 and EP4 occasionally used their school library catalogues, whereas HIS6 visited the National Library of Scotland.

5.5.3.4 PubMed and Europe PMC

The MC participants overwhelmingly reported PubMed, PubMed Central and Europe PMC as the first ports of call for online medical research, with Europe PMC referred to specifically as a source of open access research. Some participations also used PubMed in conjunction with Google Scholar (MC3a and 3b) and some in conjunction with other databases (MC7). Participants generally felt that PubMed indexed most of the research that they would need to access (although not necessarily providing full text access to all of it). There were, however, exceptions to this – MC4 felt that PubMed was *"too biomedical,"* as she wished to access social care research, and therefore tended to use databases subscribed to by the charity's library service. The significant reliance on PubMed by most participants raises the question of whether research that is not indexed by PubMed is much less likely to be seen by medical charities. It also raises the question of whether charities and organisations concerned with areas outside medicine would have such an obvious ‘go-to’ source for OA research.

For example, MC1 commented that although she could find a lot of the medical research she needed via Europe PMC this was mainly because the charity’s OA policy *required* researchers to deposit their work into this repository. When she tried to find research on non-medical topics, including (ironically) scholarly publishing, she started to hit more paywalls:

> “*You’d be amazed the number of times you try and read articles about open access and discover they’re behind a paywall […] sometimes I do just want to email the authors with – like – a big ‘DOH’” (MC1)*

5.5.3.5 Other sources

Whereas MC participants predominantly searched on PubMed, Google Scholar, library, subscription databases, the EP and HIS groups also reported using a range of trusted websites to find research articles. For HIS participants, these included medical charity sites, individual researcher pages, government websites and news platforms. EP participants appreciated the websites of organisations such as the Educational Endowment Foundation and National Foundation for Educational Research, as well as research resources created by university researchers for practitioners, and specialist press such as the *Times Educational Supplement*. EP participants were generally confident that these organisations were trustworthy, and that publications would be accessible and easy to find.

All three groups reported using a mixture of search engines, specialist databases, library catalogues and trusted online resources to find research publications. When reviewing this range of sources, it is evident that some OA material was being accessed, alongside subscription material and grey literature.

5.5.4 Encountering paywalls and paying for access at article level

All participants were familiar with the concept of a paywall, and most had encountered one as they tried to access scholarly research, although with varying levels of frequency. Many expressed frustration with the situation.

> *"If I find something I like, it will invariably be behind a paywall" (EP1)*
>
> *"We know how to use Google Scholar, so we can find open access journals, but quite often the one we want, you have to pay twenty quid for!" (EP5)*

Others (EP3, HIS5) did not experience as much frustration, being aware of paywalls but preferring to access free and trusted online resources, or to read research mediated by charities and the media.

Despite encountering paywalls, very few participants indicated that they would be willing to pay for an individual article. Some expressed shock and disbelief at the price stated on publisher websites, whereas others had not paid attention to the costs. This suggests that making costs for individual articles cheaper would not necessarily improve access, as participants were often put off by the existence of the paywall itself, rather than the price.

> *"If it was like 50p or something, or even a pound, but it's usually like twenty... it's like the price of a book!" (EP6)*

> *“I don't pay for content because, generally, I don't know how affordable it is, to be honest, I don't ever go as far as actually finding out how much it would cost, I've no idea what the costs are, whether it’s like a tenner or something?” (HIS2)*
>
> *“I’m not prepared to pay – I don’t know, I can’t remember how much it is, probably not a lot, but if you’re doing that each time, and it’s just for your own personal interest or use, then you know, it seems a bit much. And it might not even give you the answer that you’re looking for anyway” (HIS3)*

Although charity participants were more likely to be able to access funds to pay for individual articles, they resented having to do it. Several raised the issue of charitable funds, arguing that buying access to research papers was not seen as a worthwhile way to spend the money they received from donors:

> *“I mean we’re a charity, we can’t spend people’s funds on getting access to papers that we’ve probably paid for in the first place! Yeah, cos that would be – I think they’re about – some of them are like twenty to thirty dollars. And that’s a lot… especially if I read, like, five a day!” (MC2)*
>
> *“We have to kind of balance to see… it's difficult because we're working in the charitable sector. You are always conscious about when you are making a request for resource. You just have to balance it and think ok you do need it” (MC4)*
>
> *“When it comes down to it, it is charitable money. We have to justify every little penny. And it's quite a considerable expense” (MC6)*

Even participants who currently benefited from university access were also aware from colleagues’ experiences of what it would be like to not have access. For some, this led to feeling lucky; others to a greater awareness of what they perceived to be an unfair situation.

> *‘Obviously because I have the contract at [London HEI], I’m able to access journals really easily actually, but if I didn’t then it would be an absolute nightmare, and Europe PMC would probably become my only port of call, actually, to access those articles” (MC5)*

> *"And I am reminded… like how ridiculous that is and and how prohibiting that must be for pretty much anybody. I don't believe that anybody's paying that money! I can't imagine anybody is paying that money" (EP7)*

5.5.5 'Workarounds' (human and non-human)

Unwilling to pay for individual articles, participants described a range of 'workarounds' (ways in which research publications could be accessed without payment). Some of these were tools allowing participants to access OA publications. For example, several participants reported using browser extensions such as Unpaywall or the OA Button.

However, these browser extensions specifically designed to find Green OA publications were only familiar to members of the MC group; familiar with research and accessing articles on a day-to-day basis for their jobs. More often, participants drew on human contacts to provide them with access. This was sometimes the researcher who had written the article, or other researchers, healthcare professionals or students known to the participant. HIS1 described himself as having *"quite a large pool of people to call on"* through his voluntary work at a medical charity, and EP8 described writing a *"flattering email"* to the author of the article asking them to send a PDF.

It was clear that many participants were familiar and comfortable with the custom of contacting the author, and had networks of friends, family and colleagues with institutional access to call on. However, this suggests that those outside the academy with less connection to academia could be severely disadvantaged. The experiences of HIS2 and MC8 highlight this. HIS2 shook her head, laughed and said *"I need to make some more friends I think!"* when asked whether she had people she could ask to send her PDFs, and MC8 replied that he could not think of any methods of getting a free version of an article, commenting that *“we’re not skilled navigators, in that way, at research.”*

5.5.6 Perceptions of research sharing and copyright

All participant groups demonstrated a certain level of ambiguity around whether or not they were permitted to ask others for access, or to share articles that they accessed through their own institutional logins. MC participants were generally very confident about requesting access to articles from authors or from friends and colleagues with better access. Most of them perceived themselves as either part of, or adjacent to a scholarly community where this kind of communication and sharing is part of normal practice.

> *“There’ll be a friend – somebody who’s still connected… a friend who’s still at a university who’ll get the PDF for us. Because again most of us who work in research management or research comms have that kind of scientific background”* (MC6)

Several patient and educator participants, however, expressed more general concern about the legality of accessing and sharing research.

> *“I’ve got some friends who are university lecturers. I’d often drop them a line asking whether I could cheekily use their online access. But it’s not nice to rely on it.”* (EP1)
>
> *“I’m also wary of sending round journal articles which I probably shouldn’t have hold of” (HIS1)*

Other participants acknowledged these concerns but felt that it was worth risking potential copyright infringement. EP8 justified using her own university login (as a masters student) to support the teachers she was working with in school, and EP7 asserted that she would use her partner’s login details if necessary in order to do her job (EP7):

> *“I’ll download it and then I'll send it - that's probably breaking the rules because I've gone into something that I've personally got access to… I recognise that but actually if I am supporting a teacher in the classroom… you know as a justification it's part of my job to make sure they get the information they need” (EP8)*
>
> *“he was like oh you can just log into my account and use mine which I know that a you're not meant to do but a) I know there are loads of people doing that, and b) I felt a bit and I guess I felt really pissed off that that was a conversation we had to have. I felt that I should - that I was owed the access” (EP7)*

Both these educators acknowledged that they were not supposed to access and share research in this way, but felt strongly that they should be able to. Similarly, HIS6 referred to values around public education to justify asking his friends for access, and perceived sharing login details and PDFs as akin to borrowing a book.

> *“I beg and I borrow. And I see it as the work that I do is about public value. And I think that the intellectual realm should be available to us. Obviously if I were to take this stuff and profiteer from it, that’s not something I’d like either – but if someone has access, I’ll just say – you know, like I would borrow a friend’s book…” (HIS6)*

It was evident that sharing login details and PDFs was common practice, and that to a great extent, worries about copyright infringement did not prevent it. However, it did prevent sharing in a more formal context. Although MC participants were happy to share among their own community, MC2 acknowledged that she was not comfortable with sending a copyright infringing article to a patient that requested it using the charity helpline. This indicates that sharing practices may only facilitate access within certain communities and leave outsiders without access.

5.5.7 Pirating research articles

There were surprisingly little discussion of Sci-Hub and other large-scale sources of pirate open access. This may have been for a number of reasons. Firstly, many of the interviews were conducted before Sci-Hub received mainstream media coverage (Stewart, 2016), so might now have heard of it. Secondly, participants may have been wary about talking about accessing articles through pirate websites, and only referred to them non-specifically. This seemed to be the case for MC6, who had previously been in a research role in a developing country, and was clearly familiar with strategies for getting hold of research articles.

> *“There’s millions of ways [to access research articles]. You know, also I was in [developing country] previously in a disadvantaged university. We had to do things like that. I mean, so I know how to do it, but its not necessarily the best way[…] I mean, I’m still not sure of the copyright thing when people upload their free text on ResearchGate!” (MC6)*

However, it is likely that many participants (especially in the HIS and EP group) just did not know about Sci-Hub at all, as its articles do not appear on Google or Google Scholar search results, and its domain name is constantly changing (Russell & Sanchez, 2016). Two participants did discuss Sci-Hub and other sources of pirate OA.

> *“There’s another one, a Russian one – my friend told me about it, which is terrible because he works for [academic publisher] and he was like ‘here just use this’! But I wouldn’t use it in [the office] – I wouldn’t want to associate our name with the practice, because of copyright” (MC2)*

> *“So there was another there was another few places that I certainly have found things. But I know that they're like… illegal? Or semi legal. And I can't remember what it's called. But like… somebody who will remain nameless invited me to an online sort of online eBook… what are they called… pub files? like Kindle files? A repository that's basically like invite only - there's thousands of people on it but you have to be invited” (EP7)*

In these two quotations, both participants were aware of and made use of file sharing sites such as Sci-Hub, and both were aware to some extent that they were breaking copyright restrictions. Neither indicated that this would stop them using the sites for their own personal use, but MC2 expressed concern about using it at work, and EP7 did not want to reveal who had added her to the file sharing site. Without denying the undoubted ability of Sci-Hub to meet many access needs, the general lack of knowledge of the site among most participants and concerns expressed about legality suggest that they do not break down access barriers completely.

5.5.8 Social media and academic SNS

Although not often the primary source for finding research articles, participants also reported using social media such as Twitter and Facebook (HIS and EP group) and academic social networking sites such as Academia.edu and ResearchGate (EP and MC group). Some participants (MC1, MC6) described using social media in a purely transactional way; for example, using hashtags such as #icanhazpdf to request access to journal articles. Others used social media in more of a social and in-depth way, forging connections and taking part in either informal conversations or organised ‘chats’ about research, and sharing articles themselves.

> *“But that is certainly a feature of Twitter, […] but I can go - cos I'm so noisy and I manage to make all these kind of contacts, there are quite a lot of quite serious academic people I can say 'hello!' help!” (EP6)*

> *“So this Facebook group is a parent group for parents with children with [chronic illness][…] And so through my work, I come across quite a bit of research anyway and I tend to post articles on there” (HIS2)*
>
> *“I had an academia profile when I was a teacher, it obviously wasn't aligned to a university, it was an independent academia.edu site, erm... and yeah I suppose I used that to gain access to other research and to try and build a bit of a profile as a teacher researcher and somebody who's trying to sort of establish themselves within an academic community at the same time” (EP2)*

The three quotes above refer to different social media platforms; Twitter, Facebook and Academia.edu, a platform focused on research sharing. All three participants used the platforms to develop relationships and community with researchers and/or other research users, with sharing and accessing research publications playing a part in that experience. Social media here can be seen as a technology and facilitating communication within and across social worlds (Garrety & Badham, 1999), rather than a simple workaround. In HIS2’s case, the social world (parents of disabled children) existed on Facebook for sharing stories and information, and for finding people with similar experiences, with research sharing and access a byproduct of its primary purpose (HIS2 later admitted that engagement on the research she posts is very low). However, the social world of ‘research engagement,’ where practitioners were able to communicate with researchers, centres the experience of sharing and accessing research, as well as engaging in discussions about it. EP6 particularly benefited from this, describing personal relationships that she had built up with researchers on Twitter, and how they steered her in the direction of certain areas of research:

> “*He’s someone who knows a lot more about certain issues than I do, and is very measured and very tempered. He’s one of my gatekeepers”* (EP6)

Participants also described using academic social networking sites, such as Academia.edu and ResearchGate. For EP2, as an aspiring researcher working in practice, his Academia.edu profile allowed him not only to access publications but also to develop his own reputation and to build community. In contrast, EP6 used Academia.edu only to follow researchers and access research publications, joking that her followers would be *"waiting a long time"* if they expected her to publish anything. Neither brought up any issues related to copyright infringement when discussing the benefits of these sites.

It is important to note that despite social media being an important way of enabling access for some participants, others did not use social media at all, associating it with online misinformation, or with sharing experiences and stories rather than research publications.

5.6 Conceptual access

This section moves from considering material and technical aspects of open access to the question of conceptual access. Participants were asked about their experience of reading research publications, their encounters with lay summaries or other forms of research mediation, and how they decided whether or not a research publication was trustworthy. The following sections will present key findings relating to these discussions.

5.6.1 Perceptions of language and structure

The varied levels of expertise and education among participants meant that they reported different experiences in reading research publications.

The majority of MC participants had postgraduate scientific qualifications, and some had experience of working in academia themselves; therefore they unsurprisingly felt that they had gained the required expertise to read and understand research publications. MC2, for example, described herself as a *"seasoned pro"*. However, many commented that the level of specialisation required for some disciplinary areas (e.g. genetics) meant that they still found it difficult to read articles outside of their specialism. The following quotations demonstrate how even among experienced science communicators, reading a research paper may have to be a collaborative process, with participants drawing on the expertise of colleagues to make sure that they have interpreted the findings accurately.

> *"The only ones I hate are Cell papers because they've got so many findings! And they find everything [laughs]. And I'm like 'I don't know' – even my medical director, I gave him a Cell paper, I said I think I've got this, but can you just read this and tell me what the most important bit was, and he was like 'who knows?" (MC2)*
>
> *I don't find them that easy. I think often they're trying to say a lot of things and they say it in a very complicated way. And sometimes it can be - it's easy to misinterpret what they're trying to say; so it will take me trying to read it a few times and then having someone else read it, I think, and then going back to them...then getting a different story or getting the same story to see if you're on the right page (MC3b)*

However, most of the HIS participants, except HIS4 (who was a retired GP) felt that the scientific language and the formal structure used in research article were a barrier to understanding. They described developing ways to navigate research publications despite not understanding all of them, missing sections that they did not understand, or asking other people for help.

> *"all of it's quite heavy on the medical jargon… erm, some of it I'd say is beyond my understanding" (HIS1)*

> *"My twin brother […] would send me articles… but when the first – when the biology came in I thought, oh, this is all chemical! But then you get to the bit where you could understand. And he said ask if you want" (HIS3)*
>
> *"I mean I didn't[…] I wouldn't want to understand the actual chemistry of it all, like stats. But it was the result of that, how they might come out[…] the application of it" (HIS5)*

However, there was a general perception that scientific language was necessary in medical research, and that lay readers who wanted to engage with it would have to make the effort to learn at least some of the terminology.

> *"You know, as far as necessary jargon is concerned, I think that's absolutely fine, scientific terms needs to be scientific terms but there is no way that you can 'patient' them and patients have to probably learn some of the terminology"" (HIS2)*

HIS1 and HIS6 both described how they had built up this type of expertise over time. HIS1 begun by reading research on his own, but it became much easier for him when he was able to be involved in the research process itself. He then became familiar with the terminology and processes of medical research, which in turn helped him to read research.

> *"One the contacts that I made through the support group is a [clinician] who asked me to sit on the… to help with some clinical trials research. So I became a lot more familiar with how it works that way[…]And that started me with randomized controlled trials and all the rest of it really…" (HIS1)*

HIS6 took a more individual approach, systematically practicing until he became adept at reading medical research. He described this process in detail:

> *"I remember buying my first book, and this was when I was trying to understand – erm – very much sort of personal circumstances to do with*

> *mental health, addiction – well, I couldn't read a whole paragraph! I couldn't understand it" (HIS6)*

HIS6 went on to relate how over time he taught himself to read research publications through practice:

> *"The beauty about it is in the academic traditions – er – well written research refers to – explains what it's talking about. It refers to principles, it refers to landmark research, so there's always a way forward, or a way for me to further understand the next step I need to develop an understanding" (HIS6)*

Rather than finding the norms and conventions of academic writing off-putting, he appreciated the structured nature of the publications and talked about them very positively, even going so far as to claim that he enjoyed reading medical research articles more than anything else.

The EP participants did not find specialist language to be as much of a barrier to access as the HIS participants did. This may have been partly because many of them had studied education at postgraduate level and partly because they perceived that there was more research aimed at a practitioner audience or using more accessible qualitative methodologies. Their discussion of reading research was therefore more nuanced. For example, EP1 criticised journal articles that *"had very long discussion sections that don't seem to go anywhere"* and abstracts that *"don't really tell you anything."* EP7 felt that although she liked educational theory, it was *"overly verbose,"* and *"didn't need to be so complex."* In a similar way to the HIS participants who glossed over sections that they did not understand, EP6 described *"skimming"* over the methodology section, and *"cherry-picking"* types of research that she found more accessible, but she reported enjoying reading qualitative and ethnographic work with *"stories of kids in."*

EP5 and EP8, who acted as research intermediaries within schools, both felt that they could engage with educational research relatively easily. They felt that their experience studying a part time masters had made this possible, with EP5 joking about putting her *"masters hat"* on when she was reading, and EP8 commenting that her brain had *"reawoken"* to academic language through her studies. They both, however, felt that there were conceptual barriers to access for the colleagues that they supported:

> *"It's probably those people who've been out of academia for some time - erm - who perhaps are more phased - erm - by it, by the language" (EP8)*
>
> *"I know that its structured for academic purposes and there's kind of a way that things are written, and kind of a way that things are done, but if I - I don't think if I wasn't doing my masters, I would find it particularly accessible, if that makes sense. A lot of our teachers admit that they just read the abstract and the conclusion!" (EP5)*

5.6.2 Statistics

As well as language, statistics were also a real barrier to some participants, who did not have the skills to interpret them. This was true of EP as well as HIS participants.

> *"I mean there was no way I could – I mean I'm not a statistician. So anything with tables, you know – I mean a lot of the stuff in the BMJ, I will read the abstract and I'll ready the conclusions. But the tables in between I ignore" (HIS5)*
>
> *"The trouble I have with quantitative studies is that basically I'm not from a quantitative background, and I get confused. Probably a stupid thing to say I know but I just think... you know[…] I don't know if I'm being misled sometimes…" (EP1)*

Whereas HIS5 dealt with her lack of understanding of statistics by missing out anything that she didn’t understand and moving straight to the conclusions, EP1 felt he would rather understand the whole article, and therefore preferred to read qualitative research. This may be due to disciplinary differences, as in medical research there is less likely to be a qualitative option to choose whereas education as a discipline produces a range of both qualitative and quantitative research.

Whilst some participants felt quantitative research and statistics were insurmountable barriers to understanding, others felt they had the statistical literacy to make sense of them.

> *“I want to see more of the actual statistics, probably just partly because I'm a mathematician I'm particularly bothered sometimes about it being discursive and not actually seeing the data” (EP4)*

For EP4, statistics were often the reason she wanted to access research publications, either to find figures to use in reports or presentations to parents or colleagues, or to dig into the findings presented at a more surface level in the media.

5.6.3 Emotional responses to research

This chapter has already touched on the way that some participants found reading research to a positive emotional experience, either because they felt that it was reassuring to be informing themselves in this way, or because they felt that certain research papers were well written and enjoyable to read. However, some described less positive experiences. For example, some mentioned frustration at having to *“wade through”* information to get to the findings (HIS3), or not to get an explicit answer from an inconclusive paper (HIS1). Others expressed anger at the way research was written.

> *"I mean, some of the stuff I read on my masters was just pure narcissism […] I kind of was like... I was almost offended! Do you know what I mean?" (EP2)*

Reactions from several participants highlighted the significance of representation in research publications. EP3 expressed his dislike for research into the effectiveness of teaching assistants, feeling that it portrayed his teaching assistant colleagues insensitively. Similarly, EP5 described a negative reaction among from a colleague towards an article in published in British Educational Research Journal about teaching quality in different types of schools. Whereas she had seen it as a piece of abstract evidence, her colleague interpreted it as an attack on their teaching quality.

> *"[The article] said that the teaching quality in more affluent schools is better than the teaching quality in more disadvantaged areas. And she said don't you think you are going to offend people? Because […] you know, you just basically had a go at our staff as not being so good at teaching" (EP5)*

MC8 also mentioned representation in medical research, pointing out that the patient group that his charity supported felt alienated and dehumanised by their depiction in scientific literature:

> *"I suppose…I dunno… for a lot of people research is about them, their diagnosis, it's not presented in a kind of warm way… away that makes someone feel good about themselves, that in itself is offputting" (MC8)*

Both positive and negative emotional responses to reading research highlights that conceptual accessibility is not only a matter of adjusting the reading level of the language and removing jargon. Instead, it draws on more complex interactions with the material, including issues of representation.

5.6.4 Lay summaries

Lay summaries attached to individual journal articles have been proposed as a way of increasing conceptual accessibility (Nunn & Pinfield, 2014). Participants were asked whether they had encountered lay or plain English summaries attached to journal articles. The MC group were the most familiar with them, with many having had experience of writing them, and this will be discussed further in Chapter 6. The HIS and EP participant groups had generally not encountered them, instead replying to the question with examples of other forms of translated research such as charity websites, conference presentations and practitioner magazines. For the few HIS participants who had encountered lay summaries, they were associated with the *BMJ*.

Despite not having encountered them, HIS participants felt that lay summaries would generally be helpful, if not for themselves, for people who were not as experienced at reading research.

> *"Yes, I think it could be [helpful]. Yes, because you know, these days, everybody pretty much has a computer. And everybody can search for certain things […] you need to make sure that everybody, wherever you are in the – in the ladder of understanding, can understand what they're reading" (HIS3)*
>
> *"Usually there's enough [in a summary] for my purpose. Because I'm not going to do anything with the information, I'm just going to say oh that's interesting. And perhaps, I think if there's something about diabetes, and perhaps I ought to mention that to the practice nurse" (HIS5)*
>
> *"I personally can handle an abstract, that's fine for me, but then I think there are a lot of people who couldn't and for who it would be much better to have*

> *something in a bit plainer English because sometimes there's actually no need for the jargon" (HIS2)*

However, HIS4 expressed doubt about whether patients who were not interested in reading research articles would be more interested in reading summaries, commenting that people seemed to prefer to read newspapers. And HIS6 felt strongly that there should also be a page of *"explanatory notes"* to *"bridge the gap"* between the summary and the full research article.

Some offered opinions on who would be best placed to write summaries, with HIS3 believing that it should be a PhD student's job rather than a more senior Professor's as they were *"not as much in the Ivory Tower,"* and HIS4 suggesting that researchers should co-write them with patients. They also raised concerns about the risks of oversimplifying research for a lay audience. These comments reflected the respect that HIS participants had for researchers, but also the perception that their expertise meant they were less able communicate with audiences outside the academy.

The EP participants were even more unfamiliar with lay summaries, although when introduced to the concept, some thought they were a good idea for increasing conceptual accessibility and saving time.

> *"Something like you're describing like that would be useful, save a lot of time, actually" (EP1)*
>
> *"I would find them useful... because I can encounter more stuff; its that breadth depth thing, I suppose" (EP6)*
>
> *"If that is something that exists then that's really interesting because I haven't ever seen it!" (EP7)*

> *"But that would be absolutely brilliant; erm - you know, if every article had to have - that looked like it would be relevant to a practitioner audience - if there was that there, that would be really good" (EP8)*

EP7, however, although expressing an interest in summaries, also commented that the focus should be on making research articles themselves more accessible.

> *"I would say why didn't you do it like that in the first place? (Laughs) Erm... yeah, no I think that is useful, but I said I think that people should be writing in that style as much as possible anyway" (EP7)*

Overall, attitudes towards the idea of lay summaries were positive, although most HIS and EP participants were not aware of their existence before the interview. However, they expressed nuanced opinions about the benefits and risks to summaries, as well as who had the responsibility of writing them.

5.6.5 Evaluating and trusting research

As well as being able to understand the content of a research publication, conceptual access to research also requires readers to be able to evaluate its quality, and decide whether or not to trust it. Participants varied over their approach to evaluating the research publications they accessed and read.

The MC participant group in general described evaluation and appraisal processes similar to researchers, noting the importance of aspects such as peer review, methodology and sample size. MC5, in particular, was interested in critical appraisal, and was involved in a project to teach other staff members at her organisation how to critically appraise research articles. MC2 also drew on discourses of open science, explicitly stating how she did not consider the impact factor of a journal when evaluating the content.

> *“I’m not one of those people who goes well the impact factor of this journal is X so I trust this, because I know having worked at a journal that that’s rubbish”(MC2)*

Some of the HIS and EP participants also engaged in these practices. However, they also discussed a range of other factors that would influence trust in a research publication. HIS participants tended to be cautious about what to trust. They were aware that not all publications that appeared to be scientific could be trusted, and were particularly suspicious of anything that seemed to relate to alternative medicine, or where they could not verify the credentials of the author.

> *“I quite like alternative things but their publications are not scientific and so if you see something that’s got the word ‘natural’ in it, you sort of think no that will not be, you know, a BMJ type thing or a Lancet type thing” (HIS2)*
>
> *“There are people who have just published books and they’re a doctor of this, when you actually look into what they’re a doctor of they’re probably not qualified to talk about what they’re writing about” (HIS1)*

In practice, this made several of them cautious about any research that was not published by researchers in well-known UK or US institutions, and published in well-known venues such as the *Lancet* and the *British Medical Journal (BMJ).* Publications from elsewhere in the word were often deemed as less trustworthy.

> *“So generally, if its from a university, especially in Britain and America, which is where most of the research for [my condition] comes from, that’s kind of a good start” (HIS1)*
>
> *“I would tend to be more sceptical, I suppose, if it was done in Outer Mongolia or somewhere like that. Not to say there aren’t people who might be very clever in their particular field in countries like that , but places like that… they’re not the ones you hear much about” (HIS3)*

This caution reflects a global scholarly communications system which undervalues research which does not come from key Western centres, particularly research from the Global South, and suggests that these structural inequalities continue to be upheld when research is made available outside academia.

They also made it clear that although they felt that for the most part they could judge the quality and trustworthiness of research articles, not all people in their position would be able to, and there was a risk of misinterpretation.

> *"A lot of people[…] tend to just believe there's a cure for it or are looking for every possible bit of information to cling to" (HIS1)*
>
> *"That's the risk really, at the end of the day, of having this information accessible but I think there's no way round it" (HIS4)*
>
> *"People barging into medical spaces demanding 'I want this drug, or that'… it puts the onus back on the patient to understand that this is a complex job. There aren't lots of certainties" (HIS6)*

Some EP participants had a different perspective altogether. When asked about trust, many of them felt that 'trustworthiness' was not a key consideration for them. Instead they changed the question to one of context; and asked whether the research be would be applicable in the context they were working in.

> *"The thing is, because I'm teaching, your practice is - you know - closely, intimately related with what you do day to day, very often you just go with your gut. Whether you like what you read or you don't like it" (EP1)*
>
> *"I guess if I could see it playing out in a classroom effectively, then I would be more likely to trust it" (EP2)*
>
> *"If something says it was tried in 100 schools and they say it's OK-ish, or 2 schools and they say it's amazing then I'll do the 2 schools one" (EP3)*

This was not the only aspect of trust that EP participants mentioned – for example, EP7 mentioned peer review, EP3 trusted research that was produced by university education departments rather than the government, and EP5 preferred research that was in a journal, or produced by organisations such as EEF and NFER. However, it was a noticeably different attitude that was not found in the health domain at all. The difference in responses may relate to differences between health and education research. Whereas medical research could have serious consequences for health decisions, education research was seen to have less of a serious impact.

EP participants also commented on the existence of private educational companies who produced research, or information that claimed to be research-informed:

> *"Obviously very wary of anything that just appears on a website that might - so, is where you're looking at the piece of research, is it an actually a marketing website that's trying to sell a different particular intervention, so is the research actually market driven, you know, trying to - erm - say here's the research that says this intervention is the best thing since sliced bread" (EP8)*
>
> *"I don't trust corporate websites that have lots of adverts down the side of the page" (EP3)*

The lack of trust in commercial research organisations was similar to HIS participants attitudes towards the influence of the pharmaceutical industry, with both groups feeling that it led to biased findings and conflicts of interest.

5.6.6 Preference for accessible research

Although all participants had experience in accessing formal research publications, many in the HIS and EP groups expressed a preference for research that had been made accessible for a patient or practitioner audience. In many cases, they still counted these sources as a "research publication," whether this was a write-up of a study in the *Guardian* or the *Times Educational Supplement,* a research-informed book aimed at the parents of autistic children, or a website produced by a medical charity or slides from a conference presentation. This highlights the importance of providing open access alongside other forms of research communication, as even self-selecting research users often preferred to read something more accessible.

5.6.6.1 The press

As readers of research articles, interviewees accessed and read coverage of research findings reported in publications/on online news platforms such as the *Guardian*, the *Telegraph* and (for the EP group), the *Times Educational Supplement* and *Schools Week*. In some cases, it seemed as though interviewees did not make a distinction between news coverage of research findings, and research articles themselves, especially when reflecting on their preferred sources of research information:

> "*If it's the Guardian, then they've got a special supplement – I mean – it's usually quite good isn't it? There was something – I'm trying to think – there was something last week[…] it was directly relevant. I think it was one of those little supplements you get in the G2. (HIS 5)*
>
> *"So the TES is really good for research on - erm - all kinds of things, and that would probably be my first one, just because it's easy to search for something - and then they might have reports or articles from years back on their online website" (EP4)*

HIS4, on the other hand, explained that although she liked to go straight to the research literature, she felt that many others with her condition were much more likely to read news media first:

> *"We've got a forum in [our patient support group] we're supposed to bring in articles of interest that we may have read and people bring in Daily Mail articles in there. So I don't think – I haven't come across highly educated people […] who are reading all this stuff" (HIS4)*

When questioned further about the distinction between journalism and research literature, attitudes towards the former tended to become sceptical even among those interviewees who valued news coverage of research. For instance, HIS5 worried that the Guardian report was *"full of adverts"*, and EP4 described how she did not feel she could use newspaper articles as trusted sources in her work, employing a complex search strategy to find articles that she felt to be more reliable:

> *"A lot of the time I would find an article but didn't really feel I could use the statistic in the headline so then I would google the name of the person - so often there wasn't a list - I would google the name of the person who produced it and usually would be able to find something better than the nasty Daily Mail article*[2] *that I'd originally happened upon" (EP4)*

HIS6 was even more critical of the press, describing journalism as *"infotainment,"* and "*mushy pap"* and expressing concerns about biased reporting and lack of referencing:

> *"Journalism. You can read a lot but learn little. And it rarely ever gives you insight into where else you can go to learn more" (HIS6)*

Other interviewees also reported that they valued the ability to follow linked references, not only to verify what was being reported, but also to provide new routes of enquiry. HIS2 reported that she valued the "*further reading"* that references

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[2] Of course the news media is not a monolithic entity; EP4 is referring to the tabloid press here as being particularly untrustworthy and malicious, but she also perceived other news organisations to have similar flaws and biases.

provided, whereas EP5 felt that the inclusion of references made online sources more trustworthy.

5.6.6.2 Medical charities

The HIS participant group[3] also accessed and read translated research produced by medical charities. Some interviewees felt that medical charities produced trusted summaries of research articles (more than the press), and valued their work:

> *"The [name of medical research charity] – I would definitely […] trust those, because they do a lot of research and you can see who they give research grants to…" (HIS4)*

Here, HIS4 felt that medical charities were trustworthy because they funded research as well as communicated it. Interestingly, she also used the discourse of openness and transparency, trusted the links the charity posted because of the open data that it provided about its research funding activities.

However, others felt that the information provided by charities were not detailed enough compared to research articles, and perceived individual charities to be untrustworthy due to past experiences as a patient volunteer. This emphasises how perceptions of information provided by charities (whether positive or negative) was shaped not only by what they wrote, but about how the organisation was perceived more generally. It is also a reminder that several HIS participants were actively involved with charities,

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[3] The EP participant group also read research produced by charitable organisations such as the Education Endowment Foundation, but this tended to be full reports rather than news coverage of research findings,

As respondents who had expressed an interest in reading academic research articles, it is perhaps unsurprising that some perceived other sources of online information as being unsatisfactory – this is what had led many of them to seek out research in the first place. However, the fact that several mentioned news platforms and charity websites as key sources for research information and frustration indicates that it may be valuable to provide a link to an open access version of a research article, as recommended by Tattersall (2016).

5.7 Other limitations to open access

5.7.1.1 Time

Time was perceived to be a major barrier to access, particularly for the EP participant group.

> *"I think time is the big one, and I expect for a lot of teachers, it's time that is preventing us from engaging with this type of research more. I think" (EP4)*
>
> *"Teaching really is a bloody busy job, there's no time"* (EP3)
>
> *"At my last school I would spend three hours a night marking every night. So if you'd asked me in December did you have time to do research, the answer would be no, because I just physically didn't!"* (EP5)

EP2 commented that it seemed *"boring to talk about teachers' time"* highlighting that it was a common problem that was always raised when exploring experiences of teaching. The creation of short research summaries and other accessible resources can be seen as a way to combat a lack of time. However, it should be noted that even when given (limited) time, participants felt that it was still hard to engage overworked and stressed practitioners, suggesting that accessible summaries would not necessarily be a solution.

> *"I will add that there are people who absolutely insist that they don't have time to do it at our school even through they're given an extra hour in which to do it, so sometimes its attitude as well"* (EP5)
>
> *"[The resistance isn't about time] at that point! Because they're doing a training; they're in with you for an hour, and they are - they've got nothing else they're allowed to do for that hour!"* (EP6)

5.7.1.2 Lack of interest

Although participants all had some interest in reading research, they were not sure how many other people would be interested. This attitude was often based on experiences with trying to engage peers and colleagues with research literature.

5.7.1.3 Lack of support

Finally, participants cited lack of support in accessing and interpreting research as an. HIS2 identified that this could come from a library, but perceived libraries were no longer able to offer this kind of support. Others identified medical charities and the NHS as having responsibility to support health information seekers with research access.

In the education context, participants felt that a supportive management and culture of research engagement made a difference in whether practitioners felt empowered to engage with research. EP5 provided concrete examples of differences a supportive leadership had been to her school, compared to at a previous workplace. On the other hand, EP3 and EP4 saw the claim to be research-engaged as largely a meaningless buzzword. EP3 felt that teachers were only ever asked to engage with research at the whim of senior management, and on top of a busy workload, whereas EP4 associated research with masters students conducting poorly thought out research within her school.

5.8 Chapter overview

This chapter has presented a range of motivations for accessing research in education and health contexts, identifying professional, personal and educational motivations. A central motivation for many (but not all) participants was wanting evidence to make a decision, persuade others to make a decision, or to support an already held belief. Participants also accessed research in order to share and discuss with others, to share with healthcare professionals, or to support colleagues and peers with research engagement. This emphasised that research use was not a solitary and individual activity, but also indicated that there were many societal barriers to research engagement that would not be solved by OA alone.

It has reviewed participants' attitudes towards and perceptions of open access, highlighting that the complex nature of the scholarly publishing environment was not always visible outside academia. Key discourses noted in open access advocacy were drawn on by participants (e.g. right to access research, taxpayer funded research, public accountability) but only to a limited extent, with participants perceiving it as a benefit rather than a right. Participants were positive towards the concept of OA in principle, but saw multiple limitations. It is likely that participants had experience of accessing open access publications, but it was not always possible to tease out details from the interview data, as participants took a broad view of 'research publications' including research reports, research-informed books, and summaries in the press and from medical charities.

The chapter has also discussed factors enabling and preventing (or causing ‘friction’ to) access to research publications on both a material and conceptual level. The internet – and more specifically, Google and Google Scholar – was seen to enable access to research, along with specialist databases such as PubMed, and libraries. Levels of institutional subscription access varied, and rather than a clear boundary between ‘access’ and ‘no access’ participants relied on partial or temporary access, with some taking frustrating routes to negotiate the access they needed. Most participants had encountered paywalls, and demonstrated themselves reluctant to pay for access. They instead relied on a series of ‘workarounds’ including using tools such as Unpaywall and OA Button, drawing on networks of contacts both offline and using social media, and making use of pirate sites. Findings suggests that these workarounds were very effective when participants participated in academic networks, but less effective when participants were not in close proximity to academia.

Some participants also found language and structure of research publications to be a barrier to conceptual access, but others perceived themselves to have the expertise to read them. It was clear that even participants who had experience of accessing research publications also read (and some preferred) translated or mediated research in the press, or through charities and other specialist organisations. Participants emphasised that lack of time, lack of interest and lack of support were also major barriers to research-use outside the academy.

Chapter 6 will introduce interview data from the eight researcher participants, and explore how open access was perceived by those who wrote and translated research publications.

6 Findings: Perspectives of researchers and research intermediaries

6.1 Chapter introduction

This chapter will explore the perspectives of researchers and research intermediaries on writing, publishing and translating research for wider audiences. It will particularly focus on how OA is situated in relation to wider strategies of research communication.

The chapter introduces interview data from the researcher participant group; comprising of semi-structured interviews with five education researchers and three health researchers. All eight researchers were recruited as they had indicated some interest in communicating their research to a non-academic audience. The aim was not to survey a representative sample of researchers; but to use in-depth interviews to trace how OA is situated in relation to other forms of research communication in different contexts. The chapter also draws on data from formal research intermediaries (identified in Chapter 3), who discussed their experiences communicating and translating research for donors, patient groups and the general public. The findings suggest that a desire to communicate with a non-academic audience does not necessarily lead to unwavering support for OA, or the choice of OA over subscription publishing. Despite this, OA can complement existing methods of research communication through, for example, providing links from to newspaper articles and charity websites and making grey literature more discoverable

6.1.1 Section 1 overview

Section 1 explores publishing strategies employed by researchers to communicate with a readership within and outside the academy. Despite heightened awareness of OA due to communications from libraries and research support teams about the mandatory REF OA policy, it played a relatively minor role in these strategies compared to other factors such as the pressure to publish in high ranking or popular journals and communicating with a particular disciplinary community. Although many of the researchers agreed with the principle of OA, attitudes were not uniformly positive, and were influenced by a number of social and institutional factors that were only partially related to a desire to make their work accessible. These included the availability of funding for APCs, desire to publish in specific non-OA venues, political opposition to the cost of APCs, lack of knowledge of routes into OA, concerns about “predatory publications” and the preference for other methods of making research accessible (particularly the bypassing of the traditional methods of publishing and making research reports available online).

6.1.2 Section 2 overview

Section 2 focuses on how an imagined ‘non-academic audience’ for research publications is constructed by researchers and intermediaries, suggesting that it is perceived as limited in both health and education, and susceptible to misunderstanding in health.

6.1.3 Section 3 overview

Section 3 discusses strategies employed by researchers and intermediaries for making research more accessible at a conceptual level. Focusing on ambivalent attitudes towards the addition of lay summaries to open access journal articles, it suggests that participants tended to see open access as being distinct from, and less helpful than other forms of research communication. Open access can, however, complement other research communication activities through practices such as linking to OA versions of an article and making use of OA infrastructure to increase the visibility and preservation of accessible outputs.

6.2 Researcher publishing strategies and perceptions of Open Access

6.2.1 Motivations for communicating with non-academic audiences

All eight participants indicated a desire to communicate with audiences beyond their disciplinary community and fellow researchers. This was for a range of motivations including a) work with specific marginalised communities (HR2, ER3, ER4), b) research that benefited a specific patient group (HR1), c) a desire to influence practice (ER1, 2, 5, EP2) or d) research using patient data that required her to inform patients about ethical issues (HR3). Some participants perceived that their primary audience was outside academia, whereas others saw that their main purpose was to communicate with fellow researchers. Broadly speaking, the health researchers and some education researchers held the former position, whereas some of the education researchers (particularly ER2, 4, 5) held the latter. Institutional pressures to communicate to non-academic audiences were also mentioned, particularly in ER4's description of writing an impact case study[4].

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[4] The "impact case study" is a formal mechanism by which research impact in the UK is assessed as part of the Research Excellence Framework (REF). Researchers are required to provide evidence for the social and economic impact of their work, which is then assessed by peer reviewers (Watermeyer & Hedgecoe, 2016)

6.2.2 Publishing strategies

Educational researchers ER1, 4 and 5, and all three health researchers reported producing journal articles as their main research outputs. ER1 and 4 also had experience publishing books and book chapters, with ER1 preferring to write book chapters over journal articles. ER2, 3, 4 and 5 had all also produced research reports which were hosted online and did not go through the traditional peer review process. Participants described a range of motivations for their publishing choices, many of which were unrelated to communicating with non-academic audiences.

ER1 and 4 described their ideal publishing venues being the right fit for their own disciplinary and sub disciplinary communities.

> *“[I publish] journal articles, and I belong to an informal group, really, of researchers who are interested in similar kinds of things as myself” (ER1)*
>
> *“It’s mostly about fit... and - have I heard of it? Do I get its contents alerts? Erm... you know, do I know it as a journal? Like, familiarity” (ER4)*

However, together with ER5, they identified institutional factors (such as disciplinary norms and the REF) driving them to publish in different venues:

> *“I am influenced by the reputation of the journal, to do with the REF, because I so often publish in books, that I think, oh right, I'm going to be good now” (ER1).*
>
> *“Recently, I had some feedback internally that I was published in 'niche’ journals[…] it was about ‘you should really be going for big generic hitters, like [Journal of X]’ and the problem for me as a generalisation I find it really boring! So a) I don't really want to be published in a really boring journal [laughs] and b) it is a bit intimidating if I'm honest” (ER4).*
>
> *“The priority for that department… because they're under a lot of pressure from the REF… even though the noises from HEFCE are about “it's not about the impact factor of the journal that you publish in”… erm… the priority for*

> *where to publish for my co-authors were looking at the highest impact factor as a proxy for quality and as a proxy for impact" (ER5).*

All three perceived that their publishing decisions had come under scrutiny and pressure from managers or senior colleagues. As someone who preferred writing book chapters to articles (ER1), someone who felt marginalised within her discipline (ER4) and as the most junior researcher on a team (ER5), all three expressed frustration that such pressure impacted their freedom to publish where they wanted to.

The health researchers were in general more pragmatic about where they chose to submit their articles; citing impact factors, ranking and relevance to their field. HR1 acknowledged that *"everything is seen through the lens of the REF"* and expressed some scepticism about impact factor as a lone measure but felt that "*coupled with discipline specificity it was as good [a measure] as any."*

ER2 and 3 did not engage with the traditional scholarly publishing system in the same way as the others. Working at a research organisation that was not a university, ER2 was involved in editing an open access journal but did not feel the pressure to publish academic articles herself, instead focusing on writing reports and making them available online. Similarly, ER3's participatory action research with individual communities was fed back to community members in the form of a report or action plan. Both researchers offered their perspectives on why they did not engage with the scholarly publishing system – one heavily critical of the perceived slowness and inaccessibility of academic publishing; the other unable to find time to publish due to a heavy workload at her teaching focused institution:

> *"I still don't publish in academic journals because I don't believe that is the route to, or a fast route to impact and influence" (ER2)*
>
> *"I've been considering [writing a journal article} for about 10 years, if that helps, because it's a really odd thing! I spoke to someone once and they said, "there's three elements to our work." One is the, kind of, teaching in the student facing side. The other is the university administration and the third is research and writing and it's very, very difficult to do all three of those things robustly." (ER3)*

Their experiences suggest that research is carried out in a range of contexts, and pressures to publish and communicate in different ways vary between institutions and organisations. However, UK researchers who are required to engage with the traditional scholarly publishing system are likely to be influenced in their publishing decisions by a range of factors, including institutional pressure, desire to progress their career, which may come into conflict with the desire to communicate with a particular audiences outside academia.

6.3 Perceptions of Open Access

Participants articulated a range of complex positions towards OA; with some keen to challenge the assumption that a desire to communicate with audiences outside the academy would mean embracing the principles and practices of OA. Many of the researchers, however, spoke in positive terms about the principle of OA:

> *"The concept I think is very powerful, that the idea of sharing research and being informed by other people's research and that your research informing others" (ER3)*
>
> *"It could only be a good thing to have more free access"* (ER2)
>
> *"Yes, I get that it shouldn't just be on digital shelves that anyone who doesn't work in a university can't access, totally" (ER4)*

These three participants all acknowledged that OA had the potential to be socially beneficial, with ER4 using the metaphor of “digital shelves” to convey how paywalled research is as inaccessible to the public as material in an academic library. However, this was not always reflected in their practice and publishing strategies (which were influenced by other competing factors). ER5 on, the other hand, took a very pro-OA stance and stated that it was very important for her that everything she published was freely available.

> *“My supposed principle - and we'll see if that changes - is that I'll only publish open access. That includes, to me, being able to deposit a preprint. So I’ve published in the [Journal of X] but only because I was able to deposit a preprint in my IR[…] as far as I see it I work in a practice based discipline […] and if I want my work to be read by practitioners then it has to be as accessible as possible.” (ER5)*

ER5 saw OA as an important part of making her work accessible outside the academy, and this was supported by her practical experience in moving from a research role into a role supporting practitioners with limited subscription access. EP2 made a similar argument; having just left a teaching role to start his doctoral studies, he was enthusiastic about providing access to practitioners as he had *“been in that position”* (without access) himself. However, he saw academic social networking sites such as Academia.edu as the most useful route to making his work OA.

> *“As I see more and more teachers being on things like Academia... then erm... I'll just put everything that I write on Academia. And yes, sort of point to that source, and other stuff on my Academia page that's open access and I know that teachers have used before” (EP2)*

This may have been because EP2 was not yet embedded enough in the world of academia to know about depositing his work in a repository (as a new PhD student he was likely to have not yet been affected by the REF open access policy). However, even researchers who were fairly knowledgeable about OA also believed academic social networking sites to be particularly useful for practitioners, and a valid open access option.

> *"Surgeons are finding other mechanisms like, for example, ResearchGate and Academia.edu and some of the other databases if you like which ask people to deposit their work, so you could always… even when you can't pay for access you could always deposit your pre-publication sort of thing in that, so in a way that makes it open access" (HR2)*

This engagement with academic social networking sites both from the user and researcher perspective highlights how they should be included in discussions of OA outside the academy, whilst bearing in mind issues of licensing, preservation and concerns around how the platforms use the data for their own purposes (Centre for Distruptive Media, 2015).

6.3.1 Preferences for green or gold OA

Support for the principles behind OA did not prevent participants having nuanced opinions on the different routes and mechanisms for making their work accessible. For example, despite ER5's strong pro-OA stance, she explicitly preferred Green OA route to Gold or Hybrid, feeling that paying APCs was not an "*appropriate use of public funds.*" Similarly, HR2 and ER4 stated that they deposited their work into their institutional repositories, but perceived Gold or Hybrid OA to be an unnecessary expense. HR3 was the only researcher who was positive about Gold OA, explaining that although had been consternation in her department when APCs had first been introduced, this settled down once it had become clear that her institution would cover the fees. None of the participants indicated that they favoured other methods of publishing OA that did not charge APCs (e.g. publications funded by library consortia). This may be because they had not yet encountered such publications, or because there were no obvious Diamond OA choices in their specialist field.

6.3.2 OA as a bureaucratic burden

Although in general the green route to OA was viewed more positively than the gold, both HR1 and ER4 described in negative terms the feeling of being compelled to deposit by the REF open access policy:

> *"I do it because I have to… because well, I get in the neck from my head of department or my departmental REF lead if I don't. So, we're compelled to go down that route rather than having any structured valuable discussion about it" (HR1)*
>
> *"Obviously now we really get it rammed down our throats… YOU MUST DO IT FOR THE REF!" (ER4)*

These comments, and the following quotes relating to APC funding also articulate the ways in which the processes of making work OA may seem like extra bureaucracy in an already heavily bureaucratic and compliance-focused sector (Andrews, 2019). Both ER4 and ER1 had noticed the emails about OA funding circulated from their department or library but had not acted on them, despite both stating a wish to make their work accessible to audiences outside the academy.

> *"You get an email every now and again saying 'remember there is a budget internally if you want to publish anything from your research council research' – if you want to publish it open access, and its first come first served every year. I've not particularly looked into that. Partly because I think it becomes*

> *open access after a year, pretty much, via [my IR…]. So if it becomes OA in a year so why would you give a publisher like two grand?" (ER4)*
>
> *"The process of going and getting the funding for the open access stuff is just quite onerous if you like. And obviously funding is limited, so then that just makes an additional further step" (HR2)*
>
> *"We've had lots of talks [about OA]; I've never been able to go to any of them. So every now and again they say, "oh come and find out about open access" and then I'll look and I'm teaching! That kind of thing. So I actually think that's been very hit and miss and really there needs to be.... I'm sure this information is also online... but again, you know... I don't know where that is..." (ER1)*

These quotes act as reminders that OA and its accompanying bureaucracy is often low in the list of priorities for researchers (even those who are dedicated to communicating to non-academic audiences), and communication from libraries and research support teams can sometimes be perceived as little more than an annoyance.

6.3.3 OA and research quality

Going one step further, HR1 took a stance that could be categorised as 'OA-sceptic.' He had made his work OA through both the Green and Gold routes in the past, and discussed in detail his personal journey from being pro-OA ("*Initially, I bought into the sort of notions of access and had funding available to do that, and I think there was a lot of enthusiasm about open access initially")* to becoming disillusioned with the way aspects of OA had been implemented in practice. His high publication rate meant that he did not have funds available to pay APC charges for all his articles, and he articulated broader concerns around perceptions that the Gold OA model was impacting on research quality. Criticising the business models adopted by some OA publishers, he expressed concern that APC-charging publications would be more likely to accept lower quality work than traditional journals in order to maximise profits.

> *“Fundamentally, I think the model with open access…well, if you look at the driver for an open access journal versus a non-open access journal, you have to think about the customer. So, the non-open access journal has to be good quality because it's got to sell to a library. Whereas an open access journal, the customer is the author so there is no investment in a good quality product” (HR1)*

Proponents of open access would be likely to dispute this interpretation of why libraries subscribe to particular journals. However, for HR1 this concern for the quality of research literature, was so strong that it overrode any positive impact that OA might have in providing access to non-academic audiences. Although overall much less critical of OA, concerns about quality were also brought up by HR2 and ER4, who felt it had affected the amount of low-quality and ‘predatory’ publications entering the marketplace:

> *“With a lot of predatory journals coming in which makes people pay for the publication, the information, if you look for that article they look exactly the same, even for professionals it’s sometimes so difficult to distinguish between predatory journal and an actual scientific journal, so I'm not really sure if you can expect everybody, if we can expect people to be able to make that distinction between these two things” (HR2)*

> *“The whole open access thing. I think... I find it harder - you know you get the “come publish in our journal” - what's it called - predatory emails or whatever. And you get it and you think; oh that's quite clearly a bag of shite, and you delete it!. Since open access I think I get more [emails]… and I find it more difficult to tell because by definition it's probably a journal I've not heard of, because it's new, because it's not been going for ages” (ER4)*

These comments touch on two separate concerns relating to low-quality scholarly material. Both researchers are concerned about the influence of ‘predatory’ publications, a term coined by Jeffrey Beall to describe journals which charge authors to publish but have low standards of peer review (Beall, 2012, 2013). Debate around the terminology and impact of ‘predatory publishers’ is ongoing, with Eve and Priego arguing that the potential harm of these deceptive publishing practices is very low (Eve & Priego, 2017). However, it was clear in these interviews that the language of “predatory publishing” had entered researchers’ vocabulary. Both HR2 and ER4 felt that as readers and authors, it was difficult to tell the difference between “predatory” and reputable OA publications. The constant email bombardment from publishers she perceived not to be genuine influenced ER4’s own publishing practices, causing her to hastily dismiss OA publications and stay with closed access titles she was already familiar with (with the result that her work was less accessible). HR2, on the other hand, felt that low-quality articles that *“looked exactly the same”* as if they had been peer reviewed may be particularly hard to distinguish for those outside academia, and therefore, for her, reduced OA’s benefit to those audiences.

6.3.4 Access to monographs and book chapters

For researchers who chose to publish monographs and book chapters, other forms of access (such as a reduced cost hard copy) seemed more important than OA. For ER4, OA was firmly associated with journal articles; she expressed surprise during the course of the interview that OA monographs existed, and admitted that she had not deposited her book chapters in the IR as she would have had to contact individual publishers about copyright and licensing rather than getting instructions directly from her librarian. She wanted to be able to recommend her book to practitioners, but felt that the cost (£90) was off-putting.

6.4 Grey literature

Several educational researchers (ER2, 3, 4, 5) saw a research report as a more direct route to reaching a non-academic audience than a peer reviewed journal article. This was for several reasons: reports are free to access online in PDF form, can be written in a more accessible style, and do not have to go through the peer review process (which was seen as slow and unwieldy). Sometimes, researchers wrote reports in response to questions set by external clients; at other times they made a choice to write a report for accessibility alongside as other types of research publication.

> *"We kind of do what we are paid to do the majority of the time. So most of our clients are unlikely to pay for us to publish in an academic journal, so in the time it would take for us to write an academic journal article, we are normally paid to write a report" (ER2)*

For ER4 the act of writing a report had become second nature and was prioritised over academic publications.

> *"when I had AHRC money I immediately did a report whereas I obviously know some people who get research council [funding]…you could go straight onto the papers[…], whereas I was in some way stupid and did a massive report because that's how I'm used to working" (ER4)*

6.4.1 Discoverability of grey literature

Participants ER4 and 5 discussed the concern that although more accessible, research reports may be less discoverable over time than journal articles. ER4 described how a change of her institutional website to conform to the house style meant that her published reports were suddenly less accessible than before, and ER5 made a similar comment about a funder website which displayed her research reports. In the following quote, she compared her own ability to search the website as an experienced researcher with that of a member of the public who might want to find her report:

> *"The nature of the research that I was doing was that it was often attached to funding from government or funding from organisations and there would be a report. A final report to that organisation. So that would go… (laughs)… theoretically on the [funder] website, but that website is incredibly poor in terms of searchability… and being able to access that, I mean, God, I couldn't search it and find things that I wanted!" (ER5)*

Both ER4 and ER5 therefore also deposited their research reports into a repository. Whereas ER4 was unconvinced about whether this would make them more discoverable in the long run, ER5 had expertise in this area from her work supporting practitioners, and felt that the discoverability of reports and other grey literature could be significantly improved.

> *"So the grey literature exists all over the place. It isn't always accessible. It isn't always there even two years by the line. The pdf is no longer at that url" (ER5)*

As part of her new role, ER5 was actively involved in making grey literature at her organisation more discoverable (for example, by the addition of DOIs), and felt that it was important for the wider OA movement to consider grey literature as well as peer-reviewed publications, especially when trying to include a non-academic audience.

6.5 Section overview

The first section of this chapter has outlined the publishing strategies and priorities of researcher participants, suggesting that although they all expressed commitment to communicating with audiences outside academia, they were ambivalent about open access as a way to reach this goal. This ambivalence was due to other publishing priorities, the bureaucratic burden of OA in an already compliance-heavy environment, concerns about research quality and ‘predatory’ publications and a preference for producing research reports rather than open access publications when needing to reach wider audiences.

6.6 Imagining non-academic publics

In order to understand more about practices of writing, publishing and mediating research, it is useful to examine how researchers and research intermediaries imagine a non-academic audience for their work. Chapter 2 of this thesis has already outlined potential non-academic publics, and how they are represented in the research literature. However, they were imagined in more complex ways by researchers and intermediaries in different contexts; sometimes (but not always) based on past interaction with, and feedback from members of these audiences.

The situational maps introduced in Chapter 4 presented the ‘non-academic audience’ of research publications as a form of “implicated actor,” being simultaneously present and absent in the situation of enquiry (A. E. Clarke, 2005). For example, the non-academic research-user is present, through the voices of those who access and read research from outside academia, but also discursively constructed through the perceptions of those involved in writing, publishing and mediating research (Clarke, 2005). As already noted in Chapter 5, certain types of implicated actors are also present from the perspectives of research users (e.g. the fellow patient who is at risk from online misinformation, the (untrustworthy) pharmaceutical sales representative, pupils, parents, the teacher who is hostile or unwilling to engage with research literature). However, from the perspectives presented in this chapter, it is non-academic audiences who are the main implicated actors. Clarke emphasises that there may be multiple (and sometimes conflicting) interpretations of an implicated actor that circulate within a social arena. Bearing this in mind, this section discusses how a 'non-academic audience' is imagined and represented by researchers and intermediaries.

6.6.1 Imagined publics (health)

6.6.1.1 Patients

Patients were a key non-academic audience, and were represented in a range of different ways. The image of the "informed" or "expert" patient (Kivits, 2004), was common, and was particularly influenced by interaction with patients who not only accessed and read literature, but who engaged themselves with other aspects of research such as sitting on patient panels or assessing grant proposals for charities. Both MC and HR participants expressed admiration and respect for these patients, who were seen as experts in their own rights and a key potential readership for full text OA papers.

> *"Some of them have been [on our patient panel] for quite a few years. The knowledge of research is pretty astonishing. You know they've got so much experience" (MC4)*
>
> *"[the patient panel] sort of ranges from the everyday person on the street through to people who are very clued up and involved on different panels and advisory groups" (HR3)*
>
> *"They'll have had [health condition] themselves or they'll have had a family member that did, and so yeah… they would have just volunteered, particularly if they had an interest in the research themselves. So they are already… I suppose, self-selecting, they're already kind of people who are already interested in the area. And obviously once they've gone through reading*

> *several different grants then there’s a limit to how lay they actually are now, compared to the general public” (MC6)*

For the most part, participants agreed that as well as this engaged patient community, there would be other patients with the required amount of expertise to read research publications. For example, MC2 reflected on how she would feel if she became ill and could not access relevant publications; emphasising that anyone can fall into the category of patient, including those who had gained expertise in reading research in other areas of their work and life.

> *“I mean, maybe, if I were a cancer patient I'd feel ok with interpreting the results of cancer trials. So, I'd probably be a bit annoyed if I couldn't see the results of everyone's cancer research” (MC2)*[5]

However, they emphasised that this encompassed only a relatively small group of patients (HR3 mentioned that patient volunteers often came from particular demographics – older, retired, white), and expressed doubts that the majority of patients would be able to engage with research articles at such a high level.

> *“I don't know, I think we probably are thinking… I think we are overestimating it. People may have access to it, but they may not have skills to use that sort of information and to make sense of it” (HR2)*
>
> *“I struggle to follow somebody else’s paper in a related discipline and sometimes bits of my own papers where they’ve been co-authored by a mathematician. So […] the general public’s not going to stand a chance” (HR1)*

---

[5] This comment is supported by the experiences of members of in the HIS participant group, who had built up research expertise through work, but were now applying it in their personal lives

This led to the argument from most participants that OA was a good idea in theory but needed to be supplemented both by other forms of research communication and support to help them understand and evaluate research findings.

Nevertheless, it was still felt to be important for patients to have open access to the research literature despite not being able to understand fully. These patient communities were perceived as the primary beneficiaries of the charities' work – *"the people who we are doing research for"* (MC7).

Several participants felt that OA could play a part in combatting misinformation for a patient audience, even if the patients did not necessarily fall into the category of 'informed' or 'expert.'

> *"For us it would be the people who we are doing research for. So people with [chronic health condition] if they want to access it. And they do. Because right now because there's always commentary about papers. But sometimes the commentary - it depends who is doing it[…] sometimes the commentary is not correct. So it would be nice - I'm not saying that they could go and see the subtle differences but at least they would have it" (MC7).*
>
> *"I've got a friend whose son suffers from severe eczema and she'll do her own research online and she'll go to Mumsnet… they'll have their own trusted places although sometimes you'll try and question them politely… sometimes you question whether it's better to have access to peer reviewed articles rather than quack data that people might have drawn together" (MC4)*

In these two quotations, participants questioned the validity of information found in the press and on online parenting forums[6]; and suggested that linking to OA publications from these platforms might offer the opportunity for a more reliable

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[6] It should be noted that although participants in this group were sometimes concerned about misinformation online, they also recognised the importance of other forms of knowledge (such as lived experience), and valued forums and social media as important sources of patient support.

source of health information, despite the fact that not everyone would be able to understand the finer details. Others referenced a trend in healthcare where patients and doctors make decisions in partnership rather than patients being a passive receiver of advice and information.

> *"Today patients are very, very informed, so we are working with very informed consumers who know about their rights and who are much more aware of what's happening, who have got questions that they want to be answered and who wants to learn things in that context" (HR2)*

On one hand, this could indicate an increased need for research publications to be freely accessible, in order to facilitate the partnership between patient and doctor.[7] However, HR2, along with other participants, had conflicted feelings about the 'patient as consumer' model, believing that it led to situations where patients were asking for treatments without the right level of expertise to understand them. This representation of a more 'problematic' patient was used to highlight the potential risks of OA.

> *"So they may read all that information […]and they may think there is one thing that is best for them, but that thing may not be best for them considering other issues… I mean if you're talking about one medication, so maybe they think "this is a medication that is going to work best for me", but it may not be a good medication because it interacts with other medications that they are taking or any other conditions that they have" (HR2)*
>
> *"I guess you hear anecdotally about you know, people saying I heard about this great new treatment in the media and can I get hold of it? Doctors suddenly getting all these requests in everywhere – that obviously is using up a lot of the doctor's time trying to explain to the patients that – you know – this isn't available or that it's for a completely different group of people" (MC6)*

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[7] Some of the doctor/patient relationships discussed in the previous chapter fit within the model of this partnership; however, some did not, and research suggests that the partnership does not always play out in practice.

Even more of a risk were patients who were perceived to have an “agenda.” The case of a (now retracted) paper published in 1998 claiming to show a link between MMR vaccines and “pervasive developmental disorder,” (Wakefield et al., 1998) was raised by several participants as an example of the harm caused when scientific findings are taken up by the public.

> *“The classic example is the whole thing about the MMR vaccine […] and link to autism[…] You just get people going ‘look at this paper from so and so’ even though it’s never been cited by anybody, and they’ve got access to it and sort of waving it around!” (MC5).*

There was noo consensus, however, about whether having the full text of research articles available risked causing more harm than not having it available, especially if the results were reported in the press.

> *“I think there’s no more risk to having the whole article available than having a newspaper snippet to – leading people to kind of go down an uninformed treatment route or something like that” (MC1)*

Interestingly, the ‘problematic patient’ trope also appeared in the HIS interview data, with HIS participants keen to present themselves as sensible research users in relation to other patients. However, HIS6’s experience of coming into a hospital whilst his friend was seriously ill with liver failure and attempting to talk about research papers, with the result that clinicians “freeze” and “lock” him out of discussions, demonstrates how patients can be perceived as problematic as soon as they fail to engage with research in an expected and established way.

6.6.1.2 Healthcare staff

For the most part, MC participants did not represent healthcare staff as a key public for open access research, despite them being a major focus of other studies in this area (Moorhead et al., 2015). This was because their main priority as research intermediaries was to communicate to patient communities, donors and the general public rather than to professionals. The exception to this was healthcare staff that worked for medical charities; including working on a helpline and delivering services, who were briefly mentioned as potential beneficiaries of open access.

HR1 and HR2 also envisaged that healthcare staff would be potential research users. HR1 felt it was very important that healthcare staff were taught to critically appraise research, but that it was not yet fully embedded in professional development in the way it should be. He also felt that they would be equally well served by better funding medical libraries, or by lifetime access to a university library than by open access. HR2, although acknowledging it differed by profession, felt that many healthcare staff at 'grassroots level' did not have the skills or time to critically appraise research articles, and would prefer an article targeted at a professional publication so they could *"just pick up and read something they can easily digest" (HR2).*

6.6.1.3 Donors

MC participants were particularly concerned about a donor audience; members of the public who donated money to their charities, and to whom they therefore felt a responsibility to make their work accessible. Interestingly, participants did not expect donors to want to read the full text research papers; instead producing magazines, newsletters and online information. However, it was seen as symbolically important for this public that the full text was available online, whether or not is was actually read, as a sign of accountability and so that donors could track the project they donated to from beginning to end.

> *"Everything that we fund is down to the support of our generous donors, and if they are supporting things and supporting projects they should be able to access and see the difference that funding is being made, and should almost be able to track it back from when that donation comes in to that being the output, really" (MC5)*

Potential donors were also a key audience, and several participants said that their marketing teams used research to raise awareness of the charity and spark interest in giving more money:

> *"If they know of a donor who happens to have an interest in specific disease type, then we'll use the research that we fund or knowledge about what we know to put forward a case" (MC3b)*

Research was made available to donors, therefore, both as a symbol of accountability, and as a marketing opportunity, in order to pull in more donations. However, HR1 argued that he believed that charitable donors would be shocked if they found out that their donations had gone to making research articles that they would never read open access.

> *"How much medical research could have been done with that if we hadn't paid for gold open access for all the papers we're writing […] I think at some point somebody will start to ask questions against the accounts of the charities" (HR1)*

This is an example of how the discourse of public accountability, which is often used in framings of open access (P. M. Davis, 2009), becomes less simple when taking into account the finances behind open access rather than just the act of making research publications open.

6.6.1.4 Charity staff

Medical charities formed complex social worlds on their own, with teams such as finance, marketing, helpline staff, library and information staff and fundraising engaged in different activities, sometimes geographically dispersed over multiple sites throughout the UK. These teams were seen as potential publics for research publications, partly driven by a commitment to make sure that every part of their organisation’s work was underpinned by evidence. As discussed in the previous chapter, charities often had no, or limited access to subscription resources; and several of the MC interviewees were engaged in knowledge-brokering activities with their colleagues, in order to develop of a community of practice where, ideally, all staff of varying levels of expertise could learn to engage with research and evidence.

> *“People who are [name of charity] staff […], well they'll generally say that [our research newsletter] has been... I mean really useful, quite great... something quick to look at. Gives you an overview of what we are doing. Other teams who just don't know that much about research and want to know more... new starters, and things like that” (MC3b)*
>
> *“I run the journal club here. We all select a paper which might be related to areas of people's work and we have people from finance to fundraising - not just research but people who deliver services […] We wanted people to feel more that they could engage with research it's not just something that is locked away in some ‘ivory tower’ and we were quite pleasantly surprised by the range of interest that we got” (MC4)*

6.6.1.5 Industry

Industry is often seen as an important public for scientific research, and a reason to invest in increased open access (Tennant et al., 2016). However, it was barely mentioned by participants in this study, with only MC1 noting that it was important to think about industries on *“the intersection between computer science and engineering, and medical research,”* which she viewed as exciting areas driving commercial innovation. The lack of interest in industry access, coupled with an anti-pharmaceutical industry perspective from the HIS participants in the previous chapter may have been shaped by a sample focused on access for patients and the public and third sectors. Future research exploring access to research for industry would be welcomed.

6.6.2 Imagined publics (education)

6.6.2.1 Educational Practitioners

Education researchers and intermediaries predominantly imagined practitioners as the main non-academic readership for research publications. Their understanding of this readership came from close engagement with practitioners through university teaching, working and research in schools and community settings, and public engagement events. Teachers were the most common group, but participants also mentioned other education-related roles such as youth workers and community workers. Like patients, representation of practitioners was divided.

Participants felt that there was a core audience of research-engaged practitioners who were keen to read and discuss research, as well as carry out research themselves. However, they were seen to be confronted with systemic barriers which prevented even the most enthusiastic from using research as much as they would like.

> *“Time, there is not a set time within their schedules to do this type of thing” (ER2)*
>
> *“They're really into what we're doing - they frequently want to do the kind of stuff that we're doing in their institutions. So they're usually very enthusiastic, but they come up against of all kinds of barriers such as[…]some of the things we might do don't fit with the National Curriculum and that sort of thing, and so - you know - it's really difficult for them to do that kind of stuff” (ER1)*
>
> *“It’s a fairly high pressured job and in times of austerity and the ‘more for less’ culture they’re doing more and more face-to-face work, leaving them less and less time to think about what they’re doing” (ER3)*
>
> *“You do find yourself sympathising, like well, yeah, how much are they gonna learn? From a research evaluation […] their services have been slashed[…]You're like, why the fuck would you want to fund research” (ER4)*

These four quotes identified interlinked socio-economic factors as to why practitioners would not want to engage fully with research. Participants felt that a climate of government funding cuts and austerity meant that budgets set aside for research engagement had been decimated, as well as leaving overworked practitioners with no time to do extra research or continued professional development. Researchers and intermediaries were generally very sympathetic to practitioners in this situation, placing themselves in their shoes and unwilling to force anyone to read research if they did not feel able to. They also mentioned that less confident practitioners would benefit from further training and support in reading research articles.

However, a less charitable representation emerged of some practitioners who would remain uninterested in research despite support to help them engage. This group did not see the ‘point’ in research, and believed that knowledge gained through practice was more valuable. Participants expressed frustration towards this group of practitioners, despite overall having a lot of respect for their work.

> *"Well, just - you can talk to them about [research informed topics], in order to[…]you can make that as bitesize as you can and they blank and say 'well this isn't very practical" (EP6)*
>
> *"Occasionally there's this stereotype and occasionally you do meet someone who fits the stereotype and they're just really arrogant, like 'we don't need you to tell us this, we know' - and I'm like, you know everything in all the world about youth work?" (ER4)*

ER3's experience teaching student practitioners had given her a particularly pessimistic outlook about open access outside academia,

> *"my major concern about open research…not a concern, that's probably the wrong word…is why would people want to access it because it may be just the world I'm in, maybe you as a librarian have a different perspective. But, for example student [youth workers] are very assessment focused, so all they want to do is do what they've got to do to pass. The concept of increasing their knowledge and enhancing their life and all that doesn't come into it. They're not really concerned about knowledge acquisition; it's more about, "What do I need to know to do that?" (ER3)*

ER3 questioned the whole premise of the research study she was taking part in. While she deferred to the researcher's perspective, from her teaching experience she did not envisage that her imagined public (youth workers) would be able to benefit from open access. Although she had one of the most pessimistic outlooks, echoes of this position were found throughout the education research interview data.

6.6.2.2 Policymakers

Policymakers were also mentioned by several educational researcher participants. For ER2 especially, policymakers were her key target readership. Unlike the other publics presented so far, policymakers were seen as holding power, with the ability to *“instigate change”* (ER2). ER4 placed them in opposition to practitioners as examples of different levels of impact.

> *“We did this massive report, it was then [government department], commissioned by New Labour as it was, erm... and so that report got cited quite a lot in debates in the House of Commons and House of Lords and stuff[…] On a smaller scale lots of times people say oh we’ve used your report to try and justify why we should teach about [diversity] in schools” (ER4)*

Policymakers were also represented as elusive and busy, unlikely to read journal articles on their own accord and in need of a proactive, face to face approach.

> *“Some of them might be quite important, quite busy people, and they are not going to be reading cold call emails” (ER2)*
>
> *“Even if [educational policymakers] did have access to it they would close the window if the abstract sounded really complicated, and then would get to the first paragraph of the paper, and decide they didn't want to read it if it didn't immediately grab them” (ER5)*

Open access to journal articles was therefore seen as being of limited use to policymakers, with researchers preferring to write reports or to engage in face-to-face engagement activities in order to communicate research. ER2 was particularly sceptical about the benefit of open access for policymakers, feeling that it was more productive for her to develop a long-standing relationship with particular policymakers through face to face meetings.

> *“My opinion is that they wouldn’t be reading journals; they might ask their assistant or their intern or whoever that might be, what is the evidence on something so their office might benefit from access, but even then I suspect they will go to a quicker route” (ER2)*

Overall the representation of both practitioners and policymakers highlighted that paywalls were only one among many barriers to accessing educational research, perhaps indicating why open access was not a priority for some of the educational researchers and intermediaries, despite their commitment to communicating with a wider public.

6.6.3 Overview of section

This section discussed the representation of key publics for open access research by researchers and intermediaries. Participants identified a range of publics, although their responses were shaped by the focus of their work on the needs of patients, educational practitioners and the third sector rather than industry. Different and conflicting representations of these publics existed alongside each other, but overall they were seen as fairly limited, and prevented from fully benefiting from open access by a range of sociocultural and economic factors.

6.7 Writing for publics outside academia

This section focuses on the strategies employed by researchers and research intermediaries to communicate research to publics outside academia. Each participant was asked whether they had written lay or plain English summaries of research publications, as earlier research had explored the idea of lay summaries as a way to increase the conceptual accessibility of open access journal articles (Nunn & Pinfield, 2014). The question acted as a prompt for wider discussion of research communication activities and their positioning in relation to open access.

6.7.1 Writing lay summaries

Some researchers and intermediaries had experience of producing lay summaries, and were positive about their use as a strategy for communicating research in a more conceptually accessible way. Others expanded the definition of “lay summary” in their answer to include other forms of communication such as press releases, newspaper articles and content written for charity websites, suggesting that they saw summaries played a part in a wider effort to communicate research to different audiences.

There were several comments from participants about the need to remove complex language and jargon as a starting point when writing or translating research for wider audiences. However, making the language accessible was only the first step in communicating research effectively. Medical charity staff described writing a summary as a skilled process, where they made decisions about how to frame the original research publication; for example, the decision over which aspects of the methodology to include:

> *“the sample size might be relevant, the type - so if it's interviews and focus groups and things - but if it's anything more clinical than that or anything more technical than that, then no” (MC3b)*

It was also seen as important to place the research in a meaningful context. This included explaining caveats and limitations of the research, which are often exaggerated by the press and in the public imagination.

> *“That’s something we had to really emphasise in our communications… that actually we don’t know if this is any better than what we already have” (MC6)*

The most important aspect of writing a lay summary was to tailor it to their readership. When questioned about writing lay summaries, participants almost all begun by talking about how to frame them in a meaningful way for a particular audience.

> *"[Explaining] the relevance to them, how will the science benefit the people, which can be quite challenging with very basic science, because you have to sort of extrapolate quite far, without losing the [meaning]" (MC2)*
>
> *"If I'm just doing a lay summary for our fundraising team or something I'll look at it from a certain angle - so the potential impact it has for a large group of people; the potential it has to make a difference. Its impact on policy on a wider level if it's for PR" (MC3b)*
>
> *"[Our science communication team are] reporting back to donors on the outputs and outcomes of the project; if there's been a publication they will usually try and sort of translate that publication in a way that's then accessible for those donors really" (MC5)*

The three quotes above refer to three separate readerships for lay summaries: the general public, internal fundraising staff at a medical charity, and charitable donors, each needing to be written from a different angle. This focus on tailored communication meant that most were ambivalent about the idea of a lay summary attached to a journal article without an audience in mind, as it would not be clear at what level to pitch it. MC2 expressed uncertainty about whether summaries she had written could even be defined as 'lay' as they were pitched at a level above the general public.

> *"I wouldn't say they were lay – they weren't lay in that they were really interesting, but if you have an interest in… you could go and read this thing and it would be lay" (MC2)*

6.7.2 Scaling up the production of lay summaries

There was also some scepticism about the feasibility of scaling up lay summaries so one was attached to every open access journal articles. Medical charity staff were particularly concerned about the implications for workload, and whether it was the most effective way of communicating research.

> *"It's that question of the workload involved in it. And the number of people that are going to use it. And whether that's the most appropriate way of trying to engage people with scientific research" (MC1)*
>
> *"We don't do it for all the papers because we find it hard enough to get researchers to tell us whether they've got a paper in the first place, let alone writing something for every single one!" (MC2)*

However, two participants (MC1,4) also commented that although researchers in less public-focused areas often thought that their work was too niche to be made conceptually accessible, it could not be assumed that there would be no public interest. This highlights a tension between concentrating on targeted communication strategies versus scaling up the production of lay summaries to all journal articles.

The main strategy for scaling up the production of lay summaries was perceived to be asking researchers to write their own. Medical charity staff disagreed over whether the majority of researchers possessed the skills to do this effectively. MC2 commented on the difficulty of changing register when you are an expert in the field, describing it as *"try[ing] to be really lay and still molecules and mechanisms come out of their mouth"* (MC2). MC7, on the other hand, felt that researchers should write their own lay summaries, as "*if it's written by the people who wrote the paper then it's going to be to be a nice clear correct synopsis of what's in the paper".*

6.7.3 Relationships between research communication and open access

The researchers themselves were in general ambivalent about lay summaries, and it was evident that overall they perceived open access to be separate from other research communication and public engagement activities.

For example, HR1 was positive towards lay summaries but not OA. When asked by the interviewer "*Do you think that an open-access article would be more useful if it had a lay summary attached as well, more useful for a non-academic audience?"* he replied "*Well, I think it would be the lay summary that was of use."* In answering in this way, he deliberately separated research communication activities from open access, whereas the interview question had assumed a link between them. Other researchers were critical of lay summaries attached to journal articles, arguing that without tailoring to a specific audience it would be impossible to know which terminology they needed to use and explain. They saw no problem with the intended audience for academic journals being other academics, whereas non-academic audiences could be better served by publishing in other venues.

> *"say if I'm writing something for a journal[…]International Nursing Studies or something like that, and if I am writing the same message for Nursing Times[…] I'm maybe presenting the same information, but the language used would be different for both audiences" (HR2)*
>
> *"I mean it is all about audience; that is what it comes down to me. So the audience for academic journals is other academics and if within that sphere everyone is very happy reading those types of publication and those types of article then there is no need to change it. But if they are trying to influence policy makers or practitioners, then they are going to need to write something differently and that doesn't mean they can't write a journal article but they also need to write the accessible article or the blog for the TES […], but to write different outputs depending on what they are trying to do with their research" (ER2)*

A different perspective again was expressed by ER1, who actively resisted writing a lay summary, despite wanting practitioners to read her research article. For ER1, the purpose of her research was to make her reader think, and inspire discussion and debate. She was therefore uncomfortable about appearing too didactic; resisting telling teachers *"you should do this, which is what the journal wanted me to do."* This perspective calls into question MC6's comment that lay summaries are nothing but a "*nice clear correct synopsis of what's in the paper";* instead raising questions about the politics of how summaries are framed, what is included and what is missed out. HR1 also made this explicit with his comment that "*authors will put what they want into the lay summary"* and a call for lay summaries to be subject to the same peer scrutiny as a journal article.

6.7.4 Writing an accessible report

As has already been mentioned, research reports are examples of outputs which are produced instead of, or alongside journal articles in order to reach an audience outside academia. The educational researchers who had experience of writing reports described the strategies they used to make them more conceptually accessible, which involved changes in the language and structure.

> *"So when […] my team writes reports, we try to write it in a very simple language that is accessible to non-experts. Whereas my interpretations of journals is actually it is prized to write in a more technical language and a slightly more verbose language… but that is a skill that is taught in academia to write long sentences, with long words with lots of syllables in and I would go for the opposite approach if I wanted it to be used and read" (ER2)*

ER2 saw academic language as representing an unnecessary conceptual barrier for non-academic audiences, and the way in which academics and students learn to write as making the situation worse rather than better. Both she and ER4 also simplified the structure, as well as the language of a traditional journal article when writing a report. This was partly influenced by a desire to be read by a non-academic audience, but also by the requirements of whoever funded the research.

> *"I am responsible for putting the methodology to the back or in a technical appendix rather than leading with the methodology or at least leading with the full methodology" (ER2)*
>
> *"It's quite difficult with funders, they have quite specific, [they] basically don't like references, they don't like a methods section... so stuff that you would kind of expect you can't put in there, which is frustrating" (ER4)*

Moving the methodology to the back of the publication highlighted the value placed on results by an imagined non-academic audience – supported by the practice of skipping the methodology reported by some participants in the previous chapter. This indicates a potential problem with making research more conceptually accessible, particularly in the context of answering questions set by external funders and raises the question as to whether simplifying the language and altering the structure of research publications may mean losing valuable contextual information, and shutting down the freedom for researchers to explore outside funder demands.

ER4's discussion of her own writing practices is a useful example with which to identify some of the key issues and tensions in this area. In her role she felt the pressure to produce both reports and peer reviewed journal articles. Whilst she acknowledged that more people outside the academy read her reports than they did her articles, she appreciated the greater freedom the article format gave her; not only to draw more on the research literature but also to express her own political stance (contrasting with the idea that research publications are meant to be 'scientific,' neutral and objective). In ER4’s case, it was her research reports that needed to convey the impression of objectivity to her client and external audience, whereas her journal articles gave her more freedom to offer her own interpretation.

> *“I think I put more just more analysis [in a journal article] - so it's not like literally the data, here you go. So there's more analysis, interpretation, and if I'm honest a bit more like - erm - polemic kind of - erm... so yeah, they're a mixture of a bit more analysis, obviously more engagement with literature, theory and a bit more [of a political stance]” (ER4)*

In situations where she was trying to engage with a practitioner audience, therefore, she reported providing the Institutional Repository link to her peer reviewed article rather than her reports, in a deliberate effort to promote her academic writing to a wider audience.

6.7.4.1 Accessible writing and researcher identity in education

Reflecting on the difference between reports and peer reviewed publications raised wider questions among participants around how the researchers who produced these outputs were perceived, and their relationship with academia. ER2 made it clear that she was an experienced researcher despite the fact she was not located in a university, and she and her colleagues did not have a traditional academic background. She felt that academic credentials bestowed by universities were not necessarily reflective of research quality, and argued that she and her colleagues produced *“robust”* research that had a social impact.

> *“They are really experienced researchers but don’t hold some of the labels that perhaps universities give or… you know, I don’t want belittle your own studies…” (ER2)*

ER4, on the other hand, discussed the perception that contract or commissioned researchers produced low quality research. This made her feel insecure about her own status as an education researcher, and influenced how she wrote reports – trying to push against funder/client restrictions in order to make sure they were read as high-quality research publications:

> *"There's loads of history of people working on contract research, there's the term 'contract cow' - erm... which isn't particularly nice (laughs)… "Quick and dirty", you know all those phrases, so maybe like within [me] somewhere there's a button, so because I have this button that I try to hide like "am I not as proper as [my academic colleagues in the office]?" (ER4)*

These tensions were indicative a number of divides and tensions reported by education researchers, which provide an important context to any discussion of writing for non-academic audiences in a practice-based discipline. ER1 for instance, perceived a clear divide between academics who were involved in teacher education, and those who focused on research and were more theoretical:

> *"Those people who are involved in teacher education in the university… erm… have a very high… erm… proportion of their time based on teacher training. And… they are looked down upon by many academics, seen as very practice based. There's a real snobbery; there's two levels. There's those who work with the teachers - in teacher education, and to be absolutely honest they are looked down upon by people whose work is really theoretical" (ER1)*

This was supported by ER3, who felt that her heavy teaching load (with trainee practitioners) had not allowed her to develop her academic writing in the way she would have liked, leaving her feeling insecure about her own ability to publish:

> *"I do think there are just certain people who are inclined towards writing and publishing and then there are others who have got a lot to say, but maybe their experience has been such that they don't. And I think I count myself in*

> *this, where you don’t necessarily have the confidence to do it, so in some ways it’s more about confidence building than skills” (ER3)*

Although these tensions present in education departments and research organisations may seem to be at a tangent from this section’s focus on conceptual access; they are highlighted in order to place discussion of research outputs in a wider context of academic practice and identity which has shaped the meanings that participants attached to questions of accessible research.

6.7.5 Writing an accessible research publication

Whilst the above section has outlined the complex separation between formal academic publications and other forms of research communication, several of the education researchers (ER3,4,5) did still want their journal articles and book chapters to reach a practitioner audience as well as an academic one, and adjusted their language accordingly. ER5 stated a commitment to writing accessibly in all her publications, which she felt had harmed her academic career.

> *“I would also say that I think it's very important to not write in a […] traditionally academic way, at all […] I make an effort for my language to be straightforward and clear, and not overly academicized for the sake of sounding smart. Which has been, you know, to my disadvantage - academically... for an academic career, but it has been beneficial in terms of actually supporting practitioners to do their work” (ER5)*

This attempt to tailor her language to a practitioner audience relates back to the experiences of practitioner participants in the previous chapter, who felt that there were some publications that had been written with them in mind, and others which had not. The conflicting positions of researchers and intermediaries on whether, and in what way research publications should be made more conceptually accessible suggests that it is a complex issue that differs in different disciplinary and departmental contexts

6.7.6 Other research communication strategies

Researchers described a range of other communication strategies that they perceived as being distinct from either making their research publications open access or producing a research report. Several reported being involved in participatory, co-produced research (HR2, ER3) which led to the production of materials such as websites, audio, and leaflets or a community action plan. HR1 preferred to liaise with the university media team as they had the skills to create a narrative around his research and gain press attention; this was also part of the roles of many of the medical charity participants.

Other researchers wrote for blogs or specialist press such as the *Times Educational Supplement* or the *Nursing Times*, which they felt received much more attention than if they made their research publications open access. There were positive and negative aspects to this increased attention. ER4 had gained particular attention for a blog that she had written for *The Conversation,* which had also been picked up by the media, and had resulted in negative attention, online harassment and even death threats which made her feel uneasy and vulnerable. Similarly, HR2 commented that the fear that the press would frame her research in a way that would harm the marginalised communities that she wrote about, making her cautious about engaging with them.

These negative consequences of increased public attention are important to consider when reflecting on making research more accessible to the public, whether this is through a press interpretation or a blog written by the researcher themselves. Whilst it may seem irrelevant to questions of open access research publications, which may only reach a limited audience both within and outside academia, open access is situated within a wider research communications ecosystem of online news media, and social media which can (as HR2 and ER5's experiences demonstrate) spread quickly with unwanted and harmful repercussions.

6.7.7 Open access enhancing research communication

Rather than arguing for all open access research publications to be made conceptually accessible, there were also suggestions of how open access could complement or enhance existing practices of research communication. For example, participants felt that linking to an open access version of an article from a press release, website or news item made it accessible to a wider audience. However, it was not always standard practice to do this. For some, this was because they simply had not thought of doing it, or had chosen not to for contextual or aesthetic reasons:

> *"I think it depends on what the purpose of the communication is […] when you're writing a release you might just reference it but it depends on the look and feel of whatever organisation you're working for[…] So I think our website tends to have a clean kind of look to it so you might not necessarily see the underpinning research" (MC4)*
>
> *"We've never done that actually. No, we never share that level. So we might put – we might cite the paper to give it some gravitas; this isn't just something we're making up. But we would rarely ever [link]" (MC5)*

Other decisions about whether or not to link were shaped by the existing scholarly communications landscape. For example, several participants described wanting to link to an article as soon as it was published, but being reluctant to include a link to a paywalled or embargoed version.

> *“But I think six months [embargo] is so long! Because- you know say you want to report that in the media, I would want there to be something online that people could refer to” (MC2)*
>
> *“One thing we’re trying to do is – which doesn’t always happen – is to ensure that when we do news stories and press releases, we’re linking to a freely available version of the article. Sometimes that’s not possible because of the time it takes to get – there is a lag between publication and someone hitting the repository, but we’re trying to – to do that” (MC1)*
>
> *“I think often [we don’t link] because in most cases anyway it’s behind a paywall and so – erm – I don’t want to promote this link on our website for people to follow through and they would just hit a brick wall” (MC6)*
>
> *“Because you know now if you communicate and you have a link and the paper is behind a paywall it doesn't seem to be that transparent” (MC7)*

This highlights how the access workarounds described in the previous chapter (file and password sharing, using pirate sites, emailing the author), fell short when trying to act as an intermediary. Paywalled research imposed a barrier, but even embargoed Green OA caused friction in communicating with wider audiences at the point of the article’s publication.

In addition to linking to research publications from other forms of communication, MC1,MC3b and ER5 all referred to linking to or uploading lay summaries or blogs into institutional or subject repositories. In this way, open access infrastructure was used to increase the visibility and discoverability of research communication. MC2 also referred to a *“site where you can write and upload lay summaries of your own work,”* (probably referring to www.growkudos.com). Platforms such as Kudos have the potential to play a part in the scholarly communications ecosystem in a similar way to ResearchGate and Academia; however, MC2 was not sure about its usefulness to research, unable to remember what it was called and commenting that she wasn't sure *"whether it had had a good uptake."*

These examples suggest that open access has the potential to complement and enhance strategies of research communication, but that the existing scholarly communications landscape may restrict as well as facilitate this, especially the continued existence of paywalled and embargoed research publications.

6.7.8 Overview of section

This section discussed the strategies researchers and intermediaries used to make research publications conceptually accessible. Lay summaries, although identified as a way to make individual open access articles more accessible provoked ambivalent reactions among both researchers and intermediaries. Concerns were raised about whether they could be scaled-up effectively for all journal articles, about how they were framed, and who they were written by. In general, open access was perceived as distinct from other forms of research communication, and the relationship between the two was contested and sometimes fraught. However, it was suggested that open access does have the potential to complement and enhance other forms of research communication, and should be considered as part of a wider ecosystem including news media, social media, blogging and other public facing outputs.

6.8 Chapter overview

Overall, Chapter 6 has explored the perspectives of those involved in writing research, and making it accessible to wider audiences. It has emphasised an ambivalent attitude towards the benefits of open access, despite a general desire among participants to communicate research with a variety of wider audiences. Chapter 7 draws on the findings in Chapters 5 and 6 and discusses them with reference to relevant literature.

7 Chapter 7: Discussion

7.1 Chapter introduction

This chapter will discuss some of the key findings presented in Chapters 5 and 6. It will focus on five key concepts that emerged from the research data. These concepts are: *imagining publics*, *friction, disconnect*, *intermediaries*, and *power*. The chapter will explore each concept through the research findings, and discuss how they contribute to the existing literature on open access.

The first section will explore the ways in which participants "imagine" (Bacevic, 2017) the potential readership of open access research publications, highlighting the ways in which these publics are predominantly characterised as small, exclusive and privileged, including by those who are research-users themselves. The second section will turn to how individuals and communities outside academia find and access research publications, and the barriers they face in doing so. In order to challenge the assumption that there is a clear divide between 'accessible 'and 'inaccessible' research publications, this section will be framed around the concept of *friction* (Neylon, 2013) – identifying factors which restrict or slow research from being accessed and effectively used. The concept will be explored in the context of both material and conceptual access (Kelly & Autry, 2013), and with reference to wider socio-economic factors.

The chapter will then discuss how perceptions of open access outside academia were shaped by areas of *disconnect* – a term used to refer to gaps between different sets of perceptions or motivations, gaps between perceptions and reality (Anthony, 2010), loss of connection, or areas where linkages should be but aren't (Coye, 1997). In framing perceptions of open access in terms of disconnect, the thesis highlights that simple messages such as '*publicly funded research should be open access*' may not always be effective, and that the area is characterised by the same fragmentation and disagreement as other debates within scholarly communications (Moore, 2017; Pinfield, 2015; Šimukovič, 2016). It also allows for suggestions for how connections can be made, and gaps can be bridged through further research or practice.

The section focuses on four major areas of disconnect:

a) perceptions 'outside academia' of the specific realities of the academic publishing system;

b) theoretical arguments by open access advocates and the priorities of research users;

c) a narrow focus on "tangible outcomes" for research users outside academia, and a wider concern for developing a more ethical and equitable scholarly publishing system (Lawson, 2019; Moore, 2019).

d) open access and broader perceptions of research communication and public engagement;

Following on from this final area of disconnect, the fourth section will position the role of the intermediary or 'knowledge broker' (Meyer, 2010) as one that can help reduce friction between social worlds, and one that has an urgent demand for open access in their own work. It is noted that the work of intermediaries is shaped by the same structures and power imbalances that affect scholarly communications more broadly, and are not separate from these.

The fifth and final concept explored in the chapter is power; following Clarke's instructions to attend to power relations as part of a Situational analysis. This chapter explores claims made by advocates such as Willinsky (2002, 2006) that providing open access to research literature could empower users outside academia. Whilst acknowledging that the research data showed the potential for this in some instances, it also emphasised the impact of unequal power relationships between different actors, institutions and social worlds within the situation of enquiry. The chapter concludes by re-centring the discussion within the academy, and highlighting that tying open access to research assessment (eg. the Research Excellence Framework) means that it is viewed as a form of institutional power, rather than a positive mechanism allowing them to make their work accessible to wider publics.

7.2 Imagining publics

The chapter will first focus on the concept of *imagining publics*, discussing how research-reading publics are discursively constructed by participants. It argues that there are some commonalities between the way they are imagined within the data (for example, as a small, elite group unconnected with the 'general public'), but that different types of publics are represented in diverse and contrasting ways. By focusing on the 'imagined public' as a concept, the thesis draws attention to the way that despite some empirical attempts at measuring and describing different publics (Alperin et al., 2019; ElSabry, 2017), much of the discussion around public access to research relies on how its publics are represented by other stakeholders.

7.2.1 Identifying publics

Literature exploring the relationship between science and society acknowledges that a single ‘public’ for scientific information does not exist. Rather, there are multiple, overlapping and heterogeneous publics, engaging and disengaging with scientific information in different ways, in different contexts (Bucchi, 2008; Dawson, 2018). Although this research is particularly interested in a narrower range of publics – those that engage with formal research literature in non-academic contexts – it is still not the case that these make up a homogenous group, and different methods have been used to describe and measure different publics.

As a qualitative study, this thesis does not aim to identify a comprehensive range of research-reading publics, although it does indicate towards loose and overlapping categories; patients with chronic illnesses, parents, teachers, teacher-researchers, freelance consultants, evaluators, third sector staff, campaigners and activists and science communicators. Instead, it explores these categories through the mapping exercises discussed in Chapter 4, conceptualising a network of overlapping social worlds in a wider arena (Clarke, 2005; Strauss, 1978), with individual actors often inhabiting more than one social world, or moving between them (Clarke, 2005). In some social worlds, research access is an infrequent activity, whereas others engage actively with research on a regular basis. The activities of many of these groups (literature reviewing, report writing, research translation) highlight that those that engage with research publications should not be seen as passive receptacles of scientific information (a “deficit model” approach) (Bucchi, 2008), but instead as individuals and communities engaged in knowledge creation from multiple and diverse sites outside the academy (Gibbons, Nowotny, Schwartzman, Scott, & Trow, 1994; Holzmeyer, 2018).

7.2.2 Why ‘imagining’?

Due to a lack of empirical work in this area, most writing about open access outside the academy refers only theoretically to a non-academic readership of open access publications. For example, Willinsky (2006, p. 111) opens his discussion about non-academic beneficiaries of open access with the phrase “it is not difficult to imagine occasions when…,” and goes on to give hypothetical examples of individual teachers and patients searching for research publications. Although the current study contributes to a growing body of research providing a more empirical focus to the topic, including by Willinsky himself (Beddoes et al., 2012; Holzmeyer, 2018; Maggio et al., 2016; Zuccala, 2009, 2010), it is important to acknowledge the extent to which research-reading publics remain theoretical even within the empirical data. Research-users appear within the data as “implicated actors,” discursively constructed by participants (Clarke, 2005). For example, MC participants drew on particular discursive representations of patients, as they discussed the benefits and risks of open access to research, and researchers described potential audiences of policymakers and practitioners. Maranta et al. (2003) have argued that experts often direct their work towards imagined lay audiences who do not necessarily resemble “flesh and blood” people, but are nevertheless influential in the communication choices that they make.

This section will therefore explore how research-reading publics are imagined, arguing that they are perceived as small, exclusive and characterised by their capacity and enthusiasm for absorbing scholarly knowledge.

Publics were ranked by researcher participants in order of how coveted, elusive and hard to reach they were perceived to be. For example, policymakers were seen to have the capacity to read and understand research, but it was considered unlikely that they would make use of OA publications, instead requiring a face to face approach in order to communicate research findings. An early study by Willinsky (2003) based on interviews with Canadian civil servants has suggested that this is not necessarily true, with participants showing a preference for OA resources over paywalled, and a more recent UK study indicated that policymakers were using online journals such as the BMJ (Oliver et al., 2015; Willinsky, 2003). However, it is true that collaboration, communication and developing relationships between researchers and policymakers is often prioritised rather than access to the formal literature (Tricco et al., 2016), and this was reflected in participant responses. This ‘imagining’ of a policymaker audience aligns with Bacevic’s 2017 exploration of university public engagement practices, which found that the ‘public’ was largely imagined by her academic participants in a highly stratified manner, organised according to their capacity to absorb and engage with science (Bacevic, 2017). For example, she described academics “engaging up” to policymakers and decision makers, and “engaging down” with marginalised communities. Due to the hard to reach nature of this public, the balance of power was seen by researcher participants to rest with policymakers (who are able to pick and choose whether to engage with research) (Bacevic, 2017).

Similarly, when research was imagined to be accessed by patient communities the balance of power was perceived to be on the side of the researcher (Sullivan et al., 2001). This was reflected in many of the responses in this study, where although HR and MC participants acknowledged the existence of research-literate patients, and valued expertise gained through lived experience, many other patients were seen as unable to engage with research, easily misled by complex research findings, and even at risk of harm. This was exemplified by repeated reference to Wakefield's fraudulent research paper claiming a link between the MMR vaccine and autism (Wakefield et al., 1998). Similar attitudes were found in a study relating to Patient Public Involvement (PPI) activities in medical research, where researcher participants felt that most patients did not have the skills or expertise to engage meaningfully with research (Boaz, Biri, & McKevitt, 2016). Interestingly, many of the same perceptions also arose in the interviews with research-users, with HIS participants drawing on similar discourses around 'other' patients, despite being patients themselves.

7.2.3 Elite, exclusive and limited publics

Research-reading publics were therefore perceived overall as elite and exclusive; with participants reiterating the belief that most people would *not* be interested in reading formal research literature. Advocates of open access have often acknowledged this limitation (Boshears, 2013; Neylon, 2015). As Willinsky commented, open access will mean "little enough to most people, most of the time" (2006, para. 111). Not only this, but the rapid expansion of scholarly publishing in the twentieth century (Fyfe et al., 2017) has meant that estimates put the number of scholarly publications in existence at 50 million in 2009 (Jinha, 2010). If communities of research-users outside the academy are small and exclusive, they are dealing with a body of work that is very big, and expanding exponentially (Fyfe et al., 2017). It has been suggested that the sheer amount of articles published is not helpful for researchers, let along for those outside academia with limited time (Bruce, 2017). An awareness of this led some participants to question the usefulness of scarce resources going towards open access, rather than towards of targeted public engagement and science communication activities.

The most positive representations of research-users were those characterised by a high level of expertise, and by a commitment and enthusiasm to research. This often meant that as well as accessing and reading research, there was the expectation that they would be interested in (in the health context) undertaking Patient and Public Involvement activities such as contributing to patient panels and ethical reviews (Boaz et al., 2016), undertaking further study and (in the education context) conducting practitioner research (Kincheloe, 2003).

Participants perceived these publics as forming small but active subworlds of wider social or professional worlds (Clarke, 2005). For example, research-reading teachers and patients were situated within wider worlds who were by and large not interested in accessing research. This was a common perception, held both by researchers and research intermediaries, and particularly reinforced by participants who felt (and were frustrated) that as research-readers they were alone among their wider social worlds of patients or colleagues. The figure of the “research engaged teacher” (Borg, 2009; Coldwell et al., 2017) or “informed patient” (Kivits, 2004) was very often accompanied by the spectre of a fellow teacher or patient who was disinterested and resistant to research. In the case of patients, this also included those who did not engage with research in the correct (biomedically sanctioned) way (Fox, Ward, & O'Rourke, 2005), and thus posed a risk to their own and others' health.

Because of this exclusivity, social worlds formed which traversed the boundaries of 'inside' and 'outside' the academy. Patients formed communities with researchers and clinicians coalescing around particular chronic or rare illnesses, often online (Vicari & Cappai, 2016), and education researchers and research-engaged practitioners interacted with one another through professional organisations such as the Chartered College of Teaching, or on social media (see Davis, 2015; Rosell-Aguilar, 2018 for discussion of Twitter as a professional community of practice for teachers). These communities often had shared commitments to certain activities (Strauss, 1978), such as advancing evidence based practice in education, combatting social inequalities, or raising awareness among patients with a particular chronic health condition. Participation in these social worlds and access to networks played a significant role in enabling access to research.

In some ways, the perception of research-reading publics as exclusive and limited is unsurprising, as the interest in, and ability to read research publications can be a sign of social and educational privilege (Boshears, 2013; Neylon, 2015; Peters & Roberts, 2016). At a basic level, the fact that none of the participants in this study reported limited access to ICTs and the internet (a major barrier to access noted by Peters and Roberts) is a marker of that privilege. Many (although not all) also had access to time, either with part of their jobs set aside for reading research, or retirement allowing them spend time on research-related activities. Similarly, the fact that all but one participant had an undergraduate degree, many had a masters degree and some doctorates reflected a tendency for research-reading publics to be comprised of those who already had benefited from an educational advantage. Holzmeyer (2018) reported a similar result in her study of public health NGO staff, observing that her participants were able to leverage their expertise and education in the service of their own research practices outside the academy.

It could be argued that the size of potential research-reading publics is growing, as more and more people experience Higher Education (and are therefore exposed to research) (Lawson, 2019). However, the specialisation of academic research (Fyfe et al., 2017) means that research publications are not necessarily understandable to fellow researchers in a different subfield (Neylon, 2015), let alone a graduate from another discipline. Lawson also cautions that access to Higher Education still remains conditioned by factors such as race and socioeconomic status, and Dawson (2018) argues that systemic social factors (such as working conditions that do not allow time to read, and institutionalised racism) prevent marginalised populations from becoming involved in even more accessible science communication activities. This means that the exclusive nature of research-reading publics is likely to be weighted towards sections of the population who are already socially privileged. The sample of participants in this study (the majority of whom were professional and were highly educated), reflects this.

Neylon argues that acknowledging of the exclusivity of research-reading publics is positive in that it prevents glib statements about the ‘public’ nature of research, and instead encourages the targeted reduction of friction for particular communities (Neylon, 2015). However, participants' perceptions about who constitutes a research-reading public suggest that those who fall out of the obvious categories may risk not being regarded as someone who might benefit from open access. The experiences of participant HIS6 reflect this. HIS6, who had not been to university and who described a history of addiction and substance abuse – experiences which tend to be stigmatised (van Boekel, Brouwers, van Weeghel, & Garretsen, 2015) – nevertheless had built up a wealth of expertise around medical literature through self-study and was a regular reader of academic journals. He may be perceived as someone who did not need, and perhaps was not able to safely engage with open access medical research (this was demonstrated by reactions he reported from medical professionals with whom he attempted to discuss scientific articles). However, among all the participants, he was one of the most enthusiastic proponents of open access, believing most strongly in its potential for equality and social justice. It is therefore worth noting that researchers, intermediaries and publishers are not always able to accurately assess or 'imagine' exactly who forms a research-reading public. Willinsky argues that using the existence of other social inequalities (such as the digital divide) as a reason for not focusing on access to research is a 'poor excuse' on behalf of the academic community (Willinsky, 2006). It also indicates the benefits of a wider, 'scattergun' approach to access (Neylon, 2013) rather than only targeting particular communities.

Findings also suggest that small and exclusive publics are made larger and more diverse through the 'knowledge brokering' practices of research intermediaries such as the press, university media offices, charities or professional bodies (Cooper &

Shewchuk, 2015; Meyer, 2010), and that in many cases, access to research publications were essential to facilitating these activities (Beddoes et al., 2012). Intermediaries therefore constitute an important public, with knowledge brokering activities taking place within and between the social worlds identified in this study. This will be discussed further later in the chapter.

7.2.4 Global publics

It should be noted that research-reading publics are not confined to the UK. The needs and experiences of global research-reading publics (eg. trainee nurses in Pakistan, NGOs in the global south) were reflected on by several participants. Indeed, the need for access to research for low and middle income countries is often considered in parallel with the need for access for publics ‘beyond the academy’ in the Global North (Haider, 2007), and that the research produced by participants in this study would of course have reach beyond the borders of the UK. However, with the exception of two participants who had direct experience as researchers in low or middle income countries, most participant reflections dealt with the needs and experiences of researchers, patients, charity staff and practitioners in a UK context.

The touting of OA as a saviour for those without subscription access in the Global South, has come under scrutiny and criticism in recent years (Haider, 2007; Lawson, 2019; Piron, 2018), with postcolonial readings highlighting that the changes needed to create a more equal scholarly communications landscape reach far beyond making research publications open access (Inefuku & Roh, 2016). Therefore, this thesis attempts to avoid generalisations about the needs and experiences of publics around the world, recognising that these need to be explored in their own national and cultural contexts. It is important, however, to point out that the global inequality in scholarly communications (Alperin, 2015; Lawson, 2019; Piron, 2018) undoubtedly influenced the experiences and perspectives of participants in the UK. For example, the lack of trust that some HIS participants demonstrated towards research that did not come from the UK, and the perception that ‘all’ research is available through scientific databases such as PubMed and Web of Science are notable examples.

Through a focus on imagining, the thesis contributes to a growing body of work attempting to categorise, measure and describe the varied publics for open access research. It acknowledges the importance of that work whilst highlighting that it is different actors’ and communities’ *perceptions* of who might read research which also have a significant impact on discourse and practice in this area.

7.3 Friction

The next section will draw on Neylon’s (2013) concept of *friction* to discuss the multiple ways in which access to research publications and knowledge is restricted or slowed down, without suggesting that there is a clear divide between ‘accessible’ and ‘inaccessible’ research outputs. This divide was shown to be misleading, with participants often discussing the time wasted, and the difficulty in accessing research outputs (through workarounds, drawing on networks, file sharing etc.) rather than being unable to access them at all.

Neylon uses ‘friction’ in the context of open access to draw on a model of information diffusion which takes into account the potential *interest* in a piece of information, how far the information can *reach* and the *friction* that restricts or slows down the use of the information (Neylon, 2013). In Neylon’s example, a lack of open access affects this model of information diffusion, with removing a paywall increasing the reach of the research, and other factors (such as linguistic accessibility, or license type), increasing the levels of friction. Neylon acknowledges that this is a simplistic model; it is not always clear, for example, whether paywalls count as inhibiting reach or causing friction or whether the lines are blurred between the two. Neylon is particularly interested in discussing where finite resources should be allocated to increase reach/reduce friction – for example, investing in platform infrastructure.

In order to add to this concept, is also helpful to look away from open access to research publications and towards data. Edwards (2010; 2011), and Bates (2018, p. 412) develop the concept of data friction in order to analyse the movement and flows of data as “complex socio-material factors that coalesce to slow down and restrict data generation, movement and use.” Edwards refers to the “costs in time, energy, and attention required simply to collect, check, store, move, receive and access data” and Bates cites elements such as infrastructure, sociocultural factors and regulatory frameworks as being pivotal in causing friction in the generation, movement and use of data. These map closely onto the elements identified as part of the Situational analysis in this study.

This thesis expands the concept of friction used by Neylon in the context of open access outside academia, drawing on the more complex definitions offered by data theorists such as Edwards and Bates. The discussion here will focus on sources of friction in the movement of research outputs between social worlds in and outside the academy.

Analysis of friction also allows for the possibility that some friction is necessary (Bates, 2018). This emerged in several contexts in the research data, especially regarding the potential harms that free circulation of research articles in an online environment could have to particular communities or to researchers themselves.

7.3.1 Sources of friction

The following section will discuss the sources of friction that slow down and restrict the flow, movement and use of research articles between social worlds that form inside, outside and on the borders of academia. It will focus on both material and conceptual access to research (Kelly & Autry, 2013).

7.3.2 Material access

The growth of the internet and advances in digital technologies means that infrastructure designed to enable access to scholarly publications is now almost entirely online (Borgman, 2007). It is made from a complex network of platforms, repositories and social web technologies, interoperable through the use of standards and protocols (Borgman, 2007; Fyfe et al., 2017; Pinfield, 2015; Shehata, Ellis, & Foster, 2015), owned and governed by a range of actors including corporate publishers, researchers, academic institutions and consortia (Lawson, 2019). Whereas open access advocates envisaged that advances in technology would be able to revolutionise access at minimal cost (Budapest Open Access Initiative, 2002), the development of scholarly communications infrastructure has faced challenges in implementation, and is a hotly contested area among different groups of actors with views on how it should be financed and governed (Lawson, 2019; Moore, 2017). It is also a fast moving landscape, technologies such as ResearchGate and Academia.edu, which might have been regarded as controversial several years ago have quickly moved into the mainstream, now replaced by new 'disruptors' such as Sci-Hub (Nicholas et al., 2019). Neylon argues that the importance of investing in digital infrastructure is paramount to reducing friction and increasing access for a variety of publics (Neylon, 2013).

Findings showed that the level of engagement with the complexity of scholarly communications infrastructure among participants in this study was dependent on the social worlds they inhabited and their proximity to academia. For example, the medical charity participants were familiar with PubMed, Europe PMC, platforms such as F1000 designed to encourage practices such as open peer review, and plug-ins (Unpaywall, OA Button) used to retrieve Green OA content. It is fair to say, however, that the majority of other participants, infrastructure was obscured and simplified through the use of Google and Google Scholar.

7.3.2.1 The dominance of Google

Google and Google Scholar played a central role in reducing friction and enabling access to research for almost all participants, apart from the MC group, who preferred to use PubMed and Europe PMC. This is consistent with research into the scholarly information seeking of undergraduate students, doctoral students and researchers at various career stages; which has seen a shift away from using library portals and specialist databases towards general search engines (Ince, Hoadley, & Kirschner, 2018; Nicholas et al., 2017). This was also the case for the third sector organisations studied by Beddoes et al (2012). This is unsurprising, as even to a researcher with access to subscription resources, Google Scholar can be a 'one stop shop', aggregating both subscription and OA resources , and potentially making open access more visible (Nicholas et al., 2017).

However, for those without subscription access, Google Scholar was an even more important discovery tool. This was a point highlighted by several participants involved in supporting fellow practitioners, who described how they trained their colleagues how to use Google Scholar to access OA resources. Google Scholar is able to return a significant percentage of free content; a recent study showing that 55% of search results included full text access to research publications (Martín-Martín, Costas, van Leeuwen, & Delgado López-Cózar, 2018). 'Free' is used in this context rather than OA as 40% of results came from other sources, such as ResearchGate. The open/free access content is made visible in GS search results in a way that it is not always by specialist databases and in Google's main search (Jensenius et al., 2018). Reported use of GS therefore suggested that participants were accessing a significant amount of OA material from journal platforms, institutional repositories and academic SNS without knowing where the publication was originally hosted. This was not only because participants in this study are from 'outside' the academy – Nicholas et al. acknowledged that their participants (early career researchers) were also unable to accurately pinpoint where the research they were using came from (Nicholas et al., 2017). However, this study indicated that those who were the least confident and experienced research users showed the least awareness about where the research they found was hosted, and were more likely to use Google's main search engine rather than Google Scholar.

Society's overwhelming reliance on search engines as neutral information providers have been critiqued in recent years; from the way commercial interests skew search results, its role in spreading misinformation, to how algorithmically driven search technologies reinforce existing social inequalities (Noble, 2018; Tewell, 2016). Researchers have recognised the value in Google Scholar (Halevi, Moed, & Bar-Ilan, 2017), especially in providing access to OA content (Martín-Martín et al., 2018). However, it has been argued that its algorithm for returning the most cited papers may disadvantage bold and innovative work which is not immediately well-cited (Jensenius et al., 2018). Other scholars have pointed out that although Google Scholar represents itself as indexing only 'scholarly' content, in reality it returns a range of results without quality control (Halevi et al., 2017). Its indexing and ranking mechanism has been criticised for not being transparent enough, and older research has suggested that it is vulnerable to spam content and errors (Jacsó, 2011). Participants were aware that using Google and Scholar may not return the results they needed, but they tended to attribute this to their own lack of expertise in searching rather than a problem located in the search technologies themselves.

There was also a perception that all research was available, if not through Google Scholar alone, then through a mixture of Scholar and bibliographic databases, once searching was carried out correctly. This becomes a problem especially when considering geospatial aspects of knowledge production. For example, a 2015 study demonstrated that Latin American repositories were virtually invisible in Google Scholar (Orduña-Malea & Delgado López-Cózar, 2015). Similarly, less than 1% of the research indexed in Web of Science comes from Francophone Africa (Piron, 2018) and it only indexes 242 out of the thousands of journals published in Latin

America (Alperin, 2015). Uncritical use of these resources outside the academy could be in danger of replicating the current scholarly communications landscape which disproportionally favours research from the Global North, and therefore reinforcing colonial knowledge hierarchies and erasing research from elsewhere (Piron, 2018).

7.3.2.2 Encountering Paywalls

Using Google, Google Scholar and PubMed, as well as library portals for those who had access to subscription resources meant that participants were able to access a large amount of material. However, the vast majority of participants had encountered paywalls in their information seeking activities and (with very limited exceptions) were not willing to pay the fees associated with gaining access to a single research publication. This aligns with the experiences of third sector organisations (Beddoes et al., 2012), public health NGOs (Holzmeyer, 2018), physicians (Maggio et al., 2016) and SMEs (Parsons et al., 2011), and meant that a lot of research was abandoned at the sight of a paywall unless it was deemed relevant enough to be accessed through a workaround. The paywall is a central source of friction in open access advocacy (Suber, 2012), giving its name to a recent film about the open access movement ‘Paywall: the business of scholarship’ (Schmitt, 2018).

The scholarly communication landscape is, however, more complex than ‘paywalled’ vs ‘open access’. Participants described accessing seemingly ‘open access’ material from ResearchGate or researchers’ personal webpages. A new category of ‘bronze open access’ has been suggested for material that is hosted on a publisher’s website without an open license or has only been made temporarily free (Piwowar et al., 2018). Some publishers have introduced ‘free to read’ schemes where shareable links are generated for use when linking from media outlets, but where the publication cannot be downloaded (Shepherd, 2017). Hinchliffe has also observed the rise of the ‘datawall,’ where scholarly publications offer free access in exchange for the user’s personal data (thereby granting permission to be tracked and surveilled, and to have their data monetised) (Hinchliffe, 2018). For the most part, the nuances of this landscape did not cause unnecessary friction – that is, they did not affect participants’ experience of accessing free material, as most wanted to do nothing more than read, download, and link to research publications. Friction could potentially arise for those who indicated that they wanted to share publications, and create accessible translations – however, participants did not seem to be aware of the possibilities that open licensing might offer in those situations (Neylon, 2013). This demonstrates a skewed perspective in this study towards the ‘free to read’ side of the dual-pronged open access movement described by Moore (2017), as opposed to a focus on open source and open licensing. Although this distinction was not necessarily relevant in the situations described by participants, it may restrict publics outside the academy from taking advantage of the possibilities offered by open licensing.

7.3.2.3 Embargoes and publication speed

Reducing friction by increasing the speed and efficiency of scientific communication has always been an integral part of its development, with print journals allowing more efficient communication between scientists than had previously been possible (Lawson, 2019). A digital environment has the potential to speed up the process still further, yet proponents of open access have argued that aspects of traditional scholarly communication such as the peer review process, paywalls and embargoes artificially slows it down (Suber, 2012). The speed of the publication process can impact on researcher career progression (Powell, 2016), but can also stall dissemination outside academia. These concerns were particularly expressed by a number of MC participants, as they discussed problems with linking news content or press releases to an OA version of a research article. Embargoes functioned as a real barrier to this practice, with participants feeling unable to link at the point of publication (when the press were most interested) if the full text was not available.

Other practices designed to speed up the dissemination of scientific papers, such as the use of preprints or post-publication peer review (Johansson, Reich, Meyers, & Lipsitch, 2018; Kriegeskorte, 2012), were not commented on by participants. This may be due to a lack of knowledge about these developing aspects of scholarly communication, or a perceived lack of relevance for a non-academic audience. This was particularly the case in the education context. There have been recent calls for education researchers to make more use of preprints and working papers (Sullivan, 2018), but other studies have suggested that they are not generally seen as important by education researchers (Coonin & Younce, 2010).

Instead, education researchers working on contract research described working to limited timescales, and disseminating their work using grey literature rather than through scholarly channels in order to reduce friction. EP2's perspective, as a researcher working outside the traditional academy, was particularly illuminating in this case, stating that she did not believe publishing in an academic journal was a "fast route to impact and influence."

It is important to note that the acceleration of research envisaged by some open science advocates is not always perceived as a positive phenomenon. Peters and Roberts (2016) have argued that the drive to speed up scientific research actually hinders openness, and Lawson (2019) cites the ‘slow scholarship’ movement as an act of resistance to these pressures. Reflecting on these critiques, it is perhaps ironic that the pressure to speed up the dissemination of research findings was received (by the EP participants at least) in an environment characterised by ‘not enough time’ to read them (Collinson & Fedoruk Cook, 2001). Nevertheless, the concerns raised by MC participants regarding linking to embargoed research publications show how a delay in making work OA can affect access in a concrete way.

7.3.2.4 File and password sharing

As participants were often unwilling to pay for access to paywalled research articles, they relied on workarounds to gain access. The Guerrilla Open Access Manifesto exhorts those who have institutional affiliation to share their access with those who are “locked out” by both downloading and sending paywalled articles to those who request them, and by sharing passwords (Swartz, 2008). Although the majority of participants did not express such a moral obligation to share access, findings suggest that file sharing and (to a lesser extent) password sharing among both researchers and non-researchers was a common practice and succeeded in reducing friction by moving research articles between communities who did have institutional affiliation and those who did not. Drawing on a network of contacts with institutional affiliation to download and send articles was an experience shared across all participant groups, a finding also reported by Beddoes et al (2012) in their study of OA in the third sector. Sharing articles is common practice among researchers, and some publishers have policies designed to encourage a limited amount of scholarly sharing. For example, Elsevier allows those who are affiliated with a library subscribing to Science Direct to share research in certain contexts (Elsevier, 2019).

Sharing passwords was less commonly discussed; potentially because of the information security issues it raised. However, a 2011 study into password sharing practices identified that a common reason for sharing login details and passwords was for the purpose of accessing library resources (Jofish' Kaye, 2011). Password sharing described in the current research was cautious, and restricted to close family and friends.

Through file sharing and password sharing, participants were able to indirectly benefit from subscription access through personal networks of university-affiliated contacts. 2017-18 figures shows that there were around 2.3 million students, and 430,000 staff studying and working in UK HE institutions; a substantial pool of people with institutional affiliation and access to subscriptions to draw on (HESA, n.d.-a, n.d.-b). Research on university students' attitudes to copyright has suggested that they are often unconcerned about sharing resources with unaffiliated peers, even if they are aware that this kind of sharing risks copyright or license infringement (Muriel-Torrado & Fernández-Molina, 2015; Wu, Chou, Ke, & Wang, 2010). Although several participants expressed doubts about the legality of sharing paywalled research, particularly in the context of a non-academic workplace, they also were confident that in most cases they would be able to find someone to share an article with them.

It seems likely then, that many participants in this study benefited from their proximity to academia, as they counted students and researchers among family, friends and colleagues and felt able to ask them for access. Not having this proximity substantially increased the levels of friction in accessing research, with some participants describing how they felt connected to an academic community (eg. friends who were still in research positions), and others stating how they knew of no one that they could ask for access

7.3.2.5 Sci Hub and Pirate OA

Since the beginning of this research project, discussion of the pirate site, Sci-Hub has increased dramatically in the professional and academic literature, and even the mainstream media. Sci-Hub has divided opinions, with some seeing it as a form of civil disobedience (Lawson, 2017) and important step forward for open access (Barok et al., 2015), whereas others expressed caution about the way that it uses personal data, infringes copyright and reduces the need to develop legal open access solutions (Harrison et al., 2018; Priego, 2016). However, even those who are cautious about Sci-Hub acknowledge that for unaffiliated research users it can provide essential access to material that would be otherwise inaccessible (Priego, 2016). As recent research suggests that 85% of articles in closed access journals can be obtained through Sci-Hub (Himmelstein et al., 2017), its existence can be classed as a key factor enabling access and reducing friction outside the academy. Interestingly, however, this is not reflected in the results of this study. Three participants discussed Sci-Hub (and other pirate sites such as LibGen and aaaaarg.fail) directly, although one of the three had not yet tried it. None of the three believed using it to be unethical, although one felt that she would not use it in her workplace in case the copyright infringement was linked back to the prominent medical charity she worked for (MC2).

The majority of participants, however, did not mention pirate sites at all, which seems surprising based on data suggesting there has been a significant uptake in Sci-Hub's usage all around the world (Bohannon, 2016). This could be due to a number of reasons. One is that interviews for this study were carried out before a flurry of media attention on Sci-Hub (see Murphy, 2016; Waddell, 2016), and its use has become more mainstream only in the past two or three years. This meant that participants were not asked directly about pirate sites, as the researcher was cautious about the ethics of asking about potentially illegal behaviour. The same problem was reported by Nicholas et al. (2019), but they were able to adjust their interview schedule over the course of a longitudinal study. The inability to do this in this study reflects the weaknesses of using single interviews to provide a snapshot, and indicates that serial interviews might be better able to capture evolving practices and changes over time (Murray et al., 2009). A direct question would form part of the interview schedule if the research was carried out today.

Despite these caveats, it is also worth noting that pirate sites would not provide an access solution to all participants. Whereas a survey carried out by *Science* magazine found that the vast majority of researcher respondents saw nothing unethical about using Sci-Hub (Travis, 2016), and data shows heavy usage from university campuses (Himmelstein et al., 2017), several participants in this study expressed concerns about whether they were infringing copyright even by sharing articles among colleagues and friends. These concerns were likely also to apply to using pirate sites, and may have put participants off from using them (particularly the case if they believed erroneously that researchers are paid for their writing). Research accessed through Sci-Hub would also not be able to fulfil all the uses desired by participants (for example, providing a link from a news article or charity website, sending evidence to a patient who phoned a charity helpline). The overwhelming reliance on Google and Google Scholar also means that for those not ‘in the know’ about Sci-Hub, its vast shadow-library would not be immediately discoverable, especially to participants who were not confident internet users.

7.3.3 Conceptual access

Neylon (2013) cites linguistic accessibility as a source of friction, even when paywalls are removed. Participants’ experiences in this study showed that this was the case, and that there were range of factors causing friction in understanding and assessing the usefulness of research articles. These factors can be grouped under the wider term ‘conceptual access,’ used to highlight that even when research publications are open access, they are not necessarily “linguistically, conceptually, or ideologically accessible to the global public(s) they are intended to reach” (Kelly & Autry, 2013). They argue that it is not enough to enable “material access” by removing paywalls and increasing discoverability if research publications are not accessible to anyone outside a small specialist audience of researchers. These limitations are recognised by many OA scholars, advocates and commentators (Boshears, 2013; Neylon, 2015; Peters & Roberts, 2016; Willinsky, 2006). Others have gone as far as to dismiss paywalls as a major source of friction altogether, compared to more conceptual factors, arguing that there are relatively simple ways to get access to paywalled research (Green, 2019).

7.3.3.1 Language and structure

Conceptual access was a significant barrier for many of the participants in the study. Academic writing is a specialised genre that is influenced by its context of production in particular disciplinary communities (Bazerman, 1988; Gross et al., 2002; Hyland & Salager-Meyer, 2009). The hyper-specialisation of science in the 20th century (Gross et al., 2002), has led to the traditional scientific article using complex language without the need to make it accessible to a general reader. Additionally, academic writing has a number of functions beyond conveying information, including persuading a critical reader that it is legitimate research (Bazerman, 1988) and signalling to peer reviewers that it is taking part in particular academic conversations (Wakeling et al., 2019), meaning that its nuances may only be visible to readers within a particular community. It also varies across and within disciplines, with different ‘epistemic cultures’ (Knorr-Cetina, 1999) having their own varied norms, cultures and practices that and influence how research findings are communicated and published (Wakeling et al., 2019). These peculiarities of academic writing means that it is not only specialised language and jargon which could act as a barrier to access for a non-academic reader, but the need to understand how science and research is socially organised (Zuccala, 2010).

This is reflected in the findings of this study, with participants describing the specialist language, length of publications and traditional structure (introduction, methodology, findings, discussion) (Greenhalgh, 2014), as barriers to access. Statistics in particular, were found to be particularly difficult to understand and evaluate. For some, these barriers made reading research literature very difficult, meaning that they preferred to read research that had been translated for a non-specialist audience, or they developed strategies for navigating difficult texts such as only reading the abstract, skipping the methodology and concentrating on the findings, or avoiding research that contained statistical analysis in favour of qualitative and case study research. The particular association of statistics and data with inaccessibility (even among those who are confident in reading specialised and theoretical language) indicates towards the importance of a separate focus on statistical and data literacy (Twidale, Blake, & Gant, 2013), and has led to a rise in data visualisation as a form of science communication and public engagement (W. L. Allen, 2018).

Not all participants found research publications conceptually inaccessible, however. Some MC participants were former researchers themselves, and others had developed the required expertise to read the research publications they needed, either through formal education or self-study. HIS participants in particular, most with no background in medical research, had taught themselves through time and practice to read articles in the specialist areas that they were interested in. This aligns with the concept of the ‘informed’ patient, who develops the required expertise to act as a partner with their clinician in the self-management of their condition (Kivits, 2004; Muir Gray, 2002). Detailed advice and guidance on reading and understanding scholarly literature (see Greenhalgh, 2014) has been produced to help those outside the academy develop this expertise; and participants described attending (and in some cases, running) courses designed for practitioners and workplace journal clubs in order to share advice and good practice.

Research publications were also not found to be uniformly inaccessible. Participants talked about types of research that they found more accessible, whether this was because it was written in a less traditional style, a case study that was applicable to their situation, or whether it felt as though it was addressed to practitioners as well as researchers. This highlights that it is important not to make generalisations about the way research is written, and that there are already extensive efforts within disciplines (divorced from questions of open access) focused on writing research accessibly; for example in public sociology (Burawoy, 2005), or in applied fields (Marsden & Kasprowicz, 2017).

7.3.3.2 Inapplicability

Language and structure were not the only barriers to conceptual accessibility, with participants also citing a lack of applicability to their own situation. This was a particularly common perception among the EP participants, and has been highlighted in studies looking at decision-making and evidence use among professions such as teachers and social workers (Barwick et al., 2014; McLaughlin, Rothery, Babins-Wagner, & Schleifer, 2010). If the findings were not relevant to their own organisation or classroom, then it was difficult to see how they could be integrated into their practice or used for decision making. This was not universally the case (for example, EP1 described being comfortable adapting research findings from other settings to his own classroom, with the understanding that he would change his approach if it was not working), but it was a prominent theme. HIS and MC participants also referred to a lack of applicability; with patients struggling to interpret how medical research findings might apply to their individual health situation, and charity staff considering it important to communicate what findings meant in particular contexts. These concerns highlight the way that making research conceptually accessible is more than simplifying language and explaining terminology. Instead, it requires understanding the contexts in which particular audiences are situated.

7.3.3.3 Trusting research

Aside from the ability to read and understand specialist and technical language, conceptual access also relies on the reader being able to assess the credibility of research publications (Zuccala, 2010). Assessing credibility and trustworthiness is a complex issue in discussions of open research. Academic journals have been termed 'trust technologies,' working to stabilise, and engender trust in scientific knowledge (Haider & Åström, 2017). The credibility of individual research articles are represented by proxies such as impact factor (Eve & Priego, 2017), journal title and branding, and the claimed existence of peer review (Tennant et al., 2019). Advocates for open science argue that these proxies do not accurately represent research quality, and that academic work should be judged through interrogating its methodology, findings and preferably its underlying data (Tennant et al., 2019). In fact, some have argued for the abolition of the journal altogether, favouring platforms and preprint servers and a shift to post-publication peer review. These arguments are based on the assumption that specialists are in a position to judge the quality of individual research articles based on their research and subject expertise. In fact, it has been argued that the credibility conferred by peer review harms the 'culture of doubt' and scepticism that should accompany scientific work (Tennant et al., 2019).

This assumption is not so clear cut when envisaging a wider readership. Although it has been suggested that open access could improve trust in science by allowing the public to see original work rather than biased media interpretation (Grand et al., 2012), researcher participants questioned whether members of the public would have the ability to be able to evaluate quality, particularly if research publications signalled trust and quality through external markers (eg. journal branding, claims of peer review).

Non-researcher participants described a range of strategies they used to evaluate research publications, which varied depending on their level of expertise and research experience.

The MC participant group stated that overall they judged individual articles on their merit, looking at the content, methodology and sample size (Greenhalgh, 2014). Some drew on the discourses of open science; displaying a relative scepticism towards journal impact factors, and a consideration for interrogating the methodologies and underlying data of individual article (Peters & Roberts, 2016). With the exception of MC8, who did not have as much research experience as the rest of the group, it was clear that they perceived themselves as having the necessary skills to assess and evaluate research. The MC participant group's responses illustrate that some research-users outside the academy without institutional affiliation would not find this to be a barrier to access. In fact, without the pressure to conform to disciplinary norms and conventions for career progression (Fyfe et al., 2017), it could be suggested that some audiences outside the academy may be more receptive to innovations in open science that encouraged open data and changes in research evaluation.

Some of the HIS participant group also responded in ways that reflected a 'critical appraisal' approach to evaluating the publications they read; such as checking the methodology and sample size reported in research publications (Carley et al., 1998). However, they also discussed other criteria, and were in general much more cautious about the type of research that they trusted than the MC group. Nettleton et al. (2005) identified a range of rhetorical devices that health information seekers used to justify why they trusted a particular online health information source. These included trusting information coming from a “respected institution”, trusting information from the UK over information from elsewhere, non-commercial over commercial information, and “professional” information. Journals were mentioned briefly in this research as examples of ‘professional’ (and therefore trustworthy) sources, but only as one source among many (Nettleton et al., 2005). These rhetorical devices map onto the responses of participants in the HIS participant group, suggesting that criteria for judging medical research could have overlaps with criteria for more general health information sources. ‘UK vs other’ criteria was particularly prominent among some HIS participants; who were very cautious about trusting research that was not published by researchers at recognised UK institutions and published in well-known publications such as the *BMJ* and the *Lancet*. Whilst seeking familiarity may be understandable when dealing with health-related topics, this approach serves to reinforce a global hierarchy where research from the UK and USA is considered higher quality (Piron, 2018). The HIS participants’ experience also touched on a loss of ‘cultural authority’ (Eve & Priego, 2017) as digital sources can easily adopt the visual markers of scientific authority. Participants were aware that online sources could look like journal articles but not be high quality research, or that authors could claim fabricated credentials. This increased their overall caution when assessing research publications.

HIS participants also distrusted the pharmaceutical industry's influence over academic research. A recent study by de Jong, Ketting and van Drooge (2019) analysed 'letters to the editor' in two Dutch newspapers and found that although letter writers trusted 'pure science' and the scientists that produced it, they did not trust the pharmaceutical industry, and were very concerned about conflicts of interest. This aligned closely to the perspectives of HIS participants, with HIS4 describing the pharmaceutical industry's influence over medical research as the *"scandal of the modern age."* Some were influenced by the work of Ben Goldacre in this area (Goldacre, 2012).

Attitudes towards evaluating research quality were much less cautious among EP participants, perhaps reflecting the perception that education research is less 'high-stakes' than health. Both universities and organisations such as the Educational Endowment Foundation and NFER were identified by some participants as trustworthy However, there was often a rejection of 'trust' as an important criteria, with EP participants caring more about whether it was useful in a classroom context. This is consistent with a recent research into teachers' evidence-based practice, which is often characterised by trialling ideas from research rather than using them to completely determine practice based decisions (Coldwell et al., 2017).

Reviewing the varied strategies participants reported for assessing the quality of research publications suggests that the question of whether the 'public' is able to evaluate the quality of research publications is a complex one, considering the diversity of experience and expertise within the public, as well as the diverse nature of research publications themselves.

7.3.3.4 Emotional factors

The role of emotion in social phenomena has been long acknowledged by sociologists (Bericat, 2016), and researchers in science communication, information behaviour (Fulton, 2009) and data science (Bates & Elmore, 2018; Kennedy & Hill, 2017) have all analysed the role that emotions play in social phenomena that are generally characterised by rationality and reason. Findings suggest that emotions played a role in whether or not participants found a research publication accessible or not, and in some cases caused significant friction. Particularly in the HIS group, participants gained reassurance and satisfaction from the feeling that they were reading ‘facts,’ ‘science’ and ‘truth’ and dissatisfaction and frustration from reading other types of information that they felt were not providing them with this certainty. They related this to their identity, perceiving themselves to be the ‘kind of person’ that wanted to find out everything that they could. This aligns with research into health information seeking behaviour suggests that health information seeking in general can be a form of emotional coping mechanism (Lambert & Loiselle, 2007). Negative emotional reactions to research articles were also articulated by some participants, as they described feeling alienated and angry by the way research was communicated in scholarly publications. This type of negative reaction to representation in research has been particularly documented by marginalised researchers, such as Cooper (2016), who has described a visceral reaction to research that dehumanises its subjects.

7.3.4 Social media

One area which blurs the line between material and conceptual access, and could be seen to dramatically increase reach, and reduce friction in the movement of research publications across academic/public boundaries, is that of social media. Some form of social media was brought up by the majority of participants in this study, and open access and social media are often discussed together (eg. Alperin et al., 2019). This section discusses how research sharing can be and facilitated by social media, with researchers engaging in "networked participatory scholarship," – the use of "online social networks to share, reflect upon, critique, improve, validate, and further their scholarship" (Veletsianos & Kimmons, 2012). Non-academic participants in this study who use social media were also able to benefit from these practices, using them to gain access to research articles, as well as engage in discussion with researchers (see Álvarez-Bornstein & Montesi, 2019 for analysis of researchers' Twitter followers). However, research sharing on social media was not simply transactional, nor was it always a way of reducing friction.

Digital media have been addressed as means by which 'engaged' academics have the potential to move between different communities and publics, although the reality of those engagement practices are complex and varied (Grand, Holliman, Collins, & Adams, 2016), and encompass a range of digital communication activities such as blogging, tweeting and creating videos and wikis (Kjellberg, Haider, & Sundin, 2016). As analysis by Alperin et al. has indicated that most open access journal articles are shared only within small communities, with limited diffusion to the public (Alperin et al., 2019), it could be argued that open access to formal publications is only a minor, and potentially irrelevant aspect of research activity on social media. Carrigan, for instance, sees social media as an extension of the choice offered by the open access movement, arguing that whereas researchers once had that choice of publishing in a prestigious paywalled journal or in a less prestigious open access journal, now they have the opportunity to be even more accessible to the public by blogging and using social media (Carrigan, 2016).

This tension was reflected in researcher participant responses in this study. For example, ER1, who felt she benefited from a lively Twitter research community, and used it to publicise her articles, expressed surprise when asked whether she shared an open access version, responding that she thought that any of her followers who was interested in it would also have institutional access. Although she was very interested in talking to practitioners about her work in other contexts, she saw sharing formal research outputs on Twitter as a way of communicating within her own research community rather than crossing community boundaries (Grand et al., 2016). On the other hand, ER 2, 4 and 5 believed that a significant number of their Twitter followers were practitioners, and felt that it was important to share open access versions of their work.

Using social media to share and publicise research outputs (using academic social networks or institutional repositories) is only one aspect of academic social media engagement, alongside networking, forming communities and developing online identities (Carrigan, 2016; Kjellberg, 2015; Morrison, 2018; Stewart, 2016). Nevertheless, there are clear overlaps between notions of ‘open scholarship,’ and ‘networked scholarship,’ with Veletsianos arguing that the technological developments that have enabled open access have also produced online networks that have changed the nature of scholarship in important ways (Veletsianos, 2016; Veletsianos & Kimmons, 2012). These overlaps become particularly evident when considering the influence of academic social networking sites such as ResearchGate and Academia.edu on the scholarly communications landscape (Manca, 2018). Findings from this study suggest that social media played a part in enabling people without institutional affiliation to find, share and access peer reviewed research publications alongside more informal communication (such as blogs) and engaging in online discussion with researchers themselves.

Participants who used social media did so in different ways. Just as MC participants were more aware of digital tools such as Unpaywall for accessing OA material; so too were they aware of hashtags such as #icanhazpdf, a popular way of requesting paywalled material on Twitter (Gardner & Gardner, 2015). In these cases, social media acted as a simple tool for requesting access to a paywalled publication.

Other non-academic participants described social media practices that were less transactional. White and Le Cornu (2011) use the term digital “resident” rather “visitor” to describe how some internet users perceive themselves to be part of an online community. As a digital resident, EP2 described creating a profile on academia.edu so he could access research and sustain an online presence as he began to write as a practitioner with the aim of eventually posting his own research outputs on the site. As a novice academic writer who had experience of accessing research without an institutional affiliation, he stressed the importance of sharing his own publications with any other practitioners who contacted him via academia.edu. From EP2’s perspective then, academia.edu was a both a way of building an academic and practitioner community and of reciprocating the provision of ‘open access’ publications that he had found so useful as a practitioner. There, has, of course, been lively critique of academic social networking sites; their reliance on venture capital funding which monetises academics' unpaid labour (Centre for Distruptive Media, 2015), academia's continued use of the .edu domain when it is not affiliated with an academic institution (Fitzpatrick, 2015), and the fact that a high percentage of articles shared on these sites infringe copyright (Laakso, Lindman, Shen, Nyman, & Björk, 2017). However, as Andrews (2016) has commented, such criticism does not often make an impact apart from "enthusiastic retweets from the library and OA advocacy communities." Indeed, a practitioner who published, EP2 would not necessarily have heard of, or have access to an institutional repository, and academia.edu seemed to him an obvious choice for both community building and access.

EP6 also presented herself as a digital resident on Twitter, bridging the gap between communities of teachers and educational researchers by engaging in discussion, sharing links to research publications and blogs, and asking people with institutional access to share material with her. She is an example of someone who could be considered a 'boundary spanner' (Long et al., 2013), sharing and mediating information and knowledge across different communities in her role as educational consultant and activist. She was confident that researchers she engaged with on Twitter would send her copies of their publications, and referred to them as friends that she trusted for their expertise on particular issues. She also had an account on academic.edu and used it to follow researchers whose work she admired.

EP6's experience highlights that researchers' social media presence is often just as important as the published research outputs they share. For EP6, the ability to engage personally with researchers was a positive experience which enhanced her research-engagement. However, other scholars have cautioned that that it can have downsides (Cottom, 2015; Vera-Gray, 2017). Cottom describes the move towards researcher/public engagement via Twitter as a good intentioned appeal to “democratized knowledges,” but goes onto analyse how it can also turn into what she describes as “academic microcelebrity,” with the imperative to “brand […] academic knowledge for mass consumption,” and make themselves (and not just their research outputs) visible in the online public sphere. Cottom’s analysis focuses on how this acts as a double-edged sword, especially as a black woman academic subject to online misogyny and racism. ER4’s negative experience of online abuse when she published a research article in the Conversation, highlights the vulnerability of marginalised researchers positioning themselves in this way (Vera-Gray, 2017).

It is tempting to focus on social media as a way in which community building and scholarly information sharing can take place between researchers and non-researchers, and a way of radically enabling access outside the academy. And in some ways, the experience of some participants suggests that researchers should heed calls to assume that some of their followers do not have institutional access, and always link to an open access version of an article. From a research perspective, it also leaves digital evidence of impact which can be studied in order to assess the reach of open access publications (Alperin et al., 2019). However, it should be noted that within this sample social media use was only important to some participants, with others expressing scepticism and distrust of social media, online forums and other forms of networked communication. Just as there exists a widely varied range of attitudes towards social media among researchers (Grand et al., 2016), so too do attitudes vary among research-users outside the academy. In some cases, social media was negatively associated with spreading misinformation, and was avoided. In others, networked communication was seen to have a use, but that use was not necessarily to share scholarly information. This was particularly true of some HIS participants, who appreciated online forums for emotional support, but preferred to access research through other means.

7.3.5 Other sources of friction

The section concludes by noting sources of friction caused by wider socio-economic structures. Time emerged as a particularly important factor that influenced how participants accessed research. Dawson has argued that having enough time plays a major factor in engagement with any research communication activity (Dawson, 2018) and was mentioned by all participant groups, although particularly important in education. This aligned with a research base that acknowledges educators' heavy workloads and the pressured working environments, and the resulting lack of time for all training and development, including research engagement (Coldwell et al., 2017; Collinson & Fedoruk Cook, 2001; Schaik et al., 2018; Williams & Coles, 2007a). For example, a 2017 government report on evidence based practice in schools found that teachers receive very little time to search for and access research evidence, and that a culture of evidence based practice in schools relied on providing dedicated time engagement with research (Coldwell et al., 2017). A crisis in teaching has received media attention in recent years, with UK teachers found to have poor work-life balance and higher stress levels than comparable professions (Worth & Van Den Brande, 2019). This meant that for all the EP participants it was assumed that it was common knowledge that teachers did not have enough time for activities outside their core practice; as EP2 commented: *“It always seems a little bit boring to talk about teachers’ time.”* Discussion of time shortages were repeated several times over the course of most EP interviews, and considered by the majority to be a bigger barrier to access than the existence of paywalls.)

Time also emerged as a contested area, with some participants who had roles supporting classroom teachers with research access commenting that even when given dedicated time, teachers still claimed that they did not have enough, and showed little interest in reading research. Research exploring teachers’ conceptions of time has acknowledged that simply allocating more time is not always successful if teachers still feel under pressure during that time or if they do not have autonomy over how to manage their own time (Collinson & Fedoruk Cook, 2001; Steen-Olsen & Eikseth, 2010).

Lack of time was seen as a driver by some participants for adjusting the format of education articles to make them shorter and more accessible, or to include summaries alongside open access articles (Marsden & Kasprowicz, 2017). However, it should be noted that simply providing shorter open access articles or summaries was not likely to be a panacea for a lack of time caused by wider structural issues such as overwork and lack of resources. As Tripney et al point out, providing resources, or even a ‘light touch approaches’ to intermediaries has very little effect on research engagement within schools (Tripney et al., 2018). Both education researcher participants and intermediaries were acutely aware of the time constraints and pressures of potential readers of research, with some linking this lack of time to wider social and political concerns, such as cuts to government funding in schools and youth and community settings. This suggests that in discussions of access and friction, attention should always be paid to broader socio-economic factors (Møller, 2017)

Other barriers cited by participants such as lack of support for reading and interpreting and using research have also been covered in the context of education (Coldwell et al., 2017; Schaik et al., 2018; Tripney et al., 2018), where studies have recommended that workplaces provide a more supportive culture for research-engaged practitioners. It has also been discussed in health, suggesting that patients and physicians need to work in partnership in order to engage in shared research-based decision making (Carman & Workman, 2017). It seems unlikely that open access alone is able to break down these barriers, as they require larger changes in systems and cultures.

7.3.6 Reducing friction

Friction, in the context of open access, is a way of articulating the range of positions between ‘accessible’ and ‘inaccessible’, and well as emphasising the time and energy costs of searching for, accessing reading, and assessing the quality of research publications. The majority of participants believed that in a world of finite resources, it would be impossible to reduce all types of friction for all publics wanting to access research, with some believing that some types of friction were necessary and positive. Removing paywalls was not always seen as a priority for reducing friction, and led to some of the disconnects and disagreements discussed in the following section.

7.4 Areas of disconnect

The third section will turn to the concept of *disconnect* – exploring gaps between different sets of perceptions or motivations, gaps between perceptions and reality (Anthony, 2010), loss of connection, or areas where linkages should be but aren't (Coye, 1997). Open access is a complex topic, and there is ongoing debate and disagreement between stakeholders about the best ways to implement and finance it (Moore, 2019; Pinfield, 2015). Data analysed in this thesis emphasises that this also extends into discussions of open access 'outside academia.' In framing analysis through areas of disconnect, the thesis avoids simplistic messages in favour of public access to research which do not recognise the area's complexity, whilst still suggesting ways in which these gaps can be bridged or reconnected.

7.4.1 Perceptions vs realities of the academic publishing system

The first area of disconnect identified within the data was between research-user participants' perceptions of academic publishing and the specific realities of the academic publishing system as understood by researchers - such as how academic authors are rewarded for their work, how peer review is carried out and how academic journals are financed (Fyfe et al., 2017). For example, some participants believed that academic authors were paid for their work, and feared they would lose money if publications were shared, and others had not heard of repositories or systems designed to encourage openness and sharing.

It has already been noted that using Google (whilst undoubtedly making some research publications more discoverable than they would otherwise be), also meant that the scholarly communications system seemed more opaque to participants

(Nicholas et al., 2017). Differences between different kinds of research (or research-informed) outputs were often blurred – participants were not always sure whether they were referring to journal articles, reports, books, sections of charity website, or pieces of science journalism. This meant it was difficult to tease out views on the type of research articles that are usually used in discussions of open access – primarily journal articles, and academic books (Lawson, 2019).

In the education context, this was because it was common to use a broad definition of ‘research evidence.’ For example, Coldwell et al. define research as “quantitative and qualitative research findings generated by external researchers; evidence reviews such as those produced by [third sector orgnaisations]; external evaluations; and/or research produced by teachers/schools that is underpinned by rigorous and systematic enquiry” (Coldwell et al., 2017). HIS participants, on the other hand, often referred to journal articles, but almost all discussed these alongside some forms of science journalism, research-informed books written for a lay audience, and research communication from medical charities.

It is not imperative for all research-users to understanding the detailed workings of academic publishing and open access. However, varied and sometimes incorrect understandings of scholarly communications meant that participants found it hard to grapple effectively with why some ‘research’ was open access and some wasn’t, and how to find pieces of research (for example through repositories). It also meant they could not meaningfully engage with the debates around scholarly communications taking place among researchers. This was particularly highlighted by those who had seen critical media coverage about big academic publishers such as Elsevier, and articulated their concern about how they profit from paywalled research. However, without further understanding how the larger publishers have now successfully modified their business models to introduce open access options (Lawson, 2019; Lawson et al., 2015), the potential for critical engagement is limited.

7.4.2 Open access arguments vs research-user priorities

Secondly, the study found a disconnect between dominant discourses in literature about open access and attitudes of research users and intermediaries. Most participants prioritised the personal and social benefits of research, over more theoretical or political arguments. The following section explores this disconnect in more detail, comparing some of the prominent discourses related to open access (benefits, rights and accountability) that were drawn on by participants and have been explored by researchers in this area.(Bacevic & Muellerleile, 2017; Davis, 2009; Zuccala, 2010).

In general, ‘benefits’ was a much more prominent discourse than either ‘rights’ or ‘accountability’, despite the latter two key themes being important in open access policy and advocacy (Davis, 2009; Finch, 2012). This tendency was also noted by Zuccala (2010) in her focus group research. Perspectives on the public right to research and the desire for research to be accountable to the public tended to be fragmented, contested and based on shifting understandings of the meanings of both rights and accountability. The following subsections will discuss the disconnects and conflicting perspectives on ‘benefits’, right to research’ and ‘transparency and accountability’ in more detail.

7.4.2.1 Personal and social benefits of OA

The benefits of increased access to scholarly literature was a significant focus for many participants, as they described how particular incidences of research access had helped them in their work and personal life. The most obvious benefits were related to health, a key area already identified by earlier research and campaigning around open access (ElSabry, 2017; Willinsky, 2006; Zuccala, 2010). As Willinsky (2006, p. 113) claims; “nowhere has the democratic potential of the open access question played out so dramatically as in the doctor’s office.” Participants with chronic illnesses were positive about being able to learn more about conditions and treatments, discuss options with their healthcare practitioners, make healthcare decisions, satisfy their need for good quality information and share information with fellow patients. These benefits conjure the image of the ‘informed patient,’ (Kivits, 2004; Muir Gray, 2002), a healthcare model where patient and doctor work together to make healthcare decisions in contrast to a paternalistic relationship where doctors make decisions on behalf of a passive patient. It also fits within a history of patients learning to read medical literature –most notably during the HIV crisis in the 1980s (Epstein, 1996), but more recently for chronic conditions where there is no consensus over cause or treatment (Dumit, 2006). When placed in this context, failing to providing open access to medical research publications seems indefensible, and this is reflected in collections of stories designed to advocate for OA, which contain accounts from patients encountering paywalls whilst trying to research their own or their childrens’ conditions (Taylor, 2015). In some cases, access could in some cases be the difference between life and death (Priego, 2016). However, it should be noted that this kind of life or death situation did not represent the experiences of the patients in this study; although there were some examples of urgent health decisions that needed to be made, there were also discussion of reading research for interest’s sake, as a coping mechanism, or to discuss with fellow patients in a support group.

Moving away from individual health problems, participants positively described a range of other benefits, particularly for those working in the third sector and in educational practice. These included supporting evidence-based decision making, sparking ideas for practice, keeping up to date with areas of interest, supporting applications for funding, campaigning on issues of social justice and diversity, and carrying out practitioner research and service evaluation. Many of these benefits align with wider research on evidence based practice and research-use in education (Coldwell et al., 2017; Judkins et al., 2014; Tripney et al., 2018; D. Williams & Coles, 2007a) and in the third sector (Hardwick et al., 2015; Holzmeyer, 2018; Moorhead et al., 2015). Some of these studies (Beddoes et al., 2012; Holzmeyer, 2018) specifically reference the importance of access to peer reviewed journal articles and book chapters. These studies noted benefits related to time saving and efficiency; with third sector staff able to carry out their jobs more effectively once they did not have to spend time finding ways to access paywalled research. This was also reflected in this study’s findings, with EP and MC participants particularly frustrated by the labyrinthine processes of getting access through workarounds, file sharing and other people’s subscription access.

Benefits to the commercial sector are notably missing from the study, despite being identified as a key driver of public access (ElSabry, 2017; Tennant et al., 2016), with only one participant (MC1) citing commercial innovation as a major benefit of OA.

Further research is needed in order to explore perspectives on industry research access, building on research which suggests that SMEs in particular struggle to access research publications (Houghton & Sheehan, 2006; Parsons et al., 2011). It would also require more nuanced analysis of how open access interacts with the commercialisation of research findings (for example, through patents); which is beyond the scope of this study. It is also worth drawing attention to the fact that close relationship between research and industry was in general, discursively constructed as a negative one by participants. Many (although not all) were intensely critical of the marketisation of education and the influence of the pharmaceutical industry on healthcare.

7.4.2.2 Social impact

The benefits of open access can be placed in the context of desiring research having wider social impact (Bornmann, 2013; Greenhalgh & Fahy, 2015; Tennant et al., 2016). A growing interest in the social impact of research has been documented over the last decades, and there has been a proliferation of terms to refer to aspects of the relationship between university and society, such as Mode 2 knowledge (Gibbons et al., 1994), third stream activities (Bacevic, 2017), and knowledge translation (Greenhalgh & Sietsewieringa, 2011). These contributions to society have been increasingly formalised and measured through research evaluation exercises (Bacevic, 2018). It is tempting for OA advocates to claim that increased OA would increase the social impact of research (Tennant et al., 2016); or, more accurately a range of diverse 'impacts' including societal, economic and cultural (Bornmann, 2013). Stories of research-use presented in this study - such as accessing research in order to influence policy within a school - could be seen as examples of impact. However, research into impact shows that is rarely linear in nature (Greenhalgh &

Fahy, 2015), and is very difficult to measure (Bornmann, 2013). Impact can also encompass a wide range of approaches from different political standpoints; from co-production and action research with marginalised communities, to increased links between academia and industry (Greenhalgh & Sietsewieringa, 2011; Moore, 2017). Bearing in mind the complex and disputed nature of impact, it is outside the scope of this thesis to attempt to provide definitive evidence of the 'impact' of open access outside the academy. Instead, it focuses on the perspectives and experiences of research-users, researchers and research intermediaries, and how access is enabled and prevented in specific contexts.

It is important to recognise also that for researchers, neither impact nor open access are neutral terminology, as they play key roles in research evaluation policy and shape what some perceive as a pressurised, managerialist and marketised HE landscape (Bacevic, 2017; Chubb & Watermeyer, 2017; Golumbia, 2016; Holbrook, 2017). This particular policy context was largely not visible from the perspectives of research-users, but was reflected in some of the researcher responses. For example, the association between open access and compliance with the REF open access policy – only one strand of enforced compliance in an HE sector that has increasingly become characterised by compliance – prevented some researchers from reflecting on the more positive aspects of open access (Andrews, 2019). As Moore argues, the anxiety provoked by encountering open access as a requirement of the REF may well have negative consequences for broader perceptions of open access among researchers, including its social benefits (Moore, 2019).

7.4.2.3 Public right to research

Moving on from the benefits of open access, this section will engage with discourses related to participants' rights as taxpayers and members of the public. Bacevic and Muellerleile (2017) have described open access as a "moral economy," underpinned by moral arguments about how scholarly knowledge should be produced and disseminated. Central to this argument is the claim that the everyone has the right to scholarly research, regardless of institutional affiliation This right can be interpreted in two ways (Bacevic & Muellerleile, 2017): the first is that as research is publicly funded, it should be available to taxpayers (Neylon, 2013). The second is that as knowledge is a moral good, it should be made as widely available as possible to all publics, with any enclosure being deemed ethically unjust (see Swartz, 2008).

Willinsky (2006) incorporates both approaches, providing an extended argument for the public right to access academic work in both the sciences and the humanities. The right to access research emerged to some extent as a theme in this study, with some non-researcher participants commenting that they felt deserving of access, or that they felt that researchers had a moral responsibility to make their work as widely accessible as possible (eg. HIS6, EP7, MC1). Working for organisations that funded medical research, the MC participants had a particular financial stake in this argument; perceiving that as their organisation had covered the cost of Gold open access for some publications, it was particularly frustrating that others they needed to access were not OA. Other participants identified themselves as 'taxpayers,' who deserved access to publicly funded research.

However, this was not as common a claim as might be expected, with participants considering themselves to be lucky to have the limited access they did. Even those who identified themselves as deserving taxpayers were cautious about demanding their rights, speculating on possible reasons why publications were not openly available. For example, HIS4 dismissed the ‘taxpayer’ argument altogether, arguing that as the research that she wanted to access was funded by pharmaceutical companies there was no reason for it to be made accessible. HIS4 makes a link here between the pharmaceutical industry and a lack of openness which is not necessarily borne out in reality. A recent study found that there has been a gradual increase of industry-sponsored research being made open access via both the Gold and Green routes (Yegros-Yegros & Leeuwen, 2018) with suggestions that not only do private companies without subscription access benefit directly from OA, but they have a vested interest in getting information out quickly in the form of preprints (M. Warren, 2019). This complex network of motivations from different OA stakeholders may mean that it is difficult for even engaged research-users like HIS4 to hold an informed position.

In contrast to other participants, HIS6 and EP7 both situated open access as part of a broader political stance relating to social justice and democracy (Morrison, 2015). They did not draw on arguments related to taxpayers and public funding; instead seeing OA as part of a wider move towards a democratisation of knowledge and education for everyone. HIS6’s political statement: “*I beg and I borrow. And I see it as the work that I do is about public value. And I think that the intellectual realm should be available to us,”* had echoes of the Guerrilla Open Access Manifesto’s claim that *“sharing isn't immoral — it's a moral imperative. Only those blinded by greed would refuse to let a friend make a copy”* (Swartz, 2008).

Researcher participants also acknowledged the public right to access research publications. However, their rhetoric did not always align with their choices of publication venue, which tended to be based on the publications popular among their research communities, and prestige considerations. This is consistent with research into perceptions of open access, which shows that although researchers are broadly supportive of the principle, many other factors influence research publication in practice (Swan, 2006; Wakeling et al., 2019). An exception to this was ER5, who described a strong commitment to OA, and on the HR2, whose criticisms of the implementation of OA (particularly the Gold route) were so strong that they outweighed support for public access. HR2’s position is echoed by Golumbia (2016), who has argued that researchers should not have a misguided duty to the idea of the commons, when the implementation of OA in practice risks causing more harm than good to research.

This lack of consensus over whether there is a moral imperative to make research openly accessible is evidence of the contested nature of all aspects of OA (S. A. Moore, 2017), and highlights the complexity and unfamiliarity of the scholarly publishing system (Fyfe et al., 2017)

7.4.2.4 Transparency and accountability

Those who argue that the public should have a right to research access often also argue that by making research open, it becomes more accountable to the public

(Davis, 2009). For example, the Finch report states that open access will promote "enhanced transparency, openness and accountability, and public engagement with research" (Finch, 2012, p. 53). Accountability is a term that is not always clearly defined (Mulgan, 2000), and this is certainly true in the context of open access. In the Finch report, the desire for openness, accountability, transparency and public engagement are linked together without clear definitions of the terms and the differences between them (Finch, 2012). In its core sense, accountability refers to being "called to account;" meaning both demanding answers, and having the capacity to impose sanctions (Fox, 2007; Mulgan, 2000). It is often linked to the concept of transparency, with the assumption that increased transparency will lead to increased accountability (Fox, 2007). However, it is also used to mean anything from being responsive to public wishes to encouraging democratic engagement (Mulgan, 2000).

These multiple and often vague meanings of accountability were reflected in participant responses. For example, MC participants discussed accountability in the context of the charitable sector, where it is considered a high priority (Ebrahim, 2003) They viewed the act of making research articles open access as a way of being accountable to their communities of donors, whilst also feeling that the need to be accountable in their use of charitable funds meant that they should not be paying for access to research publications when they could be spending money in ways that more directly benefit their communities.

Other participants gestured instead towards another sense of accountability, towards specific communities that were the subject of research and affected by research findings (Sullivan et al., 2001). Harm to marginalised communities were traditionally thought to affect individuals who took part in research. However it is now recognised that harm can also be enacted on wider communities through stigmatised representations of marginalised populations (Sharpe, 2014; Sullivan et al., 2001). This has led to calls for open access from some communities, as a way to critique and hold researchers, governments and clinicians to account (see Jones, 2014 for an example). In the study, several participants indicated that they would like to hold researchers accountable for research that they felt harmed patients, service users, or pupils from marginalised communities. Other participants discussed how open access mechanisms that were already in place to try and enable accountability (eg. co-producing research with a particular community , or forming a patient panels designed to catch problems at research grant funding stage). These aspects of research exist separately to open access, but they are sometimes seen to fall under the umbrella of ‘opening’ the research process itself (Fecher & Friesike, 2014). They were certainly seen as part of a continuum by some participants who when asked about open access to research, discussed everything from co-production to volunteering on research ethics panels. As in the call from Jones (2014) to make research accessible to people experiencing abuses in the psychiatric system, it is possible that open access could contribute to these mechanisms of accountability, through, for example, allowing patient volunteers access to the formal literature. This attitude was expressed particularly by EP7, who felt strongly that it was hypocritical for researchers committed to community accountability to publish their research in a paywalled journal.

However, the multiple and ambiguous meanings of the term ‘accountability’ means that it was difficult to tease out exactly how open access could make research more accountable. Fox’s argument that increased transparency does not always lead to accountability is pertinent here; without specific mechanisms for enabling accountability, it seems doubtful whether open access alone could succeed in holding researchers accountable. It is also worth noting that although accountability can be positive, it has also been problematised. For example, there is a perceived tension between public accountability and academic freedom (Halpern & Mann, 2015) that could be explored further, although it was not articulated by participants in this study.

7.4.3 Perceptions of key actors – publishers and libraries

This section will end by considering the discursive construction of key actors within the scholarly publication ecosystem; academic publishers and academic libraries, and the disconnect between a traditional open access advocacy narrative and the perceptions of participants. Davis (2009) identifies a narrative present in much OA advocacy, which positions academic publishers as an enemy to be resisted. In one incarnation of this narrative, the Guerrilla Open Access Manifesto exhorts those with institutional access to fight against private corporations “blinded by greed” through piracy and file sharing (Swartz, 2008). However, it is also a key argument of many of the more mainstream OA advocates (Suber, 2012; Willinsky, 2006), Notably, in these arguments, the ‘amoral commercial publisher’ (Davis, 2009) is highlighted and positioned as an antagonist who encloses publicly funded work, provoking what has been termed the ‘serials crisis’ by charging ever-increasing subscription fees (Davis, 2009), and as ‘parasitical,’ exploiting unpaid academic labour in order to increase their own profit margins (Bacevic & Muellerleile, 2017). Other actors, particularly librarians and the scientific community come together as part of the OA movement in order to resist this ‘oligopoly’ of academic publishers (Larivière, Haustein, & Mongeon, 2015) .

The potential for public interest in this narrative is evident, and it has been communicated outside the academy, in mainstream newspapers (Buranyi, 2017) and on Radio 4, with the growth of the pirate site, Sci-Hub in particular catching even the tabloid press’s attention (Stewart, 2016). This public communication offers the potential for research-reading publics to engage critically in the politics and economics of scholarly communication from their position outside academia. This was partially reflected in the perspectives of some participants, with HIS6 criticising ‘Elsevier-Reed’ [sic] as playing a particular role in enclosing content that was previously freely available in academic libraries, and MC2 referring to a Guardian article (cited above) which discussed the size of publisher profit margins. However, there was also sympathy expressed towards publishers, acknowledging the value they contribute to the publishing process and feeling that they had the right to profit from their work. HIS1, as a small business owner himself, identified with the publishers and expressed concern over the impact of making work freely available.

In some cases, the role of publishers in either restricting or facilitating OA was erased altogether by participants. Instead, research was perceived to be published by researchers or universities, with well-known titles such as the Lancet and the BMJ seen more as markers of trust than as actors playing a part in the production of scholarly publications. It seems likely that this is due to the complexity of the scholarly publication system for those who are not familiar with it, as well as the difficulty in untangling how research is published when it is aggregated (for the majority of users) through search engines such as Google and Google Scholar (Nicholas et al., 2017).

Also partially erased within the data is the work of librarians in facilitating open access. Participants who had, or had had in the past, some form of institutional access understood the ways in which libraries provided access to subscription resources, with several commenting that they used the library catalogue to access resources. However, there was no acknowledgement that the library also played a role in supporting and administering open access. This reflects concerns that the library’s role in scholarly communications may not be visible (Pinfield, Cox, et al., 2017) especially to a wider public. In fact, to several participants. the academic library appeared more as a gatekeeper than a facilitator of access described by Davis (a not unfounded perception, as research suggests that academic libraries have become more closed to non-affiliated users since the growth of electronic resources (Wilson et al., 2019).

7.4.4 Tangible outcomes vs systemic change

The third disconnect identified within the data is one between the priorities of ‘public access’ and that of an open access movement that is demanding radical systemic change in scholarly publishing. Recently, the OA movement’s capability for righting the serials crisis and of heralding a more fair democratic future for scholarly communication has been questioned, as publisher profits have seemingly not been affected by the turn towards OA (Lawson, 2019). There has been a growth in scepticism towards ways of implementing OA that maintain the status quo (Lawson et al., 2015). This perspective was reflected by several researcher participants (HR1, ER5), who were as opposed to the Gold OA business model as they were to traditional subscription models, fearing that not only had OA failed to reduce publisher profits, but ultimately excluded unfunded researchers from making their work OA (Golumbia, 2016; Lawson et al., 2015). The discourse however is notably absent from the research-user perspective, even from those who were critical of academic publishers, and suggests that an focus only on the “tangible outcomes” of public access at any cost could reinforce traditional publishing hierarchies, preserving systems which have absorbed open access rather than experiencing it as radically disruptive as it was initially hoped to be (Moore, 2017).

7.4.5 Open access vs research communication

The final disconnect (and one that draws the figure of the research intermediary to the foreground), is between open access and the wider concept of research/science communication. The significant conceptual barriers posed by traditional research publications has led to a wealth of research on how research findings are applied in contexts such as practice and policymaking and to the general public (Greenhalgh & Sietsewieringa, 2011). These understandings go far beyond expecting those outside the academy to read traditional research publications; with even common terms such as ‘knowledge translation’ being problematised as over simplistic, acknowledging that knowledge is constructed, contextual and situated (Greenhalgh & Sietsewieringa, 2011). Diverse methods of communicating research accessibly have ranged from using storytelling techniques to encourage the uptake of evidence by policymakers (Davidson, 2017), to creating theatre out of sociological data (Leonard, 2009). Faced with this varied landscape, it may seem to some as though a focus on open access to traditional publications could be a backward step. This was certainly the perception of some researcher and intermediary participants in the study, and led to a disconnect between prioritising open access and prioritising other forms of research/science communication in their work.

Health researchers in particular were much more interested in ways of communicating their research (co-producing patient information materials, liaising with the university media team, producing accessible websites using narrative techniques), than in making their work open access, with doubts expressed about whether it was worth investing time and finances in open access when other methods were more innovative and tailored towards specific audiences.

Science communication literature often emphasises a dichotomy between formal research literature (seen as inaccessible) and other forms of research communication. The opening paragraph to this science communication text effectively characterises this perspective:

> *"In the not too distant past, researchers toiled in ivory towers, presenting findings at meetings of learned societies and publishing in obscure journals, often entombing information*."(Bielak, Campbell, Pope, Schaefer, & Shaxson, 2008)

It goes on to articulate the many strategies for communicating research findings to external audiences that exist aside from scholarly publishing. Similarly Gibbons et al. cite scholarly journals as examples of Mode 1 knowledge, whereas the more impact-oriented Mode 2 knowledge used different communication strategies altogether (Gibbons et al., 1994). From this perspective, the worlds of open access and research communication may seem poles apart. Even Fecher and Friesike, who locate them both under the umbrella of ‘open science’ still see them as two distinct subfields – the ‘public’ argument focuses on making research more comprehensible, whereas the ‘democratic’ argument focuses on making it open access (Fecher & Friesike, 2014).

Given this context, it is unsurprising that researchers otherwise very committed to research communication activities should be otherwise sceptical of open access. This view was articulated by several researcher participants in both health and education, and has been reflected in the perspectives open access sceptics such as Osborne (2013).

7.4.5.1 *‘Reconnecting’ open access and research communication*

7.4.5.1.1 Linking

Despite this, there were suggestions within the data that open access to formal research publications could support and enhance other research communication activities. For example, as well as enabling open access to research publications, digital technologies also have the potential to create “cross-linkages” between translated or mediated research and formal research outputs (Zuccala, 2010). An example of this is the practice of adding links to news articles, charity websites, patient information materials, Wikipedia entries, classroom resources and press releases. Calls for this practice to be made standard have been made by Tattersall (2016), both for increasing accessibility of open access research and because it allows researchers to measure their impact via tools such as Altmetric.com, Kudos and ImpactStory. Several participants appreciated when a link was provided (enabling them to check statistics, read methodologies, or check whether a piece of research had been reported correctly). However, findings suggested that even research intermediary participants did not always perceive it necessary to provide links to research publications. Some of the reasons for this were shaped by the current scholarly communication landscape; for example, it was not seen as good practice to link to a paywalled publication, or to an embargoed green OA version. Others did not see the need to include a link, or felt that it would not fit with the design of the online article or resource.

7.4.5.1.2 Lay summaries

The addition of a lay summary to an academic journal article could also be a way of bridging the gap between open access and wider research communication efforts (Barnfield, Pitts, Kalaria, Allan, & Tullo, 2017; Kuehne & Olden, 2015; Tennenhouse, 2016). This was a practice that health participants had experienced (and was associated with certain journals such as the BMJ), but in education had generally not. Participants were often positive towards the concepts of lay summaries, although many had not seen one. Some expressed concerns about the difficulty in pitching the lay summary at the right level, and seeming patronising attempt at engagement that did not tackle the question of conceptual accessibility. This was similar to findings from an earlier study focusing on adding lay summaries to medical research articles (Nunn & Pinfield, 2014)

7.4.5.2 Writing accessibly

Kelly and Autry have questioned the need for research translation at all, suggesting instead that the research publications themselves should be made more accessible (Kelly & Autry, 2013). Participants were divided on this question, with health participants tending to believe that it was necessary for research publications to retain specialist and technical language in their publications for the purposes of communicating precisely, whereas education participants felt that research would benefit from being written more accessibly. All of the educational researchers stated some level of commitment to making all their writing accessible (especially to practitioners). However, it is worth noting that writing accessibly could sometimes mean being forced to write in a certain way, as noted by ER1 and ER4, without space to explore ideas, be theoretical or express a political slant. As Lather has argued, calls for plain and transparent language may mask other demands and assumptions which restrict academic writing in ways which are not immediately obvious (Lather, 1996).

It could also be argued that researchers now have the opportunity to write for diverse audiences without needing to make their formal research publications accessible (Carrigan, 2016; Reid, 2019). The proliferation of researcher blogs is one phenomenon which signifies the ways in which researchers are taking this opportunity (Kjellberg, 2015), and several researchers in this study had experience of writing for their own blogs, and for sites such as *the Conversation*. However, participants suggested that there was a hierarchy between formal research publications, which accrue (academic) impact and prestige, and informal research communication (eg. blogs, Tweets) which engage the public (Carrigan, 2016). The existence of accessible blogs by researchers also led to the question of whether there is a need for non-academic audiences to have access to the full paper, chapter or monograph at all. The varied motivations and levels of research literacy among participants in this study suggests that this is not always the case, but indicates that in many cases a blog tailored to a patient or practitioner audience would be preferable to a full article.

7.5 Intermediaries

Findings from this study suggest that one of the main ways in open access can complement research communication practices is by supporting the practices of research intermediaries or knowledge brokers, and that these intermediaries were an important ‘public’ for open access. The fourth section of this chapter will explore the concept of intermediaries or brokers in more detail. The term ‘knowledge brokering’ refers to the practice of bridging the gap between those who produce knowledge and those who use it (Meyer, 2010; Ward, House, & Hamer, 2009). Theorists in this area see the knowledge broker as a separate actor from the researcher and research user, whose role it is to facilitate the use of research in particular contexts. Although practices of knowledge brokering may differ depending on the needs and contexts of user communities, include identifying, reviewing and synthesising evidence, communicating it accessibly and providing training to research users in how to use evidence effectively (Meyer, 2010). They are positioned at the “interface between the worlds of researchers and decision makers” and among other things, are involved in providing assessment and interpretation of evidence for research user communities (Ward et al., 2009). Scientists and researchers can also take on knowledge brokering roles themselves (Turnhout, Stuiver, Klostermann, Harms, & Leeuwis, 2013). All of the medical charities in this study acted to some extent as knowledge brokers, translating research in a variety of ways to different stakeholders including the press, the public, policymakers and healthcare staff. HIS perspectives emphasise the key role that medical charities played in making research conceptually accessible to patients. EP5, EP6 and EP8 (working in schools) and ER5 (working in a third sector organisation) also had formal knowledge brokering roles, reflecting the increasing formalisation and professionalisation of knowledge brokering practices through the recruitment of dedicated staff (Meyer, 2010). The study also suggested that research-users outside academia could take on informal intermediary/knowledge brokering roles, making medical/educational research knowledge more accessible to other patients or social media contacts.

Research into knowledge brokering has emphasised that it is not synonymous with ‘research communication’, as ‘communication’ does not centre the work put into creating partnerships in order to apply research to practice (Malin & Brown, 2020). Therefore, open access in itself may not be seen as a form of brokering. However, as previous studies suggested (Beddoes et al., 2012; Moorhead et al., 2015) intermediaries or knowledge brokers are often without access to subscription resources, or were relying on others with temporary and contingent access. Findings from this study demonstrated a pressing need for access to research among participants who acted as knowledge brokers.

As knowledge brokers and intermediaries are positioned at the ‘interface’ between different worlds (eg. researchers and practitioners, researchers and patient communities) (Meyer, 2010), their proximity to academia allowed them to find workarounds to research access relatively easily. However, it caused frustration, and there was some material that they were not able to get access to. It was also necessary for them in some contexts to offer access to the full text of research articles as well as engaging in other brokering activities (Malin & Brown, 2020). Whereas EP7, EP8 and MC5 used their own institutional affiliation as students to share full text research articles with their colleagues, other participants were not willing to do this in a professional capacity, and found that paywalls and embargoes prevented them from linking to, or sending full text research articles to their audiences.

It should be noted that just as there are limitations to open access (Neylon, 2015), so too are there limitations to all research communication activities, and that research intermediaries are influenced by the same social biases as researchers, despite reporting that they were striving for objectivity and neutrality in their research communication activities. There are also many people who are excluded from science communication attempts for reasons that have more to do with social inequalities and the perception of research as an elite, hegemonic form of knowledge than to do with providing a linguistic and conceptually accessible translation (Dawson, 2018). These forms of exclusion were not experienced by participants in this study, and therefore could not be explored in the detail they deserve.

7.6 Power

The final key theme discussed in this chapter; power; is one that impacts in some ways upon all the previous themes. This is unsurprising in some ways, as Situational analysis asks researchers to attend directly to power relations and inequalities, with Clarke arguing that traditional grounded theory did not pay enough attention to this

(Mather, 2008). This section will discuss some specific ways in which power manifested in the data, taking as its starting point the idea that research users outside the academy can be *empowered* through open access to research. This section discusses the possibilities and limitations of this type of empowerment, focusing on asymmetrical power relations between different stakeholders. It concludes by drawing attention to the way in which open access itself has been tied to mechanisms of institutional power such as the Research Excellence Framework, which can be seen to exert power over researchers, and shape their publishing practices.

7.6.1 Open access and empowerment

This section will discuss the narrative which presents research-users outside the academy as being *empowered* by access to research. Willinsky refers to a sense of “informed empowerment” among patients in particular, where access to research could lead to a flattening of a paternalistic doctor/patient hierarchy and the ability to engage in shared decision making. This aligns with the trend towards the ‘informed patient’ discussed in the literature review (Kivits, 2004; Muir Gray, 2002), where empowered patients are granted rights, responsibilities and autonomy within the healthcare relationship (Bravo et al., 2015). ‘Empowerment’ also appears as a concept in educational research, with access to research literature, discussing how practitioners can be supported in to improve their professional practice and engage in evidence-formed decision-making., particularly in the context of teachers as active researchers themselves (Kincheloe, 2003).

Empowerment appeared as a theme within the interview data. For example, HIS participants in some cases felt that their access to research had led to increased shared decision making about treatment options with practitioners, a feeling of being in control over the management of their health conditions, a new way of understanding their bodies and the autonomy to make health decisions that went beyond the information provided by the NHS. Similarly, access to research had allowed some EP participants to influence their senior leadership teams and organisations to make changes to policy and practice at a school level as well as in their own classrooms. Research publications acted as evidence that gave weight to the change (for example, a change to assessment practices, or to challenge racist misinformation). There were also particular instances of informally sharing access to research information that meant that research-users were able to empower friends and colleagues in similar ways through acting as informal intermediaries. However, the possibility of empowerment had caveats and limitations across all participant groups, due to asymmetrical power relationships between and within the social worlds identified in this study.

It is also worth noting that some HIS participants, despite their interest in research publications felt that in certain contexts they did not desire empowerment, - as noted by Henwood, Wyatt, Hart & Smith (2003), patients often prefer a more traditional relationships with their healthcare practitioners where they do not feel under pressure to make decisions.

7.6.2 Asymmetrical power relations

Coté, Gerbaudo and Pybus (2016) write (in the context of big data) that the production, circulation and consumption of data are shaped by asymmetrical power relations, and a similar claim can be made for research literature. The promise of empowerment through open access was in reality severely impacted on by unequal power relations between individual actors, groups of actors, institutions and social worlds. For example, HIS participants still felt that their healthcare practitioners held power over them, and they recounted receiving adverse reactions when they tried to discuss research articles. This differed according to diagnosis and social position; the possibility of being empowered was more likely for a retired doctor than for HIS6, lacking in formal education and dealing with a stigmatised condition. There were also spaces that did not allow for the type of shared decision making advocated (for example, in an hospital or a GP surgery rather than in consultation with a specialist). This continued power imbalance is present in critiques of the ‘informed patient’ model (see Caiata-Zufferey & Schulz, 2012; Sommerhalder, Abraham, Zufferey, Barth, & Abel, 2009) especially when patients were perceived as the ‘wrong’ kind of informed patient, perceived to be acting against the advice of medical professionals (Fox et al., 2005).

Similarly, in an educational context EP participants felt that had very limited power to make the changes suggested by research articles, and that their access to research was controlled by their senior management, whether this was by dictating the type and subject of research that their employees accessed, or using consultants to filter and describe particular research concepts in training sessions. Research suggests that senior leadership in schools are often more positive about research engagement than classroom teachers, evidence of the top-down approach that participants were sceptical of in this study (Vanderlinde & van Braak, 2010).

7.6.3 Complex power dynamics

Findings also addressed the power dynamic between researcher and research-user. This was particularly prominent in the educational context, where there is often perceived to be a stark disparity in power between practitioners and researchers (Gore and Gitlin, 2007). Some EP participants felt this disparity, criticising that the all-powerful researcher with no knowledge of the classroom experience attempting to impose knowledge from above. Educational researchers, on the other hand, often felt powerless in their attempts to engage different publics outside the academy (Bacevic, 2017). Gore and Gitlin explore this conflict by argue that the these relationships, rather than being a simple hierarchy, are shaped by material and discursive conditions within schools/organisations and universities - for example, the pressure for academics to publish in prestigious journals, or the material working conditions experienced by practitioners (Gore & Gitlin, 2004). They therefore see journal articles as power of the wider problem, as in the educational literature they are consistently represented as being inaccessible to teachers and dealing with questions that teachers are not interested in. In this context, the provision of open access to educational research articles may only serve to reinforce power hierarchies rather than break them down. Willinksy's vision of researchers, teachers and parents reading educational literature together to make change (Willinsky, 2002), often was curtailed by the fact that the different educational groups interviewed felt powerless in ways specific to their own contexts.

7.6.4 Power and the Research Excellence Framework

It is for this reason that other forms of power are important to discuss, especially as it was clear from the research data that open access was strongly associated in researcher participants' eyes with mechanisms of institutional power and compliance (discussed by writers such as Golumbia (2016) and Andrews (2019)).

The Research Excellence Framework (REF) has been critically conceptualised as an "economic mechanism designed to force institutions to compete for finite amounts of public money as an instrument of neoliberal governmentality and subjectification" (O'Regan and Gray, 2018); emphasising how power functions through the REF in order to produce a certain type of researcher – defined paradoxically by O'Regan and Gray as both 'docile' and 'highly individualistic.' Associating open access so firmly to the REF, whilst undoubtably a way of significantly increasing the amount of articles that are openly available, also ties it to a system which is seen as negative by many researchers. Researcher participants saw the REF as shaping the amount, type of outputs that they produced (for example, journal article over book chapter, type of journal), and the REF open access mandate was another example of the exercising of this type of power. Moore and Lawson have both discussed this compromise in their work on open access (Lawson, 2019; Moore, 2017).

7.7 Re-entering the academy

This chapter has outlined some of the key issues affecting open access outside the academy. However, it seeks to continually bring the issues of 'public access' to research back *into* the academy, where actors are engaged in struggles over how best to implement open access policy, technologies and financial models (Lawson, 2019; Moore, 2017; Pinfield, 2015). The importance of doing this is highlighted by the confusion shown by many participants towards how the research they accessed was produced and made available to them.

Providing a non-paywalled output in many cases revealed nothing about the technologies, the policy, politics and the finances behind how the output reaches the end user, particularly if it is accessed through a search engine such as Google or Google Scholar. Although in some cases a narrative around open access has gained some attention in the mainstream media, the criticism of how OA had been implemented had not (Lawson, 2015; Lawson, Gray, & Mauri, 2016). Therefore, a focus on 'tangible outcomes' risked ignoring concerns raised by researcher participants around criticism of the 'author pays' model of open access, and negative perceptions of open access compliance linked to managerialism and the REF (Moore, 2019). Additionally, it also risks isolating scholarship focusing on public access which sees the output as only one part of a more holistic interpretation of open access (Adema & Hall, 2013; Moore, 2017). It is important for scholarship focusing on public access to critically engage with the wider body of scholarship around open access, as well as with scholarship on science communication and research impact, in order to situate open access outside the academy in wider conversations and contexts and to recognise that providing open access is not a singular aim.

7.8 Chapter overview

The chapter discussed research findings in relation to five key concepts, *imagining publics*, *friction*, *disconnect*, *intermediaries* and *power*. In doing so, it considered perspectives from both in and outside academia, as well as those on the borders, and emphasised the complexity and messiness of perspectives on open access. The chapter emphasised the importance of exploring open access in particular contexts. Types of friction experienced in accessing research publications will vary according a range of factors, including the disciplinary area, the way research publications are written and presented, and the type of non-academic public under discussion. The chapter encourages avoiding simplistic advocacy messaging, and warns that a focus on tangible outcomes for the public may overshadow complex debates within the academy about how to make systemic change. It also drew attention to the dual role of the research intermediary as a key public for open access research publications, and mechanism for making research more accessible to wider audiences. The next chapter will present conclusions and recommendations and discuss the thesis's original contribution to knowledge.

8 Conclusions and recommendations

This chapter presents the conclusions of a study that has begun to qualitatively map out the terrain of open access ‘outside academia’, with particular attention paid to messiness and disagreement within the situation of enquiry (Clarke, 2005). The thesis has explored attitudes towards open access in two different contexts – health information seeking and educational practice – from the perspectives of research-users outside academia, research intermediaries, and researchers. Conclusions are organised around the five key concepts presented in the discussion: *publics, friction,* areas of *disconnect, intermediaries and power*. Key areas of understanding are presented and summarised for each concept, including how the thesis furthers, expands upon or positions the concept within the context of open access.

The chapter also outlines the study’s original contribution to knowledge, offers recommendations for further research and suggests implications for practice.

8.1 Summarising and positioning key concepts

8.1.1 Publics

Firstly, this research contributes to our understanding of how research publications are used and understood by publics outside academia. It builds on a body of work engaged in identifying, mapping and categorising publics outside academia who may benefit from increased open access to research publications (Alperin, 2015; Beddoes et al., 2012; ElSabry, 2017). This work is an important attempt to provide empirical evidence for what has become a pivotal argument in open access advocacy – the right to public access (Willinsky, 2006).

However, this thesis suggests that is unhelpful to frame the question as a generalisation about whether there is a demand for research access among the ‘general public.’ The demand is too small and scattered to be useful, and obscures needs in particular contexts where research-users may not have institutional affiliation, or when their institutional affiliation is temporary and contingent. As a qualitative study, this thesis also does not seek to provide data to measure the extent of this demand (although participants’ experiences show that the demand undeniably exists in certain contexts). Instead it explores experiences and perspectives of research-use and open access outside academia, and provides a detailed account of why and how research publications are accessed in non-academic contexts by a range of different publics.

Findings suggest that there is no clear barrier between ‘inside’ and ‘outside’ the academy in these contexts, with people moving between, or attempting to move between the two for various reasons, including career development or being forced to take up a series of short term or zero hours contracts.

The thesis draws particular attention to the concept of the ‘imagined public’ (Bacevic, 2017), in order to highlight that we cannot divorce the question of what ‘the public’ want, from researchers’ and research intermediaries’ perspectives of who their publics are, what they want and what strategies should be employed in order to reach them. The different ‘publics’ discussed in the research data were discursively constructed by participants, even by those participants who were themselves members of those publics. Ideas about particular publics (eg. patients, teachers, policymakers) – including their power and status, their imagined ability to engage safely with scholarly literature, and their perceived (lack of) interest in research – shaped the way participants thought about how useful and important increased open access would be in particular contexts. Understanding your public in this way was seen to be important for researchers and intermediaries in order to break down barriers to research in a targeted way (Neylon, 2015). This was particularly important because there was a general perception across all participant groups that research-reading publics were small, exclusive and elite; narrow social worlds within wider professional and personal ones. However, some participants' experiences suggested that if a particular public was not 'imagined' to be able to, or to want to access research publications, they may experience more barriers in doing so. This was especially the case if the members of that public had less connection to academic networks, and less knowledge about the existing workarounds available to access research publications.

8.1.2 Friction

Just as the lines were blurred between inside and outside academia, participants also did not perceive there to be a strict binary between 'accessible' or 'inaccessible' research publications. Instead, there were a range of factors (socioeconomic, cultural, technical, linguistic, institutional) which either enabled or prevented research-users outside academia accessing, reading, understanding and assessing publications. The thesis uses and expands on Neylon's (2013) concept of friction, also drawing on the definitions of friction used by data theorists (Bates, 2018; Edwards, 2010), in order to identify and discuss these factors in context. Where the desire to access research publications existed, friction slowed down the movement of research publications between and within social worlds inside, outside and on the borders of academia, rather than stopping it altogether in many cases. Friction was discussed in terms of both material and conceptual accessibility (Kelly & Autry, 2013).

As the research focuses on two different disciplinary contexts, it draws attention to the different factors causing friction in two disciplines – health and education. For example, HIS participants searching for medical articles often encountered paywalls, whereas some EP participants did not remember encountering many, as they relied instead on openly accessible reports as well as traditional scholarly literature. These nuanced differences between contexts highlighted again the importance of not generalising across disciplines and sub-disciplines.

8.1.2.1 Material access

Sources of friction were identified in the context of material or technical access. Paywalls were a significant barrier, with participants unwilling to pay the one-off fee required to access research articles. Some participants, despite being located 'outside' the academy (eg. in jobs in the public or third sector) did have access to an institutional affiliation, through part time masters courses or honorary fellowships. However, this affiliation was often temporary, contingent, and in some cases had involved protracted and difficult negotiations with universities in order to secure it; meaning that it would be out of the question for many people in similar situations.

Participants without affiliation used a series of workarounds to gain access to research publications, with the success of these workarounds depending on proximity to academia and academic networks. For example, medical charity staff tended to have a good understanding of how to source publications using browser-plug ins, and had networks of contacts from whom they could easily request access, whereas some HIS and EP participants found it much more difficult. The thesis argues that although those outside academia who access and use research more often (such as a research communication professional working for a charity) can and do manage to access paywalled material fairly easily through workarounds, making research publications clearly and discoverably open access is more equitable, as it benefits those who have less proximity to academia, less institutional knowledge and fewer contacts with institutional subscription to draw on.

When workarounds included file sharing and password sharing, the copyright-infringement involved had the potential to cause more friction when attempting to move beyond individual reading of an article, towards sharing, linking to or translating research publications for a wider audience, especially in a professional context. Similar friction could be caused by using pirate sites such as Sci-Hub to obtain paywalled publications. That said, these sites have the potential to dramatically reduce friction outside academia, especially as they now offer illegal access to the majority of paywalled research articles (Himmelstein et al., 2017). Their use was surprisingly low in this study. This could have been because interviews were conducted just before Sci-Hub experienced a surge of media attention, but also because participants were wary of using potentially illegal sites and sources to access research.

8.1.2.2 Conceptual access

The thesis expands the concept of conceptual friction beyond the ‘linguistic’ barrier suggested by Neylon (2013). Linguistic and statistical accessibility was seen to be a major source of friction in some cases, prompting some participants to abandon formal research publications altogether in favour of other sources. In other cases, participants outside academia perceived themselves to have the skills to read and understand research, meaning that generalisations about levels of linguistic accessibility for the ‘general public’ should be avoided. These skills had been developed through formal education, research work, or by dedicated practice and self-study (in the case of several HIS participants).

Conceptual accessibility (Kelly & Autry, 2013) referred to more than just academic jargon and difficult statistics however; barriers to access included a lack of applicability, the length and structure of an article (coupled with a lack of time with which to read it), and being emotionally put off by the way concepts and people were described within the research itself. Strategies for assessing the quality and trustworthiness of the work also shaped how participants conceptually engaged with it – ranging from liking particular trusted journals, mistrusting research from outside the UK, preferring qualitative to quantitative research, and ignoring ‘trustworthiness’ as a category altogether in favour of how useful the article would be to them in practice. These nuanced engagements with research meant that sources of ‘conceptual’ friction stretched far beyond the difficulty of the language and jargon, and were influenced by a range of broader social, economic, cultural and geographical factors.

Although researcher participants generally thought conceptual accessibility was important, some also expressed doubts about making their work accessible (Lather, 1996), discussing how accessibility meant being required to express themselves in a certain way in order to answer a client's question or give instructions for practice. In this context, less conceptually accessible research publications were seen as an opportunity to be more discursive, exploratory and political.

8.1.3 Areas of disconnect

Attitudes towards, and perceptions of open access were characterised by areas of disconnect; gaps between perceptions and reality and gaps between different sets of perceptions (Anthony, 2010; Coye, 1997). The thesis identifies disconnect as an important area of analysis for research on open access, positioning it within the wider context of 'messy' and disputed open access discourse. Scholarship on all areas of open access agrees that OA is not a homogenous concept (Moore, 2017; Šimukovič, 2016), and is often characterised by disagreement and debate. This concept was shaped through the imperative in Situational analysis to attend to messiness and areas of disagreement within the research data (Clarke, 2005).

8.1.3.1 Academic publishing: perceptions vs reality

Four major areas of disconnect were identified. The first was how perceptions of academic publishing did not always align with the realities of the system. For example, participants outside academia often assumed that academic authors were paid for their work, whereas traditionally they have been rewarded by prestige and career progression (Fyfe et al., 2017). They also had little knowledge of the roles different stakeholders such as researchers, publishers and libraries played in making research outputs available, which made it more difficult for some to source open access material. It also meant that even those who were interested in open access as part of a broader political/social justice stance, and who had some knowledge of well-known (and well-criticised) publishers such as Elsevier from media coverage, were not able to engage meaningfully with debates and critiques about open access in its current form (eg. Lawson, Sanders, & Smith, 2015). For example, criticism of big publishers for profiting from paywalls becomes less meaningful without an understanding that they also offer significant open access options, and an awareness of the mechanisms that they have put in place to do this whilst still maintaining their profit margins (Lawson, 2019).

8.1.3.2 Disconnected discourses

The second area of disconnect was between common discourses in open access policy and advocacy (Davis, 2009), and the priorities and perceptions of research-users outside academia. Key arguments in favour of OA, such as the right to access for taxpayers or the general public, and the need to be accountable to society (Bacevic & Muellerleile, 2017; Davis, 2009), were not important priorities for many research-users outside academia, with the exception of medical charity staff who felt the need to be accountable to their donors. Discourses related to benefits were much more prominent than those related to rights, with some participants feeling ‘lucky’ to receive the access they did. However, even discussions of ‘benefits’ came with strong caveats from all participant groups, with the sense that potential benefits were curtailed by many socio-economic, cultural and institutional factors. This suggests that a strong focus on theoretical, political or rights-based arguments in favour of open access may be meaningful and important, but they are not reaching publics outside academia, nor are they reaching many researchers whose engagement is necessary in order to develop fair and equitable scholarly communications systems and practices (Lawson, 2019). it may therefore be more useful to focus on making research open and accessible in particular contexts rather than relying on theoretical arguments which risk seeming unachievably utopian.

8.1.3.3 Tangible outcomes vs systemic change

The third area of disconnect was between a focus on tangible outcomes (Moore, 2019) and a focus on creating systemic change within open access movements. If we concentrate only on increasing the percentage of outputs that are openly accessible (or that seem openly accessible to non-academic publics), we risk erasing or undermining attempts within the academy to enact change at a systemic level. This could be creating more “care-full” open access practices at a small scale (Deville, Moore, & Nadim, 2018), or criticising racist, global inequalities in scholarly communications (Haider, 2007; Inefuku & Roh, 2016; Piron, 2018). It also risks ignoring researchers’ increasingly negative perceptions of open access being linked to compliance mechanisms such as the Research Excellence Framework (Moore, 2019). This thesis suggests again that questions of what the public want from open access should not be compartmentalised and separated from what researchers and other scholarly communications practitioners want, and from broader debates of how open access should be implemented. Instead, open access scholars and practitioners should follow Lawson (2019) in thinking of these questions together and framed by wider questions of fairness and ethics in scholarly publishing.

8.1.3.4 Open access vs research communication

The fourth and final area of disconnect is researchers' perceptions of open access, contrasted with their perceptions of other research communication strategies. This disconnect challenges the assumption that open access should automatically play an important part in communicating research to wider publics (Willinsky, 2006). Researcher participants who were in general, strongly committed to research communication outside academia, did not see open access to formal research publications as the best mechanism by which to do this. In fact, some felt that open access to medical research could put the public at risk, and that there were much more useful, targeted strategies that should be undertaken (and resourced) before making all research open access. As has already been noticed, their views were strongly influenced by a negative association between open access and the REF. This negative view of open access was not the view of all researcher participants, but it was a dominant perspective, and led to situations, for example, where researchers (and intermediaries) did not link to OA versions of publications on social media or other digital media because they believed that no one from outside academia would be interested.

The study suggests that this area of disconnect is a significant one, and that open access advocates and practitioners should avoid making the assumption that OA and research communication are inherently similar concepts. They should concentrate on ways in which open access can complement other research communication strategies, such as Tattersall's (2016) recommendation that links to OA versions of publications should be provided from digital media, or that in some contexts lay summaries might be appropriate.

8.1.4 The role of the intermediary

One of the key ways in which research communication and open access could be ‘reconnected’ is through intermediaries. The thesis brings the role of the research intermediary to the forefront of discussions about open access outside academia. The research intermediary – sometimes referred to by other terms such as ‘knowledge broker’ – sits at the intersection of academia and other social worlds, and is engaged with making research findings more accessible and usable to publics outside the academy (Meyer, 2010). Research intermediaries in this study wrote translations, summaries and reviews of journal articles for different audiences, ran training in how to find and interpret research findings, answered questions from members of the public, and searched for research evidence for colleagues or senior management. Research intermediaries worked in medical charities, summarising and contextualising charity-funded research to donors and the general public, as well as to policymakers and other charity staff. They also worked in education, with the whole or part of their role dedicated to teacher research communication and engagement. There were also HIS and EP participants who took on the role of informal intermediary, explaining, providing access to, and contextualising research for friends, colleagues or fellow patients on social media, in patient support groups or as part of everyday interactions.

The thesis positions the intermediary in the context of open access, as a key public for open access publications, and as a mechanism by which those publications are transformed and made more accessible for wider audiences. It builds on past research such as Beddoes, Brodie, Clarke and Hoong Sin (2012), which identified intermediaries working in third sector organisations as particularly benefiting from open access. As a research-reading public themselves, intermediaries have a substantial demand for open access publications, as they often have the knowledge and expertise to read and understand research, but do not necessarily have an institutional affiliation. As mechanisms for increasing access to wider publics – and returning to the ‘imagined publics’ at the beginning of the chapter – attention should be paid to which types of research intermediaries choose to translate, the strategies they use to do this and which publics are included/excluded from these translations. As noted in the previous section, attention should also be paid to how formal research publications are utilised in these research communication strategies (eg. links, licenses). This thesis highlights the importance of further research on the needs and practices of research intermediaries, especially those who take on the role in an informal context (eg. patients who engage in knowledge sharing and creation within online patient communities – touched on in Vicari & Cappai (2016)).

8.1.5 Power

The final concept identified within the thesis is power. The research shines a particular spotlight on how power shapes the scholarly communications landscape both outside and inside the academy in particular ways. Power fits easily into positive narratives of open access, with the democratic and liberatory possibilities of empowerment through access to information (eg. Willinsky, 2006). This is especially noticeable in discussions of the informed or empowered patient (Kivits, 2004; Muir Gray, 2002), where access to scholarly content is seen to be able to create a more equal relationship between doctor and patient. This thesis found that there was some evidence that participants perceived themselves to be empowered through access to research – being able to challenge their healthcare providers or senior managers, influence change in their workplace, or challenge misinformation. However, a more dominant framing of power was that of asymmetrical power relations in and between individuals and social worlds, which only increased friction in accessing, reading and using research publications outside academia, and limited the possibility of empowerment. This was particularly evident in accounts of power between healthcare providers and patients (especially when the patient was seen to deviate from the model ‘informed patient’ (Fox et al., 2005)), and in accounts of senior management in schools attempting to impose a particular vision of research engagement on their employees whilst not giving them the power to enact change from the research they read. The thesis concludes that understanding these power asymmetries is essential to moving beyond a utopian conception of the possibilities of open access to “lay the foundations for uniting humanity in a common intellectual conversation and quest for knowledge” (Budapest Open Access Initiative, 2002). The accessibility of research in context relies on more than removing a paywall, or even making an article linguistically more understandable, and should always be considered in terms of wider socioeconomic and cultural factors.

A power imbalance between researchers and communities ‘outside academia’ was also mentioned by participants, particularly in the educational context, where researchers were sometimes viewed as more powerful than practitioners. The thesis drew on Gore and Gitlin’s analysis of power in educational research (2004) to complicate this relationship, and to suggest that instead of a simple researcher/practitioner hierarchy, both communities were shaped by power dynamics in their own institutions and social worlds (Gore & Gitlin, 2004). For example, whereas teachers felt that researchers were in a position of power over them, looking down from their ‘ivory tower’, educational researchers perceived the power to be elsewhere - under pressure to both make connections with publics outside the academy and publish in prestigious journals, in order to be ranked and assessed by the institution as part of the Research Excellence Framework. The REF was therefore perceived negatively as a mechanism of power and governmentality by researcher participants (O’Regan & Gray, 2018). This section concludes by highlighting that in tying open access so closely in researchers’ minds to such a mechanism, it makes it less likely that OA will be viewed as a tool of empowerment. Instead, it is seen merely as a way of institutions surveilling, and ultimately exerting power over researchers’ own work. Bearing this in mind, it is vital that we continue to build on work analysing cultures of compliance and governmentality within universities and attend closely to how it effects perceptions of, and practices relating to open access (Andrews, 2019; Lawson, 2019; Moore, 2019).

These summaries of the five concepts analysed in the Discussion chapter aim to highlight the key conclusions of the research, and to show where and how analysis has contributed to developments in the concepts themselves.

8.2 Original contribution to knowledge

This thesis contributes to the body of scholarly communications literature which explores the question of open access outside academia. It particularly provides an empirical, in-depth analysis of research production and consumption in specific contexts. It builds on work carried out by Willinksy (2006), Zuccala (2009, 2010), Alperin et al. (2015; 2019), Beddoes et al. (2012) and Holzmeyer (2018)to explore the perspectives and experiences of research-users outside academia in the contexts of health and education .

It also contributes to literature exploring researcher and disciplinary perspectives of open access (Severin, Egger, Eve, & Hürlimann, 2018; Swan, 2006; Wakeling et al., 2019), but with a particular focus on how OA overlaps with research communication. In doing so, it brings together the at times conflicting and contested priorities of research-users outside the academy, research intermediaries and researchers themselves. These conflicts and contested areas hope to contribute to critical discussions about the ways open access is envisaged and implemented.

In exploring the areas of health and education in depth, it makes a contribution to these areas in particular, as well as to scholarly communications literature more generally. Research looking at patient information behaviour (Lambert & Loiselle, 2007; Tan & Goonawardene, 2017), the concept of the 'informed patient' (Brennan & Safran, 2005; Kivits, 2004; Muir Gray, 2002), and research-engaged practice in education (Coldwell et al., 2017; Marsden & Kasprowicz, 2017; Schaik et al., 2018) do not tend to focus specifically on the role of open access to the formal peer reviewed literature, and this study brings scholarly communications literature into dialogue with these areas.

The study provides a detailed example of Situational Analysis (Clarke, 2005) , including reflections on the mapping exercises and how they contributed to the findings and analysis. It hopes to establish situational analysis, informed by constructivist grounded theory (Charmaz, 2006) as an appropriate methodology for scholarly communication and LIS research, building on previous work in the discipline (Sen & Spring, 2013; Šimukovič, 2016; Vasconcelos et al., 2012).

8.3 Future research

Research in this area suggests that it benefits from both a quantitative and qualitative approach, including the use of digital methodologies (Alperin et al., 2019) Quantitative approaches provide an idea of the scale of research-use outside academia, whereas qualitative research is able to explore perceptions and attitudes in more depth. It is suggested that future research takes a mixed methods approach in order to continue to analyse audiences for open access material outside academia.

Certain groups of research-users were touched on briefly in this study, but because of the priorities and perspectives of participants, were not explored in depth. One of these groups was healthcare staff. Future research could build on the work of Maggio et al. in this area and offer a UK perspective, working with both NHS staff and those employed by the third sector (Maggio et al., 2016)

Future research would also benefit from a focus on open access in disciplines with less immediate relevance outside academia. Building on a growing body of research on open access and the humanities (Eve, 2014; S. A. Moore, 2019) a focus on the use outside the academy of humanities researcher. This is particularly fruitful area for exploration, as much of the criticism of open access comes from the humanities (Golumbia, 2016; Osborne, 2013). However, there were examples in this study of participants attempting to access theoretical and philosophical literature, as well as monographs and edited books, both of which could be centred in future research focusing on the humanities.

It would also be important to move away from a focus on only on gratis open access (Suber, 2012)and towards how open licensing could impact on research use outside academia. Research in this area would benefit in engaging with critical as well as positive arguments in this area, such as the potential for academic work using permissive licenses to be misrepresented (Severin et al., 2018).

Finally, future research which explores the relationship between public access and creating a more equitable scholarly communications system would be welcome, particularly in relation to global inequalities in both access and production of research (Haider, 2007; Piron, 2018). Analysis of researcher, research intermediary and research-user perspectives in contexts in the Global South would be able to explore this relationship in a more nuanced way than has been possible in this study.

8.4 Implications for practice

Actors in the scholarly communications arena such as researchers, publishers and libraries, as well as organisations acting as research intermediaries (such as medical charities and the press) may wish to reflect on the potential readership of open access publications outside academia. Despite the existence of workarounds, paywalls still represent a barrier for a range of different groups outside academia in the contexts of medicine and education, especially those who do not benefit from contacts with institutional subscriptions. Therefore, highlighting the availability, and increasing the discoverability of open access publications may be particularly important to those groups. However, paywalls are only one barrier among many other material and conceptual barriers to access, and therefore OA should not be assumed to be a solution to problems caused by wider sociocultural and economic factors.

Although there are significant barriers to conceptual access for research-users outside academia, it should not be assumed that no one has the necessary skills to read, understand and interpret research publications, or that all research publications are equally conceptually inaccessible. Research-users outside academia may be highly educated in relevant disciplines or have research experience themselves. Projects dedicated to producing lay summaries or other material aimed at a non-academic audience should reflect on whether they are tailored at the right level for the intended audience.

Researchers, publishers and libraries should particularly consider the needs of research intermediaries, who may be acting in a formal or informal capacity, and for whom file sharing or pirate access may not be enough to allow them to share and translate publications as openly as they needed to. They should also consider the needs of research-users trying to move between academia and practice, or who rely on temporary and/or limited institutional access through subscriptions to professional organisations or enrolment on part time university courses.

The study challenges the assumption that researchers who care about research communication will necessarily support open access. It is suggested therefore, that those supporting the development of open access, including publishers and libraries, work with researchers and experts in science communication and public engagement in order to find context-specific ways in which open access can support other forms of research communication, whether this is encouraging linking to OA versions of journal articles, or to use open access infrastructure to increase discoverability of grey literature.

Publishers and libraries should be aware that the underlying scholarly communications infrastructure is often invisible to users outside academia, who are often coming to open access material via Google or Google Scholar. Organisations who wish to communicate some of the complexities of open access and scholarly communication more generally to audiences outside the academy may have to think of innovative ways to do so.

Scholarly communications professionals supporting researchers should expect to sometimes receive critical responses when discussing the benefits of open access outside academia. A balance should be reached between focusing on increasing open access outputs for an those outside academia, and making changes to a scholarly publishing system that does not meet the needs of researchers. It should be expected that these priorities may come into conflict at times.

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10 Appendices

10.1 Appendix A: interview schedules

10.1.1 Interview schedule – Health information seekers

Pre-Interview

- Introduce myself, my training as a librarian and my route into becoming a PhD researcher.
- Explain the context of the study – provide a brief explanation of what I mean by “open access” (without going into the details of scholarly publishing)
- Talk through the information sheet, and allow the chance for the participant to ask any questions.

Demographics

Explain that I will start with some demographic questions to set the interview in context. Explain that some of the questions may sound obvious, but they wouldn’t be to all participants.

- How would you describe your occupation?
- What is your gender?
- What year were you born?
- What is your highest level educational qualification? If so, what subject was it in?
- Do you have access to university subscriptions or other subscriptions to journal articles/research literature?

Main interview

1. I’m going to start off with quite a broad question. Could you tell me why you started to look for medical research? What motivated you?
2. Where did you look for relevant research to read? How did you go about finding relevant research to read?
    a. PROMPT: If “the internet” or “online” is mentioned, where online? Would you go to specific websites? Would you use Google? Would you go to journal websites? Could you tell me the name of a journal website you look at? *[These prompts have been added after reflecting on the pilot study, as participants tended to stop at “online”]*
3. What kind of medical research do you read?
    a. PROMPT: Clinical trials? Specific health conditions? Drug treatments? Qualitative research?
4. Have you come across websites that asked you to pay before you could read medical research?
    a. If yes, what did you do when you were asked to pay? Why
    b. Do you understand why a website might ask you to pay for research? *[this has been added after reflecting on the pilot study, in order to explore participants’ understanding of the scholarly communications system]*

5. Could you tell me a bit about what it was like reading medical research?
    a. PROMPT: Did you find anything particularly difficult? How does reading research make you feel? How do you find the terminology used in medical research articles? *[Extra prompts added here in order to explore possible emotional reactions to reading research – eg. Frustration, anxiety]*
6. Have you ever come across lay or plain English summaries of journal articles?
    a. *If yes, do you find them useful?*
    b. *If no, do you think they would be useful?*
7. How do you decide what to trust when you read research?
    a. PROMPT: Peer review? Universities? Ask about certain sites if they've mentioned them – eg. Specific journals, websites run by medical charities *[Prompts added here as several participants have mentioned trusting the BMJ over other journals, and research from universities over other forms of information]*
8. How do you decide what is useful when you read research?
9. Have you ever discussed the research you read with a doctor or other health professional?
    a. *If yes, could you tell me a bit more about their reaction?*
    b. *If no, would you ever consider talking about research with a doctor or other health professional? If not, why not?*
10. Have you ever discussed the research you read (online or offline) with other members of the public?
    a. *If yes, could you tell me a bit more about that*
11. Do you think it would be useful if medical research was made freely available to members of the public? What do you think would be the major benefits? Can you think of any difficulties/challenges?
12. What do you think the people who are involved in publishing medical research could do to make it more accessible to members of the public apart from taking away the paywalls *["apart from taking away the paywalls" added, to get participants to think beyond what we've already been discussing]*
13. Is there anything I should have asked you? Is there anything you'd like my research to find out? Anything you want to ask me?

10.1.2 Interview schedule – Educational practitioners

Pre-Interview

- Introduce myself, my training as a librarian and my route into becoming a PhD researcher.
- Explain the context of the study – provide a brief explanation of what I mean by “open access” (without going into the details of scholarly publishing)
- Talk through the information sheet, and allow the chance for the participant to ask any questions.

Demographics

Explain that I will start with some demographic questions to set the interview in context. Explain that some of the questions may sound obvious, but they wouldn’t be to all participants.

- How would you describe your occupation?
- What is your gender?
- What year were you born?
- What is your highest level educational qualification? If so, what subject was it in?
- Do you have access to university subscriptions or other subscriptions to journal articles/research literature?

Interview questions

1. I understand that your job requires you to access and read educational research. Could you tell me about a time that you have accessed and read research as part of your work?
2. Where do you go to find research? How do you go about finding relevant research?
3. Do you come across research that you can’t access because of paywalls or other barriers?
    a. If yes, what do you do when you can’t access a research article because of a paywall or other barrier?
4. Have you heard of ‘open access’ to research before? What does it mean to you?
5. What kind of research do you generally look for? What subjects? Specific authors/methods?
6. Could you tell me a bit about how you find the process of reading educational research? Is there anything you find difficult?
7. How do you decide what to trust when you read research?
8. *How do you decide what is useful when you read research?*
9. Have you come across instances where research has been presented in a way that makes it more accessible, either alongside or instead of traditional research publications? Could you tell me a bit more about that? Would you find these useful? In your opinion, would they be useful for teachers?
10. What might be the benefits of making educational research more accessible?
11. In your opinion, what might discourage/stop teachers from engaging with educational research?

12. This research project is looking at open access to educational research outside of academia. Can you think of anyone apart from teachers who would benefit from open access to educational research? (governors)
13. Is there anything I should have asked you? Is there anything you'd like my research to find out? Anything you want to ask me?

10.1.3 Interview schedule (medical research charities)

Pre-Interview

- Introduce myself, my training as a librarian and my route into becoming a PhD researcher.
- Explain the context of the study – provide a brief explanation of what I mean by "open access" (without going into the details of scholarly publishing)
- Talk through the information sheet, and allow the chance for the participant to ask any questions.

Demographics

Explain that I will start with some demographic questions to set the interview in context. Explain that some of the questions may sound obvious, but they wouldn't be to all participants.

- How would you describe your occupation?
- What is your highest level educational qualification? If so, what subject was it in?

Use of research

1. Could you tell me a bit more about your role in this organisation?
2. Does your organisation subscribe to medical journals or any other resources for accessing research?
3. Why might you, or other staff in your organisation need to access medical research?
4. If you were trying to find medical research, where would you go? What resources would you use?
5. Do you come across research that you can't access because of pay walls or other barriers?
6. What do you understand me to mean when I talk about open access to research?
7. Does your organisation think open access is important? Does it have a policy? Do you think paying to make articles OA is a worthwhile use of money for a research funder/research institution?

Research intermediary opinion

8. As a research funder/intermediary, do you think it's important for medical research to be accessible by people outside academia?
    a. If yes, whose responsibility is it to make sure research is made accessible?
9. Does your organisation do anything in particular to make medical research accessible to non-academics?
10. Who do you think might access your funded research besides other medical researchers?
11. Has your organisation heard from people outside academia who have accessed and used your research?

12. Do you think it benefits society to provide open access to research to non-academics? In what way do you think it might benefit society?
13. What do you think might discourage non-academics from accessing medical research? Do you think there might be any problems or challenges with non-academics having access to research?
14. Have you come across instances where research has been presented in a way that makes it more accessible, either alongside or instead of traditional research publications? Do you think it is useful to provide more accessible versions/summaries of research articles?

10.1.4 Interview schedule: Medical and Educational Researchers

Pre-Interview

- Introduce myself, my training as a librarian and my route into becoming a PhD researcher.
- Explain the context of the study
- Talk through the information sheet, and allow the chance for the participant to ask any questions.

Interview

1. Could you tell me a little bit about your work and what kind of research you do?
2. What is your educational background?
3. How do you usually publish your research? What kind of journals do you publish in?
4. Have you ever published in an open access journal? Did you have to pay an APC (fee) to publish? Was it included in your research grant? Where did the research grant come from? Do you think this is a good use of research funding?
5. Do you deposit your work in a repository to make it open access? Do you think this is a useful thing to do?
6. Do you find that you encounter paywalls when looking for scholarly resources? Do you find that your access is sufficient to access everything you need?
7. How else do you disseminate your research? Do you do anything to communicate your research to audiences outside academia?
8. How would you change your writing to write to communicate with audiences outside academia?
9. Arguments for open access (which appear in policy documents) are made that say ‘if you make all research open access, it will benefit people outside of academia who do not have university subscriptions?” What do you think of that argument.
10. For you, who is the most important group of people to have access to, and read your research? Do you think it is important for practitioners to have access to your research? Do you think it is important for the ‘public’ to have access to your research? Any other groups?
11. What do you think are the main barriers for audiences outside the academy to accessing and engaging with educational research?
12. Are there any risks with making medical/educational research freely available?
13. Have you every been asked to write a lay summary to go alongside a journal article? Have any of your journal articles had lay summaries attached, written by someone else? Do you think this is useful?
14. Do you make use of social media to share your research?
15. Does your research get picked up by the press? Example? Are you generally pleased with press coverage of your research?
16. Is there anything that you feel I haven’t asked you, or is there any more questions you want to ask me?

10.2 Appendix B (example participant recruitment email)

Dear XX

Have you accessed and read ***medical research*** *for your own personal health reasons or on behalf of a family member or friend? Do you have an opinion on widening access to research?*

I am a researcher at the University of Sheffield, who is currently working on a project about **access to medical research**. I am interested in **the stories and opinions of people who have had experience of accessing and reading medical research publications*** for their own personal health reasons. My project aims to help increase the accessibility of research through understanding the experiences of people who read it.

I am contacting UK support groups for those affected by chronic illness, to ask whether any of your members have experience of accessing medical research publications and would be **interested in being interviewed** for the project.

The interview would involve discussion of:

☐ Your experiences accessing and reading medical research
☐ Your experiences discussing research with family/peers or health professionals
☐ Any challenges and barriers you had experienced
☐ Your views and ideas about widening access to research for a non-academic audience

Your interview would be fully anonymised, and be used in my PhD thesis, journal articles and advice to researchers, research funders and publishers. The interview would be face-to-face if it is possible for me to get to you, or via Skype if not.

If anyone is interested in being involved in the project, or would like some more information, please email me at ebnunn1@sheffield.ac.uk.

The project has been granted ethical approval by the University of Sheffield, and is supervised by Professor Stephen Pinfield and Professor Peter Bath.

Your help in sharing the details of this research project is very much appreciated.

Kind regards,

Emily Nunn

* By "Research publications," I mean online or hard copy journal articles about conditions or treatments, 'plain English' summaries of journal articles, systematic reviews, or the results of clinical trials.

10.3 Appendix C (example information sheet/consent form)

The University of Sheffield Information School	Open Access outside academia: exploring access to, and use of, medical and educational research by non-academics

Researchers

Emily Nunn (primary researcher) - ebnunn1@sheffield.ac.uk
Professor Stephen Pinfield (supervisor) - s.pinfield@sheffield.ac.uk
Professor Peter Bath (supervisor) - p.a.bath@sheffield.ac.uk

Purpose of the research

This research aims to investigate the potential impact of open access* to scholarly research outside of academia. It will focus on open access to research in the fields of medicine and education. The study will aim to analyse a range of experiences and perspectives, and identify barriers and challenges to providing open access for a lay readership.

*"Open access" in this context means that research articles are available online free of charge for anyone to read, use and share

Who will be participating?

We will be inviting researchers in the fields of medicine and education who have an interest in or experience with communicating research to a lay readership.

A range of other participants will also be invited, including open access publishers, research funders, practitioners and members of the public who have had experience accessing scholarly research.

What will you be asked to do?

We will ask you to take part in an interview with the researcher lasting around one hour (although it may be longer or shorter if you wish). You will be asked questions about your experience with open access publishing and communicating research, and your opinions and perspectives on open access for a lay readership.

What are the potential risks of participating?

The risks of participating are the same as those in everyday life.

What data will we collect?

We are audio recording and transcribing the interviews. If you do not wish the interview to be recorded, please indicate, and the researcher will make detailed notes instead.

What will we do with the data?

The audio and transcribed data collected will be stored in a secure online location provided by the University of Sheffield. The drive can only be accessed by the researcher, supervisory team, School's Examinations Officer and ICT staff operating the facility. Password protected backups will be kept on the researcher's personal laptop. Hard copies of transcriptions will be stored in a locked cabinet at the University of Sheffield Information School or at the researcher's home.

Will my participation be confidential?

All analyzed data and direct quotes used in publications arising from this project will be anonymous. Real names, organizational names and job titles will not be used. If you are concerned the interview content may identify you or your place of work, you are welcome to discuss this with the researcher during or after the interview.

What will happen to the results of the research project?

The results of this study will be included in the researcher’s doctoral thesis which will be publicly available after completion (estimated to be early 2019). Results of this research will also be reported in journal articles and conference papers, and may be disseminated via other channels such as blogs and social media, in trade publications and in the press.

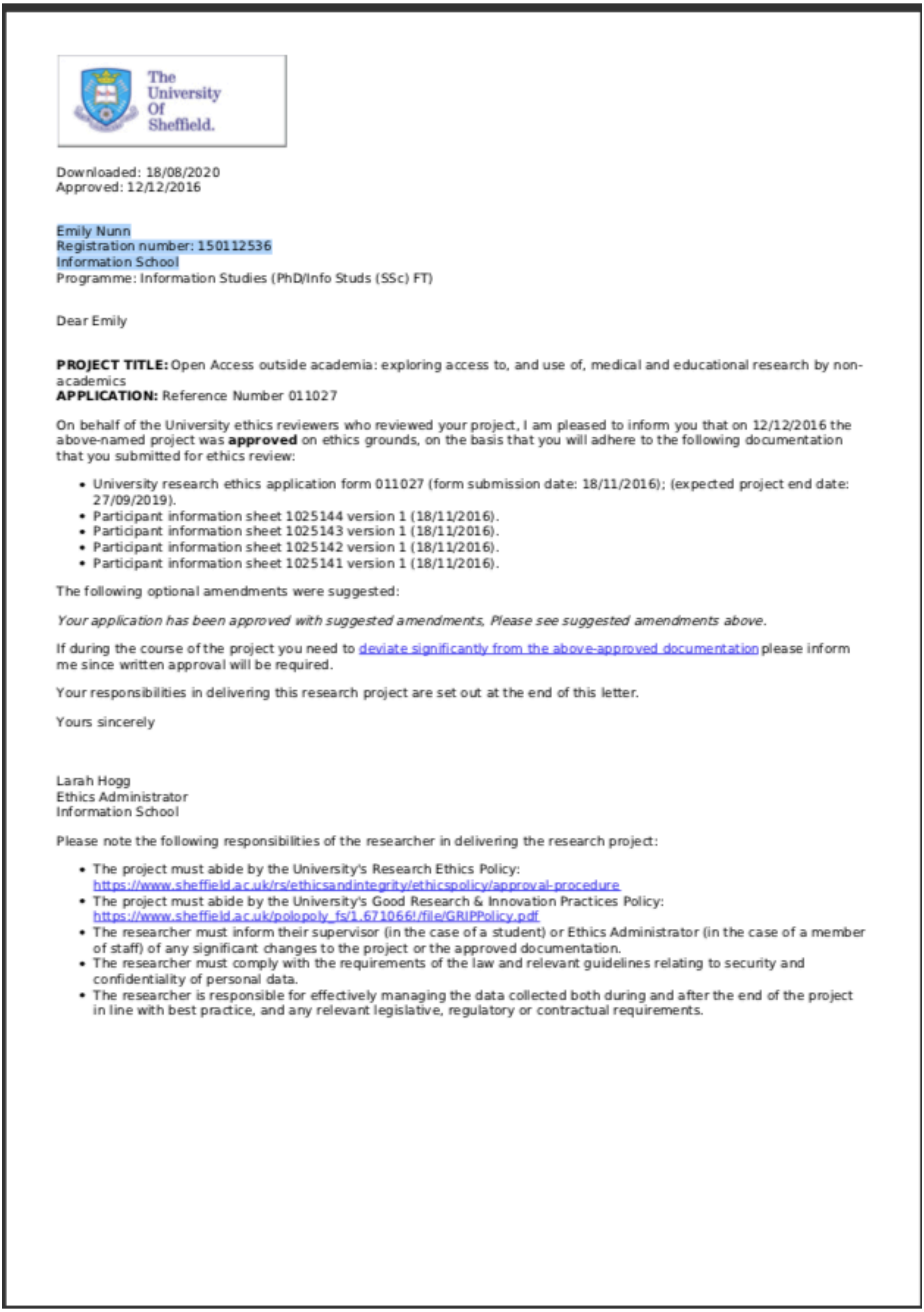
- I confirm that I have read and understand the description of the research project, and that I have had an opportunity to ask questions about the project.
- I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences.
- I understand that if I withdraw I can request for the data I have already provided to be deleted, however this might not be possible if the data has already been anonymised or findings published.
- I understand that I may decline to answer any particular question or questions, or to do any of the activities.
- I understand that my responses will be kept strictly confidential, that my name or identity will not be linked to any research materials, and that I will not be identified or identifiable in any report or reports that result from the research, unless I have agreed otherwise.
- I give permission for all the research team members to have access to my responses.
- I give permission for the research team to re-use my data for future research as specified above.
- I agree to take part in the research project as described above.

Participant Name (Please print)	Participant Signature
Researcher Name (Please print)	Researcher Signature

Date

Note: If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, please contact Dr Jo Bates, Research Ethics Coordinator, Information School, The University of Sheffield (ischool_ethics@sheffield.ac.uk), or the University Registrar and Secretary.

10.4 Appendix D: Ethics clearance from the University of Sheffield



The
University
Of
Sheffield.

Downloaded: 18/08/2020
Approved: 12/12/2016

Emily Nunn
Registration number: 150112536
Information School
Programme: Information Studies (PhD/Info Studs (SSc) FT)

Dear Emily

PROJECT TITLE: Open Access outside academia: exploring access to, and use of, medical and educational research by non-academics
APPLICATION: Reference Number 011027

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 12/12/2016 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 011027 (form submission date: 18/11/2016); (expected project end date: 27/09/2019).
- Participant information sheet 1025144 version 1 (18/11/2016).
- Participant information sheet 1025143 version 1 (18/11/2016).
- Participant information sheet 1025142 version 1 (18/11/2016).
- Participant information sheet 1025141 version 1 (18/11/2016).

The following optional amendments were suggested:

Your application has been approved with suggested amendments, Please see suggested amendments above.

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Larah Hogg
Ethics Administrator
Information School

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy: https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure
- The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.