WORKPLACE ACCOMMODATIONS AND PEOPLE WITH DISABILITIES: THE DILEMMATIC COMMUNICATIVE PROCESS OF REQUESTING ACCESS TECHNOLOGY

by

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ABSTRACT

AMIN MAKKAWY. Workplace accommodations and people with disabilities: the dilemmatic communicative process of requesting access technology. (Under the direction of DR. SHAWN LONG)

This study consists of a qualitative investigation of how people with visual impairments manage access to technology at the workplace. By the use of Applied Thematic Data Analysis (Guest, MacQueen, & Namey, 2012), results of a questionnaire distributed to employees with visual impairments were analyzed, and ten themes emerged for further analysis. The foci of these themes prompt three primary topics of discussion: defining accessibility, understanding the process of managing access to technology, and exploring the communicative strategies in managing this access. Using literature on interability communication, the interaction between employees with visual impairments and those who are able-bodied is portrayed as a co-cultural encounter (Orbe, 1998). Concepts of defining disability with relation to access technology and larger notions of workplace accommodations are also discussed.

DEDICATION

The following work is dedicated to my late grandmother (Nona), whose prayers, love, and encouragement will be with me forever.

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CHAPTER 1: INTRODUCTION

Studies have been conducted that focus on the efficacy of the ADA regarding the impact of policy on the experience of people with disabilities in employment (Acemoglu & Angrist, 1998; Deakin & Morris, 2005; Fox & Mead, 2003). The results of this literature often show that the ADA has not been as successful as hoped by lawmakers, and in some ways has provided obstacles for the employment of people with disabilities. As the ADA mandates nondiscrimination against people with disabilities, as well as the provision of reasonable accommodations, research indicates that employers are scared of hiring people with disabilities due to a lack of understanding disability and workplace accommodations (DeLeire, 2000). The conflicting results of research regarding the efficacy of the ADA also highlight the ambiguity of defining disability in a legal context (Hotchkiss, 2004) as well as subsequent interpretations by the courts concerning the ADA (O'Brien, 2001). Recent literature brings focus to the continuing disparities in employment for people with disabilities as impacted by organizational level variables, such as a lack of effective programs and policies to assist in the acquisition of employees with disabilities and initiatives to support and maintain organizational involvement by these employees (Erickson, von Schrader, Bruyere, VanLooy, & Mattison, 2014; Ren, Paetzold, & Colella 2008; Schur, Kruse, & Blanck, 2005; Schur, Kruse, Blasi, & Blanck, 2009; von Schrader, Malzer, Erickson, & Bruyere, 2011).

Discussing policy construction, research in organizational communication emphasizes the muting of minority voices (Canary, Blevins, & Ghorbani, 2015), regardless of whether policy creation is conducted through a top-down or a bottom-up approach. Studies indicate that policy makers are often influenced by institutional norms, resulting in organizational policies that ultimately do not reflect the identity of the specific organization (Davison & Rouse, 2004; Wallace & Gravells, 2010), and consult or inform those directly impacted by new policies, but do not directly include them in the policy-making process (Chang & Jacobson, 2010; Tam, 2006). Finally, it is noted that organizational policy is not always translated into action as changes in attitude and process are not instantaneous (Kirby & Krone, 2002; Swanberg, 2004). This research on policy shadows findings of the current study as these policies (e.g., the ADA) prompt accessible technology in the workplace, but a complex process must be navigated by employees with visual impairments in order to obtain access to workplace technology. In effect, the policies are in place to assist employees with disabilities, but special strategies are often used to realize the benefits of these policies.

Concerning technology, prior studies have focused on the proper use of access technology as workplace accommodation (Butterfield & Ramseur, 2004; Gamble, Dowler, & Orslene, 2006) and the inadequacies of technology access for those with disabilities (Dobransky & Hargittai, 2006). Specifically, focusing on technology access as it relates to people with visual impairments, vocational rehabilitation research has been fast to recognize the shortcomings of novel technologies in the workplace as well as outside of workplace settings (Crudden & McBroom, 1999; Crudden, 2002; Golub, 2003). While access to technology for all employees in general is a topic worth further

inquiry, this study specifically investigates access to technology for employees with visual impairments. According to the previously cited research, access barriers can result in unemployment, and issues of technology access are salient concerns for people with visual impairments both at work and overall. The current study builds on the existent research to further investigate issues of inaccessible technology in the workplace along with the management of this inaccessibility. Among the key results of the current study are themes that assist in understanding both the broader process of managing inaccessibility at the workplace as well as specific communicative strategies associated with this process.

Combining the foci on policy and technology access, a recent U.S. Department of Justice report (2012) provided evidence that organizational practices that are legally mandated by the U.S. government to provide equal technology access to employees with disabilities (legally known as Section 508) are not being followed correctly, are being completely ignored, or are not understood. In the following quote, Richardson (2012) summarizes a list of key findings from this report:

- Failure to Establish 508 Policy: Only slightly more than fifty percent of agencies reported they established a formal, written policy to implement and comply with Section 508.
- No Institutionalized Resources: Nearly seventy percent of agencies had appointed a Section 508 coordinator, but only about thirty-five percent of them had established a Section 508 office or program. Another twenty-five percent of agency components (sub offices) did not establish an office or program but utilized their parent agency's Section 508 office or program.

- No Accountability for 508 spending: Nearly seventy percent of agencies reported allocating or using resources to implement and comply with Section 508, but eighty-five percent of agencies reported not tracking their spending to implement and comply with Section 508.
- No Policies for Developing New Technology: Seventy-five percent of agencies reported developing software or web applications either in-house or by contractors. However, only about forty percent of these agencies reported establishing a policy to ensure the accessibility of software, including testing developed software for Section 508 compliance.
- Stand-Alone Equipment Access Neglected: Only about forty-three percent of agencies or their sub offices reported establishing a policy to comply with the technical requirements for self-contained, closed products (e.g., fax machines, photocopiers, etc.). Twenty-one percent of them reported not establishing a policy and had no plans to establish a policy to comply with the technical requirements for self-contained, closed products.
- Computer Access Neglected: Only fifty percent of agencies or their sub offices reported establishing a policy to comply with the technical requirements for desktop and portable computers. Twenty-seven percent of them reported [not] establishing a policy and had no plans to establish a policy to comply with the technical requirements for desktop and portable computers.
- Set Up for Failure: Nearly sixty percent of agencies reported not providing Section 508 training to their employees. (Richardson, 2012, n. p.)

This Department of Justice report provides an example of how technology access and policy can interact in impacting the experience of employees with visual impairments. While this report covers governmental organizations, similar research concerning organizational policy and access to technology has not been conducted in the private sector. It is plausible that the situation in the private sector is similar, if not worse, as Section 508 does not apply, and general ADA guidelines are often contested and openly interpreted by the courts (O'Brien, 2001).

As bolstered by the findings of the Department of Justice Report previously discussed, the accessibility of workplace technologies must be taken into account when understanding the impact of policy and technology on the experience of people with disabilities in the workplace. This is not only true in the virtual workplace, but also holds true in the traditional work environment, where information technology has become ubiquitous. Prior research, primarily from the field of vocational rehabilitation, has explored workplace factors that impact the employee efficacy of people with visual impairments. Central to the findings of these limited studies, access to technology and printed materials (Crudden & McBroom, 1999), open communication with management regarding possible workplace accommodations (Golub, 2003), issues with transportation to/from the workplace (Crudden, 2002), and employer prejudice (Crudden, Sansing, & Butler, 2005) are the most salient barriers to the employment of people with visual impairments.

Study Foundation: Thesis Research

My thesis research consisted of an interpretive phenomenology based on the collection and analysis of firsthand experiential data collected from visually impaired

virtual workers as they navigated the complexity of the virtual workplace with relation to technology access. According to the findings of this prior research (Makkawy & Long, Revise and Resubmit), access to workplace technology poses a challenge to visually impaired employees, and navigating the organizational landscape in order to obtain access to technology can be modeled as a dilemmatic communication process.

Purpose and Rationale of the Current Study

The purpose of the current study is to understand how people with visual impairments approach the dilemma of obtaining access to technology used in the workplace that is otherwise inaccessible. People with disabilities can face a problem of technology access that requires communication strategies to handle a potentially dilemmatic communicative situation. It is oftentimes necessary: (a) to alter the existent inaccessible workplace technology, (b) to acquire access technology used to interact with existent inaccessible technology, and/or (c) to utilize an alternative method to complete a work-related task that would be otherwise impossible to complete. The dilemmatic communicative interaction initiated by the employee with the disability in requesting access to inaccessible technology/access technology products results in the interaction of conflicting communicative goals.

In effect, the employee with the disability is simultaneously maintaining face while requesting a product/service/other workplace modification that is necessary for the employee to complete tasks that are central to her/his employment. Adding to this potentially dilemmatic communicative task, this interaction could be possibly be taking place between the employee with the disability and a manager, supervisor, or human resource professional where tensions associated with communicating across power

distances in an organizational hierarchy could be present. Using a qualitative approach, the researcher will investigate the communicative experience of people with visual impairments as they face workplace situations where they encounter inaccessible technology or must request access technology in order to effectively complete a work-related task. This dilemmatic communicative experience will be investigated by means of further understanding this problem of technology access from the perspectives of visually impaired employees and investigating approaches that these employees use in order to gain access to workplace technologies.

Research Questions

RQ1: How do visually impaired employees describe the problem of technology access and the management of their workplace experiences regarding access to technology?

RQ2: What communication strategies are used by visually impaired employees to manage their workplace experiences regarding access to technology?

The Study

Through the use of a qualitative questionnaire distributed to employees with visual impairments, the researcher addressed the research questions guiding this study. Using Applied Thematic Data Analysis (Guest, MacQueen, & Namey, 2012), 10 themes emerged from the data. These themes and subsequent in-depth analyses revealed: a complex multi-pronged definition of access to technology in the workplace that takes into account technical, social, and consequential factors that mold access to technology; an insight into the process that employees with visual impairments partake in to obtain access to workplace technology; and an understanding of communication strategies used in the process of obtaining said access.

Document Organization

This dissertation is organized using a traditional five chapter format. After this overview of the study, literature is presented that highlights common perspectives regarding disability, an overview of interabillity communication with an in-depth discussion of co-cultural communication (Orbe, 1998), and an overview of access technology as used by people with visual impairments and the place of this technology in the workplace. Chapter three (methods) provides an outline of Applied Thematic Data Analysis (Guest, MacQueen, & Namey, 2012) and describes the exact steps taken to collect and analyze the data. In chapters four and five (results and discussion), descriptions of each of the 10 themes presented in the data are explicated by the use of key quotations along with analytical narratives, and further analysis categorizing the 10 themes into three superordinate analytical foci is conducted, respectively.

Positioning the Study in the Literature

As it relates to the study of communication, understanding the experiences of employees with visual impairments regarding technology access will assist in considering the basic mechanisms promoted in organizational settings that provide the framework of how disability (specifically visual impairment in this case) is defined in the workplace. It is here where the intersection of policy and access technology as enacted in co-cultural interactions in the organizational context is exposed. This study intersects the literature on disabilities studies, organizational communication, and vocational rehabilitation disciplines. The value of this study stems from its potential to initiate theoretical discussion regarding disability in the workplace as well as its emphasis on providing an in-depth description of workplace access to technology by people with visual

impairments and the practice of acquiring this access. Aside from having a firm place in the literature, this study is heavily influenced by the real-world problems that people with disabilities face in the workplace. At the nexus of communication and vocational rehabilitation research, this study promotes a greater understanding of communicative strategies used by employees with visual impairments in gaining access to/accessible technology and insight to the general process of obtaining said technology.

CHAPTER 2: LITERATURE REVIEW

This chapter reviews relevant literature on people with disabilities, interability communication, and access technology as well as di0scusses popular approaches to defining disability and further analyzes/challenges these perspectives. After this introductory content regarding disability, an overview introduces theories of interability communication. Stemming from this overview, co-cultural theory and relevant studies that employ this theory in the analysis of workplace interactions are provided. Shifting from a discussion of theory to that of the workplace and people with disabilities, an overview describes the difficulties faced by people with disabilities in obtaining and maintaining employment. In concluding the chapter, the focus is brought to defining access technology and discussing specific products used by people with visual impairments (as employees with visual impairments are the population of focus for the current study).

Defining Disability

In reviewing the language used to discuss disability in the general research literature (Grue, 2011) and a review of the disability literature specific to the field of communication studies (Coopman, 2003), there are three distinct approaches regarding disability: biological, social/sociological, and critical/cultural.

The biological approach to understanding disability promotes the discourses of modern medicine in disciplining the body (Wilson & Lewiecki-Wilson, 2001). This

approach promotes an ideal body that carries a specific set of abilities/traits/ characteristics and hierarchically makes comparisons to this body with a focus on spotting deficiencies. While the biological (or medical) model is no longer favored over social and critical theories in understanding disability due to its focus on disability as deficiency, O'Brien (2001) argues that this model still shows its power in the wording and structuring of policies used to protect people with disabilities in the United States, such as the ADA. The biological approach to disability underestimates social influences on understanding disability and defines the disabled body as deficient (Gray, 2009; Grue, 2011).

The social model of disability, spawned in the United Kingdom by disability activists and theorists, promotes the idea that disability is a societal construct that is used to understand the body (Grue, 2011; Coopman, 2003). The social model is in direct opposition to the biological model, disregarding the physical body, and promoting a purely social representation of disability. In essence, the social model still promotes an understanding of disability when compared to the biological model. The social model brings the understanding of disability as a deficiency defined by culture and society (Hughes, 2009); however, the biological model promotes the same understanding of disability as a deficiency in the inherently biological trait of the physical body (Scotch, 2000).

The third approach to understanding disability (and the most recent) is the critical/cultural approach, which is a combination of several approaches aimed at understanding power differentials between the disabled and able-bodied (Coopman, 2003; Hughes, 2009). The primary focus in this theoretical grouping of approaches

appreciates the politics of the body. While Coopman (2003) briefly sketches this critical approach, Hughes' (2009) depiction of people with disabilities demonstrates how cultural understandings of the disabled as societal anomalies can enhance the understanding of experiences of people with disabilities.

Analyzing Perspectives on Disability

Grue (2011) provides an overview, and criticism, of how the understanding of disability has evolved over time. In tracing a path from the biomedical to the social model, Grue critiques the current models of disability. While the biomedical model simplifies disability to a state of lacking physical ability and does not take into account societal perspectives, the social model precludes an exploration of the physical body when discussing what it means to be disabled. The disability as minority model does not take into account the unique status and historical reality of disability, and the gap model assumes that disability is always a state that can be ameliorated by social change and public policy. Thus, the significance of Grue's critique is that the primary definitions of disability used in the literature are fragmented and do not cover crucial aspects of disability.

As Hughes (2009) illustrates, the disabled body has been portrayed as an alternative to the healthy and whole body. This encoding of the disabled body as inferior, or in opposition to the complete body of those who are able-bodied, can be historically traced through culture using three persistent themes. Hughes discussed these themes in great detail; descriptions of each theme follow.

The *disabled as wounded beings* portrays an understanding of disability built on the assumption of vulnerable bodies. People with disabilities, and women, are

categorized as incomplete beings according to this theme. As referenced in (Turner, 2003), the root word of vulnerable is the Latin word *volnus*, which means wounded. It is thus the disabled/wounded body that is positioned as an alternative to the whole and typically masculine body of perfection. This perspective defines people with disabilities as deserving, and needing, pity and support from society at large (Dean, 1999). This perspective can be readily observed in media campaigns that invoke pity when directing attention to people with disabilities (Schapiro, 1994), as well as in governmental policies that highlight the duty of society to support the incomplete bodies of people with disabilities (Prince, 2009).

The *disabled as monstrous* focuses on the disabled body as the anomaly that reinforces the able-bodied masculine self as the normative being. Extending disabled as wounded, the disabled as monstrous theme acts as a subjective reinforcement regarding the perfection of the masculine able-bodied subject (Shildrick, 2002). This perspective directly compares disabled and able-bodied subjects as opposing forces in defining one another (Shildrick, 2002).

The *disabled body as abject* shifts this focus on the disabled as monstrous to not only strengthen the normative aspect of the masculine able-body, but also to position the disabled body as a threat to the normal and the healthy. Continuing the subjective use of the disabled body in order to strengthen the position of the able-bodied masculine figure, this theme highlights the notion of bodily difference as a threat (Grosz, 1990; Kristeva, 1982) to the normal.

Across these three cultural themes of understanding disability, the notion of the category of disability is a total or partial binary to the concept of the healthy able-bodied

subject. One of the emphases of this project is to investigate how this meaning of what it is to be disabled comes to the foreground in everyday workplace interactions. While the themes of bodies as wounded, monstrous, and abject are primarily spawned from notions of the superiority of the masculine able-bodied individual, Hughes (2009) explains that further engaging these themes/perspectives on disability in a critical space can provide new insight. For example, as the body changes over its lifespan, is it not that all people epitomize aspects of both the ideal body and the antithesis to this ideal body? Hughes (2009) discusses this challenge:

> All the grooming and preening are testimony to a body that is nowhere as perfect as it seems. The battle against the abject is a permanent. Life wages it upon the 'civilized', cultured, public face that we are expected to take with us when we play at being in the world. The abject is (some of) what we are but will not admit to because decorum and decency – those pristine twins that make civilization so discontented – demand that we adhere to the 'law of the father'. It is the stranger that we despise but fear we might become. It is the whisper of disruption that we would rather ignore in case it draws us in and dissolves us in its horrors …. (p. 406)

Hughes proposes that discussions of disability and identity will ultimately collide with post-modern theorizing and thus destroy the social barrier that defines the normal body.

Following Hughes' (2009) investigation of disability in everyday culture, the ablest perspective is especially appropriate for discussion as it is built around the notion of larger social forces promoting a perfect body to which all other bodies are compared and scrutinized (Campbell, 2001; Campbell, 2008). In the past five years, this

perspective has gained attention in investigations of disability and the workplace context as the employment contract has disembodied the employee, leaving larger notions of the perfect employee at play (Foster & Wass, 2013; Jammaers, Zanoni, & Hardonk, 2016; Zanoni, 2011). Delving deeper into the concept of ableism, Wilson and Beresford (2002) bring an understanding of the workplace as a context that promotes ablest ideals by means of the employment contract of human capitol. Complementing the social model of disability, ableism extends the perspective of disability as socially constructed in focusing on the discursive production of the perfect body and the forces that maintain this perfect body (Jammaers, Zanoni, & Hardonk, 2016).

In an in-depth examination of classifications of the literature on disability in communication research, Coopman (2003) divides the existent literature into six perspectives: the biomedical, cognitive, political, as culture, in culture, and community. These perspectives are discussed as part of the above content regarding approaches to understanding disability. While similar to Grue (2011), Coopman (2003) provides a review of the literature that captures critical perspectives on understanding disability through the lenses of politics, culture, and community. In these three perspectives, the disabled body is seen as having a form of autonomy to act in ways that can catalyze societal change. While this is important for a complete understanding of how disability becomes defined in culture and impacts day-to-day interactions, the literature lacks an understanding of disability as simultaneously constituted in the physical body, the social world, and the cultural sphere. Hughes (2009) provides the following description of this theoretical complication:

> The linguistic, cultural and somatic turns in western thought have made it difficult for the social model of disability to continue to ignore or be indifferent to the body and impairment. The effort to sustain such an agnostic position has fragmented, particularly as the embodied differences among and between disabled people have become manifest in new social and political aspirations. (p. 399)

This opinion is echoed by Gray (2009), who promotes a multicultural theory of disability. Gray's theory provides the transformation of disability as deficiency to the understanding of disability as difference and posits the interaction between the disabled and the able-bodied in what Orbe (1998) calls a co-cultural encounter: "The most prominent feature of multicultural narratives of disability is their discursive shift away from 'disability as deficiency' to disability as a positively valued difference. This shift is dramatically different from the medicalized orientation to disability" (Gray, 2009, p. 326). This theoretical understanding as related to inter-ability communication is significant but does not assist in bridging the gap between the physical body and the social representation of having a disability. Hughes (2009) discusses this paradox as an understanding of the physical body as impaired and the social understanding of this impairment as disability. This splicing of the physical and social worlds provides a challenge to examine theoretical and practical ways of connecting these co-dependent realms of existence into a novel understanding of disability.

Inter-ability Communication

In order to construct a more accurate, and fundamentally real world, understanding of disability, it is important to take into account processes of inter-ability communication. Fox et al. (2000) provides an overview of the various approaches used to understand inter-ability communication. Their focus, and definition, of inter-ability

communication involves the process of communication between those with and without disabilities. These approaches can be largely categorized as interpersonal, cultural, and intergroup.

The interpersonal theories of inter-ability communication bring the focus to uncertainty reduction (Dahnke, 1983), individual cognitive needs (Thompson & Seibold, 1973), and motivations that the participants bring to each inter-ability communicative event (Sunnafrank, 1986). Cultural approaches to inter-ability communication focus on dominant and non-dominant cultural positioning (Orbe, 1998) as well as adding to the discussion of the variables of cultural values and stereotypes (Emry & Wiseman, 1987). Most recently, intergroup perspectives on inter-ability communication (Fox & Giles, 1996; Fox et al., 2006) convey the analytical tools of social identity theory (Tajfel, 1978), intergroup communication theory (Hewstone & Brown, 1986), communication accommodation (Giles, Mulac, Bradac, & Johnson, 1987), and impacts of larger societal/political variables (Bourhis et al, 1997), such as public policy that shapes intergroup relationships (e.g., the ADA).

The Co-cultural Approach

Under the grouping of critical/cultural approaches in understanding disability is work related to co-cultural theory (Orbe, 1998; Orbe & Roberts 2012), which focuses on inter-ability communication as a co-cultural encounter (Fox et al 2000; Cohen & Avanzino 2010). Enhancing the social approach to disability, this critical/cultural approach brings light to power differentials and the strength of culture in promoting understandings of disability through a critical stance of analyzing societal interpretations of the body with a focus on social practices that depict and reify politics of the body. Co-

cultural theory (Orbe, 1998) provides a space that is appropriate for understanding the experiences of visually impaired employees as imbedded in the dominant perspectives of an able-bodied society. The two foundational arguments that Orbe (1998) builds his theory upon are:

1. Although representing a widely diverse array of lived experiences, co-cultural group members, including women, people of color, gays/lesbians/bisexuals, people with disabilities, and those from a lower socioeconomic status will share a similar societal positioning that renders them marginalized and underrepresented within dominant structures.
2. In order to confront oppressive dominant structures and achieve any measure of success, co-cultural group members adopt certain communication orientations when functioning within the confines of public communicative structures. (Orbe, 1998, p. 3)

Co-cultural theory is built on the cornerstones of muted group (Kramarae, 1981) and standpoint theories (Hartsock, 1983). Both of these theories take different perspectives on understanding the experiences of minority group members and, when combined, provide the groundwork for co-cultural theory. Muted group theory investigates how minority group members are "muted" by those in power or by language structures that ignore/minimize the voice of the minority member (Kramarae, 1981). Standpoint theory posits that those who are part of minority groups will have unique stories to tell/perspectives to express due to their positioning in society (standpoint) (Hartsock, 1983). By combining these two theoretical perspectives with the power of phenomenology, co-cultural theory investigates how minority group members (non-

dominant co-cultural group members) communicate their standpoints to those who are part of majority groups (dominant co-cultural group members).

In communicating their standpoints, non-dominant co-cultural group members have many communication tactics at their disposal as proposed by Orbe (1998). Table 1 provides an annotated list of these tactics.

Table 1: Co-cultural communicative practices summary

Practice	Brief description
Emphasizing commonalities	Focusing on human similarities while downplaying or ignoring co-cultural differences
Developing positive face	Assuming a gracious communicator stance where one is more considerate, polite, and attentive to dominant group members
Censoring self	Remaining silent when comments from dominant group members are inappropriate, indirectly insulting, or highly offensive
Averting controversy	Averting communication away from controversial or potentially dangerous subject areas

Table 1: (continued)

Extensive preparation	Engaging in an extensive amount of detailed (mental, concrete) groundwork prior to interactions with dominant group members
Overcompensating	Conscious attempts-consistently enacted in response to a pervasive fear of discrimination-to become a "superstar"
Manipulating stereotypes	Conforming to commonly accepted beliefs about group members as a strategy to exploit them for personal gain
Bargaining	Striking a covert or overt arrangement with dominant group members where both parties agree to ignore co-cultural differences
Dissociating	Making a concerted effort to elude any connection with behaviors typically associated with one's co-cultural group
Mirroring	Adopting dominant group codes in an attempt to make one's co-cultural identity less (or totally not) visible

Table 1: (continued)

Strategic distancing	Avoiding any association with other co-cultural group members in attempt to be perceived as a distinct individual
Increasing visibility	Covertly, yet strategically, maintaining a co-cultural presence within dominant structures
Dispelling stereotypes	Myths of generalized group characteristics and behaviors are countered through the process of just being one's self
Communicating self	Interacting with dominant group members in an authentic, open [way], and used by those with strong self-concepts
Ridiculing self	Invoking or participating in discourse, either passively or actively, that is demeaning to co-cultural group members
Intragroup networking	Identifying and working with other co-cultural group members who share common philosophies, convictions, and goals
Utilizing liaisons	Identifying specific dominant group members who can be trusted for support, guidance, and assistance

Table 1: (continued)

Educating others	Taking the role of teacher in co-cultural interactions; enlightening dominant group members of co-cultural norms, values, etc.
Confronting	Using the necessary aggressive methods, including ones that seemingly violate the rights of others, to assert one's voice
Gaining advantage	Inserting references to co-cultural oppression as a means to provoke dominant group reactions and gain advantage
Avoiding	Maintaining a distance from dominant group members; refraining from activities or locations where interaction is likely
Maintaining barriers	Imposing, through the use of verbal and nonverbal cues, a psychological distance from dominant group members
Exemplifying strengths	Promoting the recognition of co-cultural group strengths, past accomplishments, and contributions to society
Embracing stereotypes	Applying a negotiated reading to dominant group perceptions and merging

Table 1: (continued)

	them into a positive co-cultural self-concept
Attacking	Inflicting psychological pain through personal attacks on dominant group members' self-concept
Sabotaging others	Undermining the ability of dominant group members to take full advantage of their privilege inherent in dominant structures

Adapted from (Orbe, 1998, p. 10-11).

A focal point of co-cultural theory is the combination of factors that impact what communication tactics non-dominant co-cultural group members will use when confronting dominant co-cultural group(s). To this end, Orbe (1998) proposes six factors: ability, field of experience, situational context, perceived costs and rewards, communication approach, and preferred outcome.

Ability and field of experience are two influential factors that are primarily focused at the individual level. One's experience with cross-cultural communicative encounters and the ability to practice various communication tactics in these interactions are two factors that expand or limit the selection of communication tactics available for an individual to use. Focusing on the specific co-cultural encounter, co-cultural theory

posits that each specific situation and the perceived costs and rewards, regarding the use of a specific communication tactic, will impact one's communication strategy.

Along with these individual and situational variables that impact the communication tactics used by non-dominant co-cultural members, Orbe (1998) promotes two variables that highlight each individual's general communication style: communication approach and preferred outcome. These variables form the overarching cognitive framework that guides an individual's decision to use specific communication tactics. Communication approach highlights the distance between non-dominant and dominant co-cultural communicative styles. Accordingly, does the non-dominant co-cultural member assimilate to, accommodate, or separate from the dominant style? Closely related to communication approach, preferred outcome highlights the end result of the co-cultural encounter. Hence, does the non-dominant co-cultural member want to aggressively reject the dominant co-cultural communication style, non-assertively accept this style, or assertively promote a new style while not devaluing the dominant style? Table 2 shows various communication tactics in relationship to communication approach and preferred outcome.

Table 2: Classification of co-cultural communicative practices

	Separation	Accommodation	Assimilation
Nonassertive	Avoiding Maintaining interpersonal barriers	Increasing visibility Dispelling stereotypes	Emphasizing commonalities Developing positive face Censoring self Averting controversy
Assertive	Communicating self Intergroup networking Exampling strength Embracing stereotypes	Communicating self Intragroup networking Utilizing liaisons Educating others	Extensive preparation Overcompensating Manipulating stereotypes Bargaining
Aggressive	Attacking Sabotaging others	Confronting Gaining advantage	Dissociating Mirroring Strategic distancing Ridiculing self

Adapted from (Orbe, 1998, p. 13)

These communication tactics combined with the above factors that impact the enactment of each tactic constitute the core components of co-cultural theory. Below are some examples of relevant applications of co-cultural theory that are especially salient when discussing workplace interactions.

Relevant Applications of Co-cultural Theory

The co-cultural approach has been widely used in the investigation of the experience of non-dominant co-cultural group members. Exploring the experiences of women (Burnett, 2005), racial minorities (Covarrubias, 2008; Gates, 2003; Harris, Miller, & Trego, 2004), gays (Kama, 2002), religious minorities (Bashir, 2009; Kama, 2002), first generation college students (Orbe & Groscurth, 2004), and people with disabilities (Cohen & Avanzino, 2010; Worley & Cornett-DeVito, 2007), co-cultural theory has been extensively applied across various non-dominant co-cultural groups in different settings. In reference to workplace settings, co-cultural theory has proven to be especially useful in understanding the experience of minority group members as they attempt to successfully interact with dominant co-cultural group members from the hiring process (Buzzanell, 1999) to everyday workplace interactions (Gates, 2003) to situations of workplace discrimination (Camara & Orbe, 2010). Co-cultural research also highlights the experiences of people with disabilities as fraught with co-cultural tensions that ultimately result from the dominant position of those who are able-bodied (Cohen & Avanzino, 2010). In these situations, people with disabilities are shown to most often use tactics of assertive accommodation to successfully navigate these co-cultural encounters (Cohen & Avanzino, 2010).

The co-cultural approach is compatible with a cultural/political perspective on disability. Disability, in this case, is regarded as a factor that categorizes individuals into a non-dominant co-cultural group that—in order to achieve political equality—must rely on the strategic use of dialogue. This is concurrent with MacLennan's (2011) definition of dialogue in intercultural encounters. MacLennan (2011) promotes the idea that dialogue is the key variable that defines and creates hierarchy among cultural groups; thus, it is the tool that must be used to balance power in intercultural encounters.

Visually impaired employees interact with the dominant workplace culture of the able-bodied employee. These interactions with the dominant co-culture are what ultimately shape the experiences of visually impaired employees. Orbe (1998) emphasizes respect for the experiences of each co-cultural group, but affords scholars an understanding of how non-dominant and dominant cultural positions impact human interaction and experience. Co-cultural theory also gives non-dominant cultural groups voice in its emphasis on understanding human experiences as told by those experiencing the phenomenon (as influenced by phenomenology), and, more importantly, understanding the strategies non-dominant co-cultural groups use in molding their own experiences.

Using co-cultural theory in the analysis of the workplace experience of employees with visual impairments, a deeper understanding of visual impairment as both a socially constructed category and a physical manifestation can be gained. Co-cultural theory lends a platform that, when fully taken advantage of, empowers the researcher to understand co-cultural encounters via a communicative lens that melds both physical and social worlds.

Employment of People with Disabilities

Discussing employment of people with disabilities, access technology is referred to as an integral part of employee efficacy (Crudden & McBroom, 1999; Crudden, 2002; Pell, Gillies, & Carss, 1997; Yeager, Reed, & Doe 2006) and discussed as both a series of products as well as the knowledge and training needed to use said products. In literature specific to people with visual impairments, barriers to printed materials and computer access are highlighted (Crudden, 2002; Golub, 2003). Furthermore, discussions regarding these access difficulties often include some form of reference to access technology. Burgstahler (2003) discusses the necessity of knowledge regarding the use of access technology for a successful transition from an educational environment to the workplace, and other literature in the special education discipline refers to access technology instruction as an essential part of the education-to-work transition (Wehman, 2006).

In the workplace, the vocational rehabilitation literature has investigated the interactive accommodation process and emphasized both the essential functions of open communication between employee and employer regarding accommodation needs (Golub, 2003). This literature has also investigated the process of finding the most appropriate accommodation (including the provision of access technology products) that take into account the needs of the individual with the disability and the job being conducted (Galvin & Scherer, 1996; Langton & Ramseur, 2001). More recently, the promotion of universal design (product design that is inclusive of people with a wide range of abilities) has been indicated as a viable and appropriate solution to increasing

workplace technology access for people with disabilities (Bruyere, Erickson, & VanLooy, 2006).

While workplace accommodations and access technology have been found effective in promoting workplace participation by people with disabilities (Kim & Williams, 2012; Roessler et al., 2011), findings in the literature bring focus to employers as hesitant, and sometimes unwilling, to provide people with disabilities the appropriate accommodations (Harlan & Robert, 1998; Kulkarni & Valk, 2010). It has been speculated that this is due to a reluctance to make changes in the institutional nature of the workplace (Harlan & Robert, 1998) and to promote a sense of procedural justice among co-workers (Colella, Paetzold, & Belliveau, 2004). Along with this hesitancy in providing reasonable accommodations to employees with disabilities, employers report beliefs that people with disabilities often do not have the requisite training and competencies for employability and advancement in the organizational context, that the complexities of an organization's work could not be completed by an employee with a disability, and that accommodation costs would be too high when hiring a person with a disability (Bruyere, 2000; Colella, 2001; Colella et al., 2004; Domzal, Houtenville, & Sharma, 2008; Vornholt et al., 2013). Combined with research that brings evidence that job descriptions for employment opportunities with multiple/complex tasks are written in a way that discourages people with disabilities from applying for these jobs (Foster & Wass, 2013), these findings bring focus to the larger discussion of the stereotypes and stigma associated with having a disability in the workplace.

Stigma and stereotyping associated with disability as expressed in the organizational context is characterized by a belief that employees with disabilities are less

productive and incapable in the completion of work-related tasks (Bruyere, 2000; Heslin, Bell, & Fletcher, 2012; Stone & Colella, 1996). These beliefs impact performance reviews negatively (Ren, Paetzold, & Colella, 2008) and produce a barrier in the employment of people with disabilities (Hernandez, Keys, & Balcazar, 2000). Aside from stigma and stereotyping regarding people with disabilities in the workplace context, other organizational level variables associated with the high unemployment rate of people with disabilities have been investigated. According to the Disability Case Study Consortium (2008), von Schrader, Malzer, Erickson, and Bruyere (2011), and Erickson et al. (2014), organizational culture and managerial backing of the hiring and support of people with disabilities in the workplace are crucial to the diversification of the workplace regarding employees with disabilities. In 2010, a survey of organizations found 70% of corporations had some form of diversity policy or program, while just under one-third of these corporations had a specific policy or program addressing employees with disabilities (Kessler/National Organization on Disability [NOD], 2010).

In concluding this primer on factors impacting the employment of people with disabilities, both stereotypes and organizational level variables impact the hiring and overall experience of people with visual impairments. It is important to contextualize this discussion of workplace accommodations and access to technology in the larger experience of people with visual impairments. Social and critical understandings of disability are especially salient when reviewing the literature on stereotyping of people with disabilities, while the ablest perspective brings a focus to the organizational level variables that impact the inclusion of people with disabilities in the workplace.

Access Technology and People with Visual Impairments

The Job Accommodation Network (JAN) (2016), a program hosted by the U.S. Department of Labor, refers to access technology as both hardware and software that assists people with disabilities to interact with content or to perform functions made difficult or impossible by a disability. Regarding people with visual impairments, databases that categorize relevant access technology (Products for People who are Blind or Visually Impaired - American Foundation for the Blind, 2014; National Federation of the Blind, 2016) emphasize various kinds of technologies. This family of products aimed at assisting people with visual impairments can be categorized into three primary functions: computer access, printed material acquisition, and navigation assistance products.

Computer access products include screen reading software (e.g., JAWS for Windows, System Access, and Voice Over), screen magnification software (e.g., Magic Screen Magnification and Zoom Text), and braille display hardware (e.g., Brilliant and Focus), along with other software and hardware solutions used to access visual information necessary to use a computer, smartphone, or other smart device. Printed material acquisition products include both software and hardware products used to convert printed material (both hardcopy and electronic format) into speech, magnified text, or braille. Examples include Open Book, SARA (Scanning and Reading Appliance), the Victor Reader suite of products, as well as the KNFB Reader. The third category of products consists of navigational aids used to assist people with visual impairments independently navigate. Products include hardware devices and applications installed on mobile computers (including smartphones) that use GPS information and

speech output in order to orient individuals to street intersections and points of interest (e.g., Blind Square and Trekker Breeze).

These three categories are by no means exclusive or exhaustive; products listed in the previously cited databases can be most often categorized in one or more of the above three categories. For example, the Braille Note Apex produced by Humanware provides people with visual impairments with a hardware product that combines Internet access using braille keyboard input and speech output as well as electronic book/file-reading capabilities through a built-in braille display and speech output. In addition to the Braille Note Apex's standard functions, an optional add-on GPS receiver with a software counterpart for street navigation is available to assist with pedestrian navigation. Other access technology products listed in these databases that do not fit into the above categorization include color identifiers/light probes (products that communicate information about the color of objects and amount of light at a specific location) as well as specialized tactile markers and product identification technology (e.g., talking barcode scanners).

In order for a product to be listed as an access technology, it does not have to be a specialized product specifically produced for people with visual impairments. For example, products used innovatively or in combination with other access technology products in a way that has significance for people with visual impairments can be considered a as a form of access technology. The (Products for People who are Blind or Visually Impaired - American Foundation for the Blind, 2016) lists many mainstream applications produced for smart phones that, while not explicitly produced for people

with visual impairments, when used in an access technology set-up can provide novel opportunities or alleviate access barriers specific to having a visual impairment.

Conclusion

The literature on disability is fragmented by a lack of consistent definitional perspectives, as well as myriad approaches to understanding inter-ability communication. Co-cultural theory, as applied to inter-ability communication, provides its strength in taking the perspective of the person with the disability and promoting a theoretical backdrop that portrays empowerment by way of the use of communication tactics. Applying this co-cultural approach to workplace interactions regarding access technology attainment, this study allows for theoretical and practical implications regarding both inter-ability communication and a better understanding of the workplace accommodation process for people with visual impairments.

CHAPTER 3: METHODOLOGY AND DATA ANALYSIS

Methodology

In order to investigate the experiences of employees with visual impairments as they navigate access to technology in the workplace setting, a qualitative approach was used. Applied Thematic Data analysis (Guest, MacQueen, & Namey, 2012) was employed as a framework for the analytic procedure. A qualitative approach is commensurate with the research questions posed and the purpose of the study. According to Creswell (2012), "Qualitative research begins with assumptions and the use of interpretive/theoretical frameworks that inform the study of research problems addressing the meaning individuals or groups ascribe to a social or human problem…" (p. 44). Using this definition of qualitative research, the current study is especially fit for the application of this approach. In effect, a qualitative approach is used to investigate the "meaning" that people with visual impairments "ascribe" to access to (or inaccessibility of) technology in the workplace as well as the management of this access. Continuing this discussion on qualitative research, Denzin and Lincoln (2011) provide the following definition:

> Qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field

> notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. (p. 3)

In this study, Denzin and Lincoln give the researcher the power to immerse himself in the experiences of participants and transform said experiences into alternative representations for further analysis.

Using a qualitative approach in the investigation of people with disabilities in the workplace, the current research joins a rich tradition of literature that crosses disciplinary boundaries (Cohen & Avanzino, 2010; Crudden, 2002; Jammaers, Zanoni, & Hardonk, 2016). This, more general, qualitative approach is combined with that of the rigors of Applied Thematic Data Analysis (Guest, MacQueen, & Namey, 2012) in order to bring a systematic approach of exploration that respects the individual experiences of participants as well as provides guidelines in the synthesis of the data.

Research Instrument

To inquire about the experiences of employees with visual impairments regarding their interactions with technology access in the workplace and the management of this process, a specially designed questionnaire was used. This questionnaire included eight questions that were specially designed in relation to the research questions prompting this study. Using literature regarding the experience of employees with visual impairments and information about existent access technology products, questions were posed to participants regarding their use of access technology in the workplace, specific situations

where participants might have encountered issues of inaccessible technology, management of access to technology in the workplace, interactions with others in the workplace regarding access to technology, and other thoughts regarding technology access. Paired with a series of demographic items (including three items regarding technology use in the workplace), this questionnaire was posted on a secure online platform. Using both snowball sampling and distribution via e-mail lists hosted by all three major blindness advocacy organizations in the United States of America (National Federation of the Blind [NFB], American Federation of the Blind [AFB], and American Counsel of the Blind [ACB]), this questionnaire potentially reached thousands of individuals.

The questionnaire was distributed online, but participants were also prompted to contact the researcher if they wished to complete it in an alternate format. Online distribution was used due to the questionnaire's focus on technology use and the ability to obtain responses from a large and diverse pool of participants. In order to ensure accessibility for participants using screen reading and/or screen magnification programs, the researcher (who previously worked as an access technology consultant and has everyday experience using access technology) conducted extensive testing on the questionnaire-hosting platform (webpage containing the questionnaire). In addition, the researcher provided a link to the questionnaire-hosting platform to an access technology specialist to further test for accessibility. The researcher also discussed and pilot-tested the actual questionnaire with two vocational rehabilitation counsellors who specialize in working with people with visual impairments in obtaining employment. The complete questionnaire is available in Appendix A.

Participants

In order to be eligible to take the questionnaire, participants must:

- self-identify as visually impaired or blind
- have been employed for the last six months, working for at least 20 hours per week
- reside in the United States of America
- be between 18 and 65 years of age

Taking part in this study were 60 individuals who identified themselves as meeting the above criteria. In reference to the demographic information collected from the participants: 14 respondents reported as male, while 43 participants reported as female (three participants did not respond). The majority of respondents identified themselves as Caucasian/white (47 participants). With regards to reported education level, 23 participants reported having some form of a graduate/professional degree, while 19 participants reported graduating from college (nine participants reported some college and five participants reported some post-graduate education). The ages of the participants ranged widely, and no meaningful average or median is obvious: the largest age categories selected by participants were 22-30 and 51-60 years, with 13 participants each. Respondents were not bounded to any geographic region of the United States of America. For all but one exception, Florida with seven participants, all states/territories with respondents range between one and four individuals partaking in the study. Participants reported working in many different industries and jobs, ranging from human services to legal services. The majority of participants identified themselves as either working between six months and one year or greater than 15 years for their current

employer, nine and 15 participants, respectively. Basic demographic information is presented in Appendix B.

Data Analysis

After collecting data from the aforementioned 60 participants, Applied Thematic Data Analysis (Guest, MacQueen, & Namey, 2012) was used to analyze and synthesize the data. This method of analyzing data is built from both phenomenology (Husserl, 1982, 1989) and grounded theory (Corbin & Strauss, 1990; Glaser & Strauss, 1965) in its general theoretical foundation. Using the roots of phenomenology in order to focus on the lived experiences of participants and the building blocks of grounded theory in bringing a step-by-step approach to data analysis, Applied Thematic Data Analysis promotes an analytic procedure that both preserves the voice of participants and prompts a methodologically rigorous approach. Owing to its pragmatic roots, Applied Thematic Data Analysis is strongest when used to gain further insight when utilized on qualitative data that is associated with studies that investigate practical issues/social phenomena (Guest, MacQueen, & Namey, 2012). Previous research that has employed Applied Thematic Data Analysis in its ideal-use scenario includes a study of the experiences of virtual workers (Long et al., 2014), an investigation of factors that promote social inequalities (Miller, Cahn, & Orellana, 2012), and an examination of emerging organizational practices (Schiff et al., 2012).

In the research context, Applied Thematic Data Analysis consists of three static steps and a final fourth step that is organic to the purpose of the study/research questions:

1. Data is sectioned into independently meaningful statements (segmentation)
2. Statements are coded by the creation of a coding schema (coding)

3. Analyses of coded segments of data produce a series of themes
4. Resulting themes are used in accordance with the purpose of the study/research questions (e.g., in-depth descriptions of the themes are provided, further analyses of the resulting themes are conducted, and/or theoretical models are developed)

Using this step-by-step procedure, all data were segmented and coded (98 pages) by the use of emic codes, and, through careful analysis, ten salient themes were developed. As prompted by the research questions and purpose of the study, in-depth descriptions of each theme are provided (chapter four) and further analysis of said themes using both existent literature and cross-theme comparison is conducted (chapter five). In order to bolster the reliability of the findings, the researcher developed a codebook that contained a simple yet inclusive coding scheme (a list of codes used to classify the data is included in Appendix C) and conducted negative case analyses. In order to strengthen the validity of these findings, the researcher discussed the resulting themes with vocational rehabilitation counsellors who assist people with visual impairments in finding and maintaining employment. The researcher also paid close attention to the data and used a series of three questions that inquired about technology (and access technology) use to decrease the chance of inclusion of responses from participants who do not meet the participation criteria previously described. (No data omission resulted from this process.)

By combining a qualitative investigation with a thematic analysis, the researcher is able to answer the research questions guiding this study in a systematic, reliable, and valid approach. The use of emic codes preserves the voice of participants, while the step-by-step approach of the data analytical procedure lends a strong scaffolding to this qualitative inquiry.

CHAPTER 4: RESULTS

When exploring technology access in the workplace and communication strategies used to manage this access, as utilized by visually impaired employees, many themes emerge from the data. These themes are isolated for further description and analysis. Below, each research question is followed by relevant themes retrieved from the data.

RQ1: How do visually impaired employees describe the problem of technology access and the management of their workplace experiences regarding access to technology?

1. Technology and Print
2. Time and Performance
3. Organizations and Policies
4. Power of Change
5. Accessibility Lost

RQ2: What communication strategies are used by visually impaired employees to manage their workplace experiences regarding access to technology?

1. Requesting Accommodations: An Always Ongoing Process
2. Avoidance as Strategy
3. Balance as Strategy
4. Advocacy as Strategy
5. Formal Procedures and Everyday Talk

In this chapter, the narratives of the research participants are used in order to further explore each of these themes and commentary to summarize these findings is provided. Each theme is categorized under one of the two research questions guiding this study. After discussing the themes relevant to each research question, a short negative case analysis and conclusion is presented, and an overall summary regarding all ten themes concludes this chapter. In chapter five, the existent literature is engaged in analyzing the findings as well as continuing to explicate relationships between the themes in the data. Aside from further analyzing these findings, implications (both theoretical and applied) and future directions spawned by this research project are discussed.

RQ1: How do visually impaired employees describe the problem of technology access and the management of their workplace experiences regarding access to technology?

Before investigating the themes regarding technology access, it is important to understand the access technology set-up often used in the workplace by visually impaired employees. These employees use different products to access technology at work, and the products include both software and hardware solutions used to read and magnify printed material, to interact with computers as well as other office equipment, and to

travel independently. While there is no singular optimal access technology set-up, an example from one respondent is provided below.

> I use the [J]aws screenreader on work computer, with the Kurzwiel 1000 software to scan and read papers and also to read PDF attachments that are not accessible to [J]aws. I also use an i[P]hone 6s with voice over and a little stand to place the i[P]hone at the right distance to scan papers using the KNFB Reader Mobile app. This I use if I have a lot of pages and am not at my desk. I also use the Digit Eyes app and the Red Laser app which are bar code scanners. I use a long rigid white cane to get around my workplace. I use [B]raille slates of different sizes to take note or make [B]raille labels for folders and documents, mailboxes or other things I need to read at work. I use a [B]raille display from Baum, the Varioultra, 20 cell for taking meeting notes or reading [PowerPoints] at meetings. I use human readers at times when necessary. I look up user manuals online and read with a screenreader rather than taking the time to scan the print manuals. When I need to go off site for work, I will use a taxi, bus, walk or Uber, if I don't have a ride. I will use my i[P]hone to get directions for places I've never been, the app [Google] maps and the app [B]lind [S]quare are the best. (qDat, 1-7)

In this in-depth description, the various access technology products and where to implement said technology to complete various work-related tasks are explored. The use of specialized access technology products (e.g., Jaws, a popular screen reading application for the Windows operating system) along with off-the-shelf solutions (e.g.,

the use of an iPhone running several apps) are combined to form a holistic access technology set-up. Descriptions of set-ups that are similar to the one described above are common in the data (qDat, 1-4, 2-3, 3-3, 3-4, 3-5, 6-6, 8-7, 8-8). The use of screen reading and/or magnification technology are the most common access technology referred to in the data (used by all 60 participants in the study), closely followed by the use of smart phones running screen reading technology combined with various apps used for optical character recognition and navigation. To underscore the importance of technology in the workplace, and access technology specifically, 58 of 60 participants said that using technology in the workplace was either important or very important for completing job-related tasks, and 58 of 60 participants reported that they interact with workplace technology as well as access technology at least once a day (two participants did not respond to these questions).

In the following sections, each of the five themes that highlight issues with technology access in the workplace is described. As each theme is explicated, access technology products are described, as emphasized in the data, in order to bring a deeper understanding of each problematic theme of workplace technology access.

Technology and Print

The most salient theme in the data (mentioned by all participants either directly or indirectly) regarding technology access in the workplace is that of accessing print on the computer. This challenge comes in two basic categories. Visually impaired employees are either presented with web content or applications that do not allow access technology to read and/or interact with printed content (qDat, 10-1, 10-2, 11-1, 13-1, 14-7) or with document formats that seek to protect the visual aspects of a document's presentation by

presenting the document to the end-user as a photo with no textual tagging (qDat, 11-3, 12-5, 12-6, 13-2, 16-1). In this case, it is neither the technology nor the printed content alone that provide the access issue, but instead the combination of both in a format that does not allow for access technology products to interact with the end result. In an example of this barrier to accessing printed content, one participant, an employee in a call center, describes how inaccessible program design hinders the process of accessing printed content necessary for successful job completion.

> My most challenging parts for work are the call flow in the RightNow program, which I believe, is a product Oracle makes that is used in customer service. The main issues are that I have to use the Jaws cursor through most of it because you often can't tab through to the questions I need to answer, based on the customer's response, and some controls I might have to hit as many as 5 to 10 times before it will move on. The phone system part is mostly graphics that I end up needing help to label each day, and there is no easy way to see if some of the buttons are taking, as I must use the [J]aws cursor and then physically click the mouse to have a chance at it. Two of the graphics absolutely must be labeled during a live call because they change state then. The hold or after call timer is something I can sometimes [read], but it ends up taking enough time to check the time when using the Jaws cursor. The after call stuff takes forever because of JFW acting like questions' responses clicked, but I find I never advanced until I search for it many times and hit it. (qDat, 10-1)

This call center employee discusses the daily struggle of accessing printed material imbedded in an inaccessible application. While common access technology is being used in the example above (Jaws for Windows abbreviated as JFW by this participant), aspects of the call management software present printed material in a graphical format that is inaccessible to the screen reading software being used. In this situation, as the printed material on the computer screen is inaccessible as part of a larger program, the difficulties of interacting with the program are made exceeding apparent. The various work-arounds are described by the participant as part of her description of the technology access issue. Using Jaws, this participant has developed some various techniques to read and interact with the content (using techniques to manipulate the cursor), and even after these extensive work-arounds some aspects of successful interaction with the call management are either left up to chance or to sighted assistance precluding independent interaction between the employee and the call management program.

In addition to inaccessible printed material that is imbedded in computer programs, inaccessible documents pose difficulties for visually impaired employees. These difficulties stem from file formats and/or untagged photos of printed material. The most common file format cited in the data that poses barriers to accessing printed content for visually impaired employees is the portable document format (PDF) (qDat, 10-3, 11-2, 11-3, 13-2, 15-2). Another participant discusses this access problem:

> As explained previously, I have experienced software issues twice during my work life. I am an Instructor of assistive technology, and during no time was failure due to lack of ability on my part. Additionally, my greatest challenge was that of working with "pdf" documents which are

> formatted so that they cannot be used by screen readers. Such documents were produced by the agency serving the blind where I worked and by EEOC representatives on the State and Federal level after I had made accessible document requests.

This visually impaired access technology instructor details the difficulty with PDF files. His experience brings focus to the fact that PDF documents can be formatted (via graphics labeling and tagging) in order to work with screen readers, but this step is often not taken. This is an example of how the combination of technology (electronic file formats) and printed material can be combined to provide visually impaired employees with access to print, but features of the technology are not taken advantage of in order to provide this access.

Combining the discussions of electronic document formats that pose accessibility barriers with computer programs and interfaces that pose issues accessing and interacting with printed material, the following quote from a participant of this study lists obstacles to accessibility:

> 1) in this and previous jobs, inaccessible PDF documents have been a constant irritant: either those produced in-house or those received from outside the organization, including legacy documents that attempt to memorialize older hard copies in an electronic format 2) Increasingly, equipment that presents a touch-screen interface, especially those that have menus and submenus (because simply placing dots on the screen is not enough to navigate these multi-layered displays) 3) Many websites require some kind of registration and I have dutifully filled out all the

> requisite forms only to be confronted by an inaccessible CAPTCHA, thereby making it impossible for me to finish the process - I have also encountered audio CAPTCHAs that are either so garbled or so clunky to use as to make them unusable - too many audio CAPTCHAs fail to navigate the cursor into the edit field when Audio CAPTCHA is selected, so while the audio CAPTCHA is playing, I am scrambling to locate and enter the edit field into which I am supposed to enter the CAPTCHA and all the while my screen reader is speaking with/over/through the audio CAPTCHA (qDat, 15-2)

This participant discusses inaccessibility in the workplace, addressing how immerging touch screen technology is gaining complexity without providing access solutions for people with visual impairments. The approaches used by this participant to access touch screens in the past are made obsolete via the fluidly changing interfaces of touch screen devices that are being introduced. In the discussion of inaccessible technology in the workplace, participants referred to multi-function printing and copying machines providing accessibility barriers (qDat, 11-1, 19-3, 20-4). In these cases, personal desk printers were used as workplace accommodations but created barriers due to the use of touch screen technology that does not incorporate accessibility features (such as speech feedback).

This theme underscores problems of technology access as the combination of printed material and technology interfaces or formats that make it difficult, or sometimes even impossible, to read and interact with documents and programs. While many of the participants in this study have found work-arounds for accessing electronic content, such

as using optical character recognition programs, difficulties still exist. For example, ever- evolving computer interfaces and programs are either developed without built-in accessibility features or do not include methods that allow for access technology products to interact with the specified interface.

Time and Performance

Moving beyond technical aspects of technology access for visually impaired employees, participants discussed how issues with workplace technology manifest themselves in challenges for workplace performance with regards to the timely completion of work-related tasks. Participants discuss having to creatively come up with work-arounds to complete tasks that are easily accomplished by their sighted coworkers. These work-arounds often put the onus on the disabled employee. A participant prompts discussion of this theme through sharing the following workplace experience:

> The most challenging situation, and still remains, is access to a complex Microsoft Access database with a proprietary interface. This application is accessed on a remote server. The application developer has not been able to make it directly accessible with a screen reader. Instead, a clunky work around involves cloning off the database everyday, interacting with it with a local client and then synchronizing my cloned database back with the online database at the end of the work day. (qDat, 12-1)

In the above example of the *Time and Performance* theme, the problem of inaccessibility is encountered when using the popular database management program Microsoft Access. While this program is accessible when used with a screen reader locally (on an individual computer), the database manipulated by this participant has both a proprietary interface

and is accessed remotely. This technical situation cannot be fixed via the application developer; thus, the onus falls on the employee with the disability. This burden can be described as extra time used to access an otherwise inaccessible technology set-up, explained by a participant below:

> We have a system that tracks our HR type information, such as time sheets, evaluations and expectations, contact information, leave, etc and I have problems on some of their screens and have to use the phone system which takes a lot longer. A second example would be that we had to change to an application that tracks our phone calls, and for that system, I had to fight to get them to make it accessible, since that's the main part of my job and I couldn't work the system. That has since been resolved. (qDat, 14-6)

Continuing the focus on the problem of inaccessible technology as an issue of time and performance, the above quote discusses two technical complications. In the first example (accessing the human resource management system), the participant describes how the computer program used sometimes presents inaccessible interfaces and managing this accessibility is completed via a time-consuming process of using a telephone interface. In the second example (the phone call tracking program), the employee had to "fight" for accessibility.

The third and final quote included below further explains the difficulties of technology access as an issue of time and productivity by situating problems of inaccessibility in the larger office environment.

> I have to have other office workers read to me any printed materials. Since I had to print off handouts, I had to ask someone to tell me if I printed it correctly. It sometimes takes longer to get something done when it takes sighted people mere moments to complete. As far as outcomes go, my [supervisor] did not mind unless the office was very busy. I then would have to place the printed papers in a pile and wait for someone to go through them with me. (qDat, 23-6)

For this participant, managing access to inaccessible printed content is not accomplished via optical character recognition programs but through the use of human readers. The participant describes this experience as taking "a longer" time to manage (because of the reliance on the schedules of co-workers) as opposed to "mere moments" to accomplish for their sighted co-workers.

In this theme, understanding the problem of technology access is one of performance and time management. Employees with visual impairments must go above and beyond their everyday job responsibilities to access content readily available to their sighted co-workers, and this either requires extra time (via the use of tedious and often complex work-arounds), or puts the responsibility of fighting for accessibility on the employee.

Organizations and Policies

Participants explain that problems with inaccessibility regarding workplace technology can stem from a lack of communication throughout the organizational hierarchy or result from inaccessible technology adopted by the organization. In the data, participants discuss the acquisition of inaccessible technologies adopted by organizations

and frustration regarding employers ignoring accessibility standards as the roots of technology access issues. Below is a quote from a participant that exemplifies how the matter of obtaining inaccessible printed material is a problem of communication within the employer's organizational hierarchy. (qDat, 44-2)

> When there was my training to be attended, I requested materials in Braille. I was never given any. I requested Braille materials at least two weeks before training, and explained that if I received the materials I could emboss them myself. Usually the requests were verbal. My supervisor thought the requests were reasonable, but didn't use force when speaking to superiors when requesting materials. (qDat, 44-2)

While not directly discussing technology access, this participant prompts the discussion of gaining access to workplace materials as imbedded within the complex network of workplace communication. She discussed how a solution, while available, to access printed content distributed at a workplace training event was not provided to her due to a communication problem among supervisors and managers.

Moving from discussing communication within the bounds of an organization to inaccessibility issues produced by the organization-wide adoption of inaccessible technology, the following quote explains how a data management system used by a governmental entity negatively impacts the technology experience of an employee.

> The state of [name withheld] has adopted a new system that requires me to use a sighted reader because the web system speaks the information that is not actually on the page. This software ensures that transferred documents and messages are secured. Since I receive so many authorizations and

> confidential emails from state employees, this software has made my job a nightmare. (qDat, 19-4)

This state employee discusses her frustration regarding an inaccessible program acquired by the state government and the subsequent work-around that must be used in order for her to be able to complete her job (which is reliant on this program). This is an example of an organization acquiring inaccessible programs that do not meet the 508 accessibility standards set forth by the federal government. Managing access to this program is accomplished via the use of a human reader and provides much difficulty for this employee. The management of the adoption of inaccessible programs by organizations is explored via the following participant's experience:

> I have asked the trainer I worked with and various people helping to see if anything can be done about some of my issues. I really don't know, and I don't know if they do either, if anything much can be done because the Windows Profiles delete upon logout/reboot, and any settings we would apply add more to the prep time in the morning. For example, I wouldn't be able to remember all the code that might go into JFW script files if someone could write them, and the random behavior of the phone controls would make it hard to remember numbered graphics. The saving of files issue has to go up to their client, and I am not sure if that client can somehow give me things like audible indications of hold time, disconnect, etc. I don't have much of any of the integrations between systems that sighted agents have to make things easier because there isn't a hotkey to jump between the web interface that is the account tool, and the part of

> RightNow that works with the call flow. I am also using an externalized version of the phone controls because of RightNow's shortcomings, which may have potential for their client to need to do a lot of manual work to associate calls with incidences. (qDat, 22-1)

Problems of inaccessibility again stem from organization-wide policy and implementation of inaccessible systems. The complexity of managing this technology access problem combined with adoption of inaccessible programs by the organization are perceived as the culprits that promote accessibility issues. The confusion and uncertainty regarding what can be done in this specific situation are palpable in the above quote.

This theme brings another example of the problem of technology access for employees with visual impairments, and again emphasizes how inaccessibility is a phenomenon of ignoring policy mandating standards regarding the design of computer programs and the adoption of inaccessible programs by organizations.

Power of Change

> Even if things are usually run very smoothly, you must always be prepared to handle inaccessibility because eventually it will unfortunately come up. Technology changes rapidly. (qDat, 82-8)

> I have lost promotion opportunities just because of a software purchased by the employer which is not accessible and the employer is not willing to make it accessible. (qDat, 19-1)

In the pair of quotes above, the theme of the ephemeral nature of technology accessibility is interpreted as not just a problem of technology access, but also as a possible barrier to upward mobility in the workplace. This fluid aspect of technology

accessibility impacts how participants manage access to technology. Employees with visual impairments are forced to manage technology access as an ongoing process, as opposed to a one-time or periodic process.

As developers now have the tools to deliver more frequent updates to software along with the use of productivity software that is hosted online (e.g., Microsoft Office 365 and Google Documents), managing access to technology is literally a day-to-day process. The following commentary regarding the status of technology access in the workplace demonstrates this process.

> The hardest is that it is always changing. Accessibility is there one minute, but could be gone in a major area you need the next. The programs they use change. All of a sudden, you cannot perform a major function you have to perform. It's not a problem to anybody else. In fact, most times for everybody else, it gets easier with each upgrade. Not always mind you, but most times. You NEVER can take it for granted. (qDat, 89-9)

This participant not only discusses the ever-changing state of technology access in the workplace, but also alludes to the inequalities of this ever-changing state of technology access. He promotes the idea that the visually impaired employee must be somewhat skeptical of ever-changing technology as changes to a product's accessibility are at stake with change/update. Employees with visual impairments must manage this ever-changing technology/accessibility landscape by engaging in a constant process of accessibility audits and in some cases requests for workplace accommodations. The following quote exemplifies the impact of the constantly changing accessibility status of

technology on how access to technology is managed by employees with visual impairments:

> I deal with this on a daily basis when it comes to software updates, IT security changes, webpages, inaccessible documents and use of SharePoint. I immediately make my supervisor aware and then send an e-mail to the responsible department with a description of the problem I experienced. In many situations, a meeting is set up and I provide a demonstration of the problem. In some situations, I'm invited to the IT test lab to run some tests to further document the problem, or test the resolution that is being put in place. Depending on the situation, my supervisor and I might need to engage in the interactive accommodation process that is in place in the agency where I work. This will hopefully result in some type of an accommodation that will allow me to perform my job. (qDat, 23-2)

In discussing technology access issues in the workplace and combining the discussion of inaccessibility with the management of this inaccessibility, this employee brings further definition to how the ever-changing accessibility status of technology prompts an ongoing accessibility management protocol. This employee has not only identified access to technology in the workplace as an ongoing process, but has also developed a method to handle the issues of inaccessibility that may emerge. The protocol that this participant has developed includes both formal aspects (engaging in the interactive accommodation process) and informal aspects (letting a supervisor know about the

accessibility issue before making contact with the responsible department) in managing technology access.

The theme of *Power of Change* is very much a theme of how technology access is perceived and managed in the workplace. This theme takes the focus away from accessibility management as an incident and instead promotes the notion of an ongoing process of technology access.

Accessibility Lost

The theme of *Accessibility Lost* emphasizes the problem and management of workplace technology inaccessibility as an issue of the lack of understanding/lack of importance put on creating accessible technology interfaces for employees who are visually impaired. Quotes from participants that highlight the lack of built-in accessibility features in mainstream technology, including web interfaces, are rife throughout the data (qDat, 11-4, 12-2, 12-3, 12-5, 13-1). Statements made by two participants regarding the difficulties of interacting with technology that does not have built-in accessibility features for employees with visual impairments are presented below. These two quotes pose both the difficulties of working with inaccessible technology as well as the difficulty of managing this inaccessibility.

> If accessibility can be considered throughout the lifecycle of products and services addressing accommodation needs can [become] timely instead of reactive. (qDat, 74-4)

> I think the biggest issue is that not every piece of technology has accessibility function. So if I'm traveling and I need to use a computer but

> can't use my laptop, then there isn't always a magnifying option on the operating system of the new computer. (qDat, 14-3)

These two quotes demonstrate how issues of technology access are perceived as imbedded in the technology development process. The first of these two quotes brings focus as to how, if technology was developed with accessibility features, the process of managing technology access in the workplace would be “less reactive” and “more timely.” The second of the above two quotes demonstrates how this lack of built-in accessibility impacts employees who must travel as part of their jobs. The second participant states that he must use his own technology set-up while traveling (presumably a laptop with some form of magnification software) and that, if for some reason another computer must be used, accessibility might be jeopardized. Demonstrating how people with visual impairments must take an active role in educating employers regarding technology access, the following experience is provided:

> My workplace had disabled the Windows "Accessibility" menu features as someone had determined, at some point in the past, that they were optional features that should be removed to reduce the risk of "destabilizing" the work environment. When I developed vision issues and requested that those features be enabled, it took 4 months for IT to enable the magnifier feature. The problem was, the magnifier feature didn't help me and wasn't what I requested; I wanted the other features enabled. When the IT department heard that someone had vision issues, they automatically assumed the magnifier was the solution, and it wasn't. My workplace uses a [C]itrix environment, which is not compatible with some screen readers,

> such as Zoom Text. I was provided with NVDA, but was not able to find any training on the program. I am hoping to get JAWS on my work computer. My IT department has a significant lag time in making accessible features available to me as they determine whether it is compatible with our work environment or will destabilize it. (qDat, 18-5)

The above participant states how information technology departments and professionals neither understand nor grant a high level of importance to product accessibility. The information technology department discussed in the above quote first decides that accessibility features equate to screen magnification, which ignores other accessibility features, then takes several months to make the proper features available to this employee. This false assumption demotes technology access over other technical priorities as opposed to developing technical systems where apt accessibility is a priority along with system security. The problem of technology access and the management of this access can be a problem of ignorance, and, as previously discussed in the above results, it falls on the employee with the visual impairment to be the single educator/advocate for product accessibility in the organization.

Wrapping up the theme of *Accessibility Lost*, the above quote demonstrates what can happen when the design of a software interface does not allow for access technology to interact with the program, let alone built-in accessibility features.

> The publishing system we use for producing content for print and online does not meet accessibility guidelines as it utilizes the mouse for most functions with few keyboard equivalents or shortcuts. I can complete the basic tasks such as creating story folders, text files and photo assignments.

> However, when it [comes] to such tasks as tagging stories, setting destinations for where they will appear online, I have to rely on my sighted colleagues for assistance. (qDat, 19-7)

This participant cannot access certain features of the publishing program described above and must rely on sighted colleagues to complete some job functions that are reliant on inaccessible portions of the software. This not only takes independence from the employee with the visual impairment, but also provides another example of how inaccessible technology design can impact the employee with the visual impairment as well as others in the organization. When the origin of inaccessibility is from a lack of understanding/implementation of accessible product design, the management of said inaccessibility can be extremely difficult, and reliance on human readers or other employees to interact with inaccessible technology might be necessary (qDat, 16-1, 16-2, 17-5).

Negative Case Analysis

While the five themes above posit technology advancements as often times problematic for employees with visual impairments, it is important not to ignore the data that presents advances in technology as empowering employees with visual impairments by prompting more accessible technology solutions and mainstream technology with built-in accessibility features. The following quote traces the development of how mainstream office technology (document scanning and optical character recognition programs) have eliminated an inefficient access technology set-up.

> I used to type up documents into the computer from printed material. Reading the document and typing at the same time were a real challenge.

> I used a CCTV for a while to read the material, though it wasn't really totally efficient. Many documents can now be converted electronically and so manually typing up the documents in Word or some other program is no longer needed as much. (qDat, 16-6)

This example, along with others (qDat, 38-4), brings focus to how some advances in technology have inadvertently assisted employees with visual impairments in gaining access to computers and printed material in the workplace. Multiple participants refer to using Apple products (specifically iPhones) with built-in screen reading and magnification functions (qDat, 1-2, 1-7, 2-3, 3-1). These examples of technology with built-in accessibility features are not the norm in the data, but could indicate some progress with regards to the promotion of accessibility product design.

Conclusion

The five themes described above bring emphasis to the multiple perspectives that characterize technology inaccessibility in the workplace and the management of inaccessibility. The theme of *Technology and Print* prompts the discussion of technology inaccessibility by highlighting the technical aspects of technology that are inaccessible, while the remaining four themes bring attention to how technology access is a problem that manifests itself via timely completion of job tasks, issues regarding inter-organizational communication, ever-changing workplace technologies, and inaccessibility as rooted in a lack of emphasis/lack of knowledge. These themes mold how employees with visual impairments manage access to technology. Answering the second question that guides this project, the researcher will delve deeper into communication strategies/approaches these employees use to obtain access to workplace

technology. When possible, parallels between the themes just discussed and those referring to specific communication strategies will be afforded.

RQ2: What communication strategies are used by visually impaired employees to manage their workplace experiences regarding access to technology?

> It is terrifying. I would love a world where I could simply be hired and get to work, like [sighted] people do. It is quite terrifying to have to tell the person paying you that you need something else to complete the job or to know that they are paying you for the time you are spending there putting accommodations into place. (qDat, 76-4)

In addressing the second research question that guides this study, five themes in the data that are especially salient regarding managing access to technology are discussed. The focus is on specific communication strategies used by participants in the themes of *advocacy, balance, and avoidance as strategy*, and imbed these themes in the larger context of general technology accessibility management by explicating the themes of *an always ongoing process* as well as *formal procedures and everyday talk*. By presenting both themes concern specific communication strategies combined with themes that address general trends regarding workplace interactions focused on gaining access to workplace technology, a nuanced and contextually situated description of relevant workplace communication processes is provided.

Requesting Accommodations: An Always Ongoing Process

> It [seems] like it's a step forward, and two steps back system. (qDat, 76-2)

This theme is most closely aligned with *Power of Change*. The discussion of communication strategies used to manage technology access in the workplace is an

ongoing communication process. The following quotes illustrate this technology access procedure as starting from the interview process and extending throughout the everyday on-the-job experience of employees with visual impairments. This ongoing process of educating employers regarding technology accessibility is made necessary by the always changing and easily updatable technological backdrop that lends itself to organizations along with the lack of knowledge and prioritization regarding accessibility of technology. The following quote demonstrates how the communication process regarding the management of workplace technology access can begin during the interview.

> Most of my issues involving access have come up during the interviewing process for various companies and organizations. It's been difficult to convince a potential employer that any accommodation I may need will cost little to nothing. Many interviews that I have gone on in the last 2 years have felt like I was discriminated against because of my disability, but I had little hard evidence to present to HR to prove this. (qDat, 74-5)

Another participant discussed the on-going process of developing workplace technologies and the continuous battle to gain access to said technologies: "What I find particularly frustrating is that because things change so fast it is constantly necessary to seek new technology and upgrades to old technology" (qDat, 77-4). Accessing workplace technology is a complex chain of continuous communication with managers and supervisors. The below quote is an example of this process:

> When I first started working here, asking for extra technology or help made me uncomfortable. If I could get by without it, I never bothered to ask. As school became more dependent on technology, I have had to learn

> to ask. I begin with a gently worded verbal request. i.e... "I will need large print software installed on one of the lab computers if you wish me to participate in this training." That one usually gets ignored, and I go to the training and either sit with a friend and pretend to watch, or sit and stare blankly at the computer. When I really need […] special tools, I request it verbally. i.e.. "I [need] a CC TV to enlarge written material." or "Would you please print that roster in a 10 point font rather than the 6 that it seems to come in?" At first I have had to explain that I, despite appearances, really CAN'T see small things. If the verbal request does not work, I send an e-mail. If I still don't get the desired effect, I go to my principal, and mention the Americans with Disabilities Act, and reasonable accommodations. The mention of the ADA usually does the trick. If it doesn't I send a written request further up the food chain… (qDat, 53-5)

This quote from a teacher is representative of many other participants' experiences (qDat, 76-1, 76-3) and promotes the notion of the process of managing technology access as integral with managing relationships and strategically communicating with stakeholders across the organizational hierarchy. Continuing this conversation, the next quote from another participant supports the importance of widespread communication and relationship management with supervisors and administrators in effectively handling technology access.

> It's very important to be as specific as possible, to involve as many senior managers as possible, and to keep following up. I found that lower level

> IT people would typically ignore requests unless I copied the director of IT on my emails. (qDat, 81-3)

Replicating the theme of *Accessibility Lost*, this quote shows how, due to the low priority put on technology accessibility, managing accessibility is a process that involves strategic communication with multiple individuals. Overall, this theme embodies the specific communication strategies of *Advocacy as Strategy*, *Balance as Strategy*, and *Avoidance as Strategy*. It is paramount to have an understanding of the explicit strategies used to manage technology access as part of a larger and multifaceted process and not as parts of singular one-on-one experiences.

Advocacy as Strategy

The use of self-advocacy as communication strategy is expressed across the data as a strategy for making employers aware of accessibility issues and prompting change.

> Make yourself your own biggest advocate, in doing so, do not hesitate to make your employer aware of your needed accommodations and the benefit it will have on your over all work. (qDat, 80-4)

Advocacy in this quote is posed as a strategy that prompts conversations with supervisors and managers regarding technology access. The process starts with contacting a supervisor and advocating for accessibility. A quote from another participant illustrates a step-by-step communication strategy based on the concept of self-advocacy for obtaining/promoting the development and/or implementation of accessible workplace technology.

> I have always found that it is most effective to: 1) Identify a specific accessibility issue 2) Explain why it is important for my job to get

> accessible material 3) Propose a reasonable accommodation - i.e., suggest a process, identify needed equipment/software, in short, demystify the issue/process 4) Provide feedback - either thanks for a job well done or a detailed analysis of how the work-product did not address the accessibility issue - with further clarifications as to possible solutions 5) Work with those responsible for providing accessible materials on an ongoing basis - alerting them to technical innovations that can make their jobs easier and more efficient, or proposing policies and procedures that can be put in place so that future situations can be resolved with a minimum of fuss (qDat, 42-2)

In the communication strategy outlined above, the employee advocates for a workplace accommodation in the management of an inaccessibility issue by both educating the employer and proposing a solution (steps 1-3), and uses a feedback and relationship management process in order to maintain accessibility of future technologies developed and/or acquired by the organization (steps 4-5). This approach is loosely referred to by other participants (qDat, 42-5, 44-3), and central to this process is the use of self and accessibility advocacy that guides the communication strategy being used to acquire accessible technology and to promote built-in accessibility features or interfaces that are compatible with access technology. The following quote relates the advocacy as strategy process to language that might be used in the promotion of accessible technology:

> Some language used, could be direct or indirect. I may say things like: "Here is how I access something" or, "I would like to discuss something with you." "This is how I complete on-the-job tasks." (qDat, 52-2)

Some examples of verbal strategies are provided in the quote directly above. Again, the focus is on advocacy as strategy. The employee approaches a relevant stakeholder and educates/advocates for technology access. Through self-advocacy as a communication strategy, employees have the communicative tools to approach, educate, request, and engage in a process that can prompt accessible technology in the workplace. To conclude the discussion of advocacy as strategy, the following quote accomplishes this flawlessly:

> The more informed you are, the better you can educate your employer. The more "reasonable" you and your accommodation are, the less scary and bothersome the fulfillment of your accommodation will appear to your employer. Think informed, active, diplomatic, flexible, creative, and problem-solving. (qDat, 87-4)

Balance as Strategy

Further developing the theme of *Advocacy as Strategy*, *Balance as Strategy* checks the amount or type of advocacy that should be directed by employees with visual impairments. In the closing quote discussing *Advocacy as Strategy*, the strategy of balancing the needs of the employee and that of the organization can be observed. The quote highlights that the employee and his or her proposed access solution should be "reasonable." Expanding on the concept of balance, the following quote provides an example of approaching an employer while attempting to balance accessibility needs and the needs of the company. The participant discusses his communication strategy when confronting an employer regarding requesting accommodations:

> Let me just say up front that I believe in approaching any conversation with regard to accommodations with the respect of the company in mind.

> In other words, I don't focus so much on how the accommodations will help me, but more of how with a combination of explaining that the accommodations are provided by the state at no cost to the company, as well as how these accommodations will ultimately allow me to be successful in me fulfilling the company's needs. I "never" approach a company with legal rationalization for the accommodations unless the company person I am speaking with makes a blatant statement about my disability. (qDat, 41-4)

This participant highlights the fact that he explicitly discusses the relationship between workplace accommodations and organizational level productivity. He attempts to balance the needs of the company along with his own needs as an employee with a visual impairment positing how the needed accommodations will thus make him effective in the workplace and thus boost overall productivity. The quote also brings the focus to the explicit strategy of obtaining funding for workplace accommodations from a third party (state government resources) to reduce the monetary cost to the organization. In the quote below, a participant proposes communicating inaccessibility issues as not just impacting a single employee, but promoting that a more accessible technology setup will benefit the entire organization.

> Typically, any accommodation that I may need requires no cost. The accommodation often creates increased productivity for other employees completing similar if not the same tasks. Moving time card submission from a paper system to an electronic system, for example, developed more organization for the non-profit and ease of process. (qDat, 52-4)

Also underscoring the lack of cost to the employing organization, this quote builds on the first quote presented in this section. In effect, this employee is advocating for an accessible method for entering time card information, while communicating how this change can not only help her but also bring greater efficiency to her employer. The following demonstrates how communicating this balance might be posed in a conversation with a manager:

> I generally ask my employer "how do they expect me to get the job done without the required technology?" I justify the cost of the accommodation with the value I am bringing to the company and the value of getting the job done. (qDat, 51-5)

Again, this is another example of advocating for accessibility by means of promoting an argument that positions the employing organization as a beneficiary of providing (and promoting) accessible technology. In sum, this communication strategy builds on that of *Advocacy as Strategy* but positions the argument for accessibility as balancing advocacy for the employee with the visual impairment and advocacy for how the organization as a whole can gain from increased accessibility (or the provision of access technology).

> Avoidance as Strategy: Don't Be too Demanding
>
> Do it as little as possible, but do what is really necessary. You do not want to be perceived as demanding. I could have, for instance, but I have never requested the county [to] pay for a Braille display or portable notetaker. (qDat, 82-5)

The theme of *Avoidance as Strategy* primarily concentrates on avoidance as a communication strategy. While similar to the theme of *Balance as Strategy*, this theme

pits the needs of the employer over those of the individual employee and posits the employer-employee interaction regarding accommodations as a place where the employee with a visual impairment must limit his or her request in order to maintain face. The quote opening this theme's discussion exemplifies how employees with visual impairments avoid technology access accommodation requests in order not to be "perceived to be too demanding." Expanding on this perspective, the following quote delves deeper into how technology access requests can be made while limiting the "demands" on an individual employer.

> In previous employment, I requested devices or software by explaining how the device or software would benefit me and assist me to perform the job I was hired to perform. I would identify alternatives to my requests and explain why they were not the best option. I also offered to contribute to the cost of the devices or software. When requesting accessible forms, I volunteered to receive training on how to create such forms, and create the forms outside of work hours. (qDat, 52-6)

This participant centers her request for accessible technology on decreasing demands on the employer. She volunteers her time outside of workhours, as well as personal financial resources, in order to obtain access technology and to implement electronic document accessibility. This approach prioritizes avoiding discussions of accessibility, and, in some cases, can result in an outcome where the employee with the visual impairment is disadvantaged. The below quote exemplifies the negative impact on technology access when inaccessibility is not addressed in conversations with managers and/or supervisors.

> In my past experiences, I have provided my own accommodations. I brought along with me a copy of Zoomtext, and I just requested that it be installed on my computer. I did this because Zoomtext was provided to me by Vocational Rehabilitation. Also, I did not want to be a burden on my employers. In one particular environment, it was difficult to get Zoomtext on my computer because the security on the computer was very tight. It took over 2 weeks to get the software on my computer. It was frustrating because my employer tried training me on a computer without Zoomtext. My eyes were strained and their makeshift alternative was not user friendly. (qDat, 59-1)

Motivated by not "wanting to be a burden" on her employer, this participant experienced an employee training situation that was inaccessible to her individual needs. In sum, the theme of *Avoidance as Strategy* promotes communication strategies that do not emphasize technology accessibility and that finds the employee with the visual impairment avoiding the explanation of the inaccessibility issues but instead providing their own access solutions.

Formal Procedures and Everyday Talk

> The most formal and expensive request for an accommodation involved my need for a desktop video magnifier to be able to read printed materials. There is an agency form, Request for Reasonable Accommodation, I may submit for any such needs arising in my work. […] I also recall that we easily arrived at a verbal agreement that the magnifier was necessary and the agency would purchase it. The form was more of a formality to

> document the need and expenditure rather than a "petition" to move the process along toward a decision point. (qDat, 37-3)

While the theme of *Formal Procedures and Everyday Talk* does not emphasize a specific communication strategy, it situates the previous themes as occurring in both formal and informal discussions regarding technology access. The importance of informal discourse about technology and accessibility in the workplace is underscored in the quote above. It is the informal conversation with management that is the force that prompts the acquisition of access technology as opposed to the "formality" of official documentation/request documents. In the next quote, this informal process of everyday talk and the educating of others in the workplace regarding technology access is demonstrated.

> My main take away is that I needed to begin requesting accommodations as soon as I got the job. I had to do a lot of work on my end—sending links to products, explaining the products and, in some instances, even assisting IT to install. I also had to explain that these pieces of software would not compromise the security of the data being stored on my computer. (qDat, 46-4)

Continuing the discussion of the importance of informal everyday communication in the workplace, this theme accentuates the importance of forming workplace relationships in obtaining inaccessible electronic documents and building a comfort level with other employees that allows for directly requesting assistance. The following exemplifies how informal requests and everyday workplace interactions are used to assist in granting access to otherwise inaccessible documents used in meetings.

> At a previous job, I would be handed printed materials during company-wide meetings. […] If documents were not available prior to the meeting, I would take notes on what was said during the meeting, and sit next to a coworker who was willing to read to me if there was something important that was not covered. If I had questions following the meeting, I would meet with my supervisor and ask these questions. Most of the time they were very good about verbalizing visual materials but I spoke to them about this when discussing workplace accommodations. I also was not afraid to ask questions during the meeting if I felt like I was missing something important. (qDat, 38-4)

Examples like those provided above are common in the data (qDat, 31-2, 37-6, 40-3), promoting the notion that everyday informal discussions regarding issues of accessibility are often the root of working around technology inaccessibility and/or inaccessible document formats. Understanding the mix of both informal and formal procedures in requesting access to technology and access technology more accurately positions the specific communication strategies posed above in the multiple contexts that they are implemented under.

Negative Case Analysis and Other Directions

While the five themes most relevant to RQ2 are discussed above, negative cases that do not fit into any theme were presented as part of the data collected. Two quotes are presented that are especially unique and that stand out as compared to the remainder of the data collected. The following quote presents a communication strategy not portrayed in the above themes. This participant uses

what can be described as a confrontational communication strategy to obtain accessible materials needed for effective participation at workplace meetings.

> As stated previously, I attended a staff meeting of several people. They all had printed documents in front of them. I was not given any opportunity to receive the information in an email or to have it in Braille. I stated, since I did not have the documents I must not be needed in the meeting. I walked out. After that incident, I had many things in Braille. With electronic documents items are more accessible at this time. However, Google documents and other Google apps make it difficult to access. (qDat, 43-3)

This participant is faced with inaccessible documents and publicly confronts her work team in a public setting. While her description of the inaccessibility of electronic documents mirrors much of the other descriptions of such accessibility issues, this confrontational approach is unique to this participant. As opposed to *advocacy as strategy*, this participant directly confronts coworkers not to educate but with an interpretation of what a lack of accessibility in the workplace (in the context of meetings in this case) means to her. This strategy seemingly worked to the advantage of the employee with the visual impairment, but its singular occurrence in the data (all from employed people) probably indicates that it is neither a popular nor a successful tactic. Regardless, the notion of such communication strategies could prompt future inquiry.

The next negative case in the data is that of an extremely satisfied employee with his access technology request experience. While many employees

expressed satisfaction with their employers' current status of providing access to technology (qDat, 69-1; qDat, 69-2; qDat 69-4), this was usually after much negotiation on the part of the employee with visual impairment with key stakeholders in the organization. Perhaps providing hope for the future of the provisions of access technology accommodations, or possibly a unique experience, the following quote is provided.

> Essentially, during my job interview, my supervisor-to-be asked me about any accommodations I would need. I said Zoomtext. When I came to work the first day, my computer was equipped. It was an incredibly easy process. At some point, I mentioned that I thought JAWS would be helpful, and extremely quickly JAWS was on my computer. (qDat, 60-1)

This employee presents descriptions of interactions at the time of hire and during employment. In both of these interactions, access technology was asked for/or merely mentioned, and the almost instantaneous result was the provision of said products. These experiences are unique and prompt one to inquire as to the specific communication strategy (not provided by this participant), the previous experiences/knowledge of the manager, and/or the other factors (possibly at the organizational level) that led to such a smooth experience in the requesting of access technology.

Conclusion

The 10 themes described above form the core findings of this study. In the next chapter, these themes as categorized into three meaningful foci of analysis are discussed. These foci are primarily based on the diverse understandings of inaccessibility posed by participants, the process of requesting access to technology by employees with visual

impairments, and a more complete understanding of communication strategies used to request accessible technology. This in-depth analysis is followed by with further discussions of implications, prompts for further research, and limitations of the study.

CHAPTER 5: DISCUSSION AND CONCLUSION

Moving beyond the face value of the ten themes explicated in the previous chapter, it is possible to gain further insight regarding both the inaccessibility and the management of this inaccessibility faced by employees with visual impairments. In this chapter, further interpretation of the results is provided while establishing connections to salient literature, discussing implications and future directions for this program of research, and providing a holistic conclusion.

Further Interpretation

The ten themes described in chapter four provide a framework that assists us in engaging with the experiences of the research participants and appreciating these experiences. In an in-depth analysis of the themes derived from the data, it is possible to produce three higher-order categorizations that allow for a more nuanced understanding. These categorizations are:

- Defining Accessibility
- Managing Access to Technology: Process
- Managing Access to Technology: Communication Strategies

These categorizations are not exclusive. In fact, understanding these categorizations without context would compartmentalize the results of this study, which effectively blocks the ability to make meaningful connections between individual parcels of data. In

the following sections, each of these categorizations is explained and further interpretation is provided.

Defining Inaccessibility

In order to discuss strategies regarding gaining access to accessible technology or obtaining access technology used to interact with mainstream workplace technology, it is necessary to understand how participants perceive the technology backdrop they are imbedded within. This categorization of themes primarily highlights: *technology and print*, *time and performance*, and *understanding accessibility*.

When analyzing these themes in their overlapping context, it is possible to expand the fundamental understanding of issues of technology inaccessibility in general (let alone in a workplace context). As opposed to literature that classifies inaccessible technology as a technical/physical technological issue (Langton & Ramseur, 2001; Crudden & McBroom, 1999), as a social phenomenon (Moser, 2006), or as an antecedent to information access (Dobransky & Harjittai, 2006), pausing to analyze some of the themes in this study brings a cohesive understanding of inaccessibility issues faced in the workplace by employees with visual impairments. According to the data, inaccessibility has physical/technical as well as social factors as represented by the themes of *print and technology* and *understanding technology*, respectively.

The categorization of defining inaccessibility also brings the focus of how inaccessibility is perceived as an issue of technology and technological development as combined with its implications on the everyday experience of employees with visual impairments. In effect, the concept of inaccessible technology is not bounded by the physical artifact of the technology, the social context that lead to the development and

implementation of the technology, and the impacts of the inaccessible technology; instead, the concept of inaccessibility is simultaneously defined in each of these spheres of understanding. Referring to a quote previously used to explain the theme of *Time and Productivity*, analyzing a holistic understanding of inaccessibility can assist scholars in more accurately comprehending the concept of inaccessible technology:

> We have a system that tracks our HR type information, such as time sheets, evaluations and expectations, contact information, leave, etc. and I have problems on some of their screens and have to use the phone system which takes a lot longer. A second example would be that we had to change to an application that tracks our phone calls, and for that system, I had to fight to get them to make it accessible, since that's the main part of my job and I couldn't work the system. That has since been resolved. (qDat, 14-6)

In both the inaccessibility incidents mentioned, this participant discusses accessibility as both a technical aspect of the software products in tandem with the interpretations of technology access as an issue of productivity and educating others (for the first and second examples, respectively). The above quote was used to exemplify the theme of *time and productivity*. In the larger context of defining accessibility, technology access is simultaneously about technical systems, impacts on productivity, and issues of educating others and advocating for access in a context where knowledge about accessibility is either unavailable or ignored.

Regarding theories of disability, the problematic subject of technology access in the workplace can be perceived as an example of ableism (Campbell, 2001; Campbell,

2008). While technology might be available to act as an access bridge between the employee with the visual impairment and an inaccessible technical interface used by his/her employer, the requirement of this access bridge is an example of ableism. In effect, the workplace (and the technology that constitutes a significant portion of the workplace) act as symbolic barriers to those who do not have the ideal employee body. This symbolic nature of inaccessible technology and research on employers' reluctance to provide workplace accommodations (Harlan & Robert, 1998; Kulkarni & Valk, 2010) situate employees with disabilities in navigating an ablest discourse when attempting to gain access to the technological resources available to their able-bodied co-workers. These findings, and subsequent analyses, corroborate with other literature that characterizes the workplace as an ablest setting (Foster & Wass, 2013; Jammaers, Zanoni, & Hardonk, 2016; Zanoni, 2011) and promotes the notion of the person with a disability as less/inferior to the able-bodied subject (Hughes, 2009).

Managing Access to Technology: Process

Discussing the overall process of managing access to technology by employees with visual impairments in the workplace context, this superordinate categorization brings focus to themes that mold the process of requesting access to/accessible technology. This categorization consists of the previously discussed themes *organizations and policies, power of change, requesting accommodations: an always ongoing process,* and *formal procedures and everyday talk*. Combined into a holistic categorization, these four themes clarify the ongoing process of accessing workplace technology as consisting of the constantly evolving state of technology (and technology

accessibility for visually impaired employees) as combined with organization and work team level factors.

The themes emphasized in this categorization provide a more complete understanding of how managing accessibility is built on the realities of constantly developing technical systems as well as the implementation of novel technology by organizations. Thus, this is a truer approach to managing accessibility that resembles an ongoing process as opposed to a one-time procedure. The theme of *formal procedure and everyday* talk prompts a discussion of this accessibility management process as both imbedded in the formal accommodation process and the everyday talk of employees in the workplace. Revisiting a quote previously discussed in the results chapter and providing further interpretation using this larger categorization, further explanation of the importance of understanding these multiple themes in combination is brought.

> At a previous job, I would be handed printed materials during company-wide meetings. […] If documents were not available prior to the meeting, I would take notes on what was said during the meeting, and sit next to a coworker who was willing to read to me if there was something important that was not covered. If I had questions following the meeting, I would meet with my supervisor and ask these questions. Most of the time they were very good about verbalizing visual materials but I spoke to them about this when discussing workplace accommodations. I also was not afraid to ask questions during the meeting if I felt like I was missing something important. (qDat, 38-4)

While previously used to explain the theme of *formal procedures and everyday talk*, this participant's experience also brings understanding to the overall management process of gaining access to otherwise inaccessible material (documents at meetings in this case). This participant's experience brings to the forefront the process of gaining access to documents at meetings as simultaneously an issue of workplace accommodations (discussing accommodations with managers regarding accessing documents) and a constantly informally managed process amongst his coworkers (working with a coworker during meeting to access documents as well as asking questions). Behind this layer of analysis, the core issues are group and technical level factors that prevent this employee from receiving accessible documents in the first place.

The data show that requesting access to technology and access technology as workplace accommodation is an ongoing process. The literature regarding best practices to providing workplace accommodations to employees portrays this process as a linear procedure starting with a form of job analysis and ending with the provision of an appropriate accommodation (Langton & Ramseur, 2001). With regards to technology access for employees with visual impairments, providing access to workplace technology might be characterized as a process of constant technology accessibility audits and the provision of appropriate accommodations, whether by way of formal (engagement with the formal accommodation request policies developed by the organization) or informal procedures (informally providing an access solution among coworkers). Using informal channels to obtain workplace accommodations, including access to workplace technology, might be necessary in some cases as less than one-third of corporations have

a formal policy/program related to hiring and promoting the employment of people with disabilities (Kessler & NOD, 2010).

The multiple factors that impact the process of obtaining accessible technology in the workplace are commensurate with the variables that are associated with the difficulties of obtaining employment by people with disabilities. These include both individual- and organizational-level variables associated with employer perception of people with disabilities (Bruyere, 2000; Colella, 2001; Colella et al., 2004; Domzal, Houtenville, & Sharma, 2008; Vornholt et al., 2013) and the promotion of ablest workplaces (Wilson & Beresford, 2002), respectively. The lack of universal design in the initial production of technology (Bruyere, Erickson, & VanLooy, 2006) poses the notion of how disability is defined as a deficiency (Hughes, 2009), and the researcher posits that the complexities of gaining access to mainstream technology in the workplace by employees with visual impairments is the result of this complex social process. Forecast by Bruyere, Erickson, and VanLooy (2006), the lack of universal design in the development of technology provides a barrier, associated with this complex series of processes, in the effective employment for people with disabilities (specifically people with visual impairments in this study). The complexities of the process of obtaining technology access is perhaps also due to the reluctance of managers in providing workplace accommodations (Harlan & Robert, 1998; Kulkarni & Valk, 2010).

Managing Access to Technology: Communication Strategies

The three themes in the data—*advocacy as strategy*, *balance as strategy*, and *avoidance as strategy*—provide three different perspectives regarding communicative approaches to managing workplace accommodations and, more specifically, accessing

technology in the workplace. In effect, these three communication strategies create a continuum between a focus on the access needs of the employee with the visual impairment and those of the organization, ranging from *advocacy as strategy* to *avoidance as strategy*, respectively. Regardless of the communication strategy used, a focus on improving the organization could be perceived. When *advocacy as strategy* was used, a focus on how having access to workplace technology could help the employee in question, thus promoting a stronger organization. If *balance as strategy* was used, then the needs of the individual employee and those of the organization were discussed simultaneously. When using *avoidance as strategy*, the employee would promote the needs of the organization before his/her own accessibility needs.

In the analytical lenses of interability communication, the communicative approaches highlighted can be easily mapped onto those promoted by co-cultural theory (Orbe, 1998). The concepts of communication approach and preferred outcome, combined, bear resemblance to the communication strategies discussed in the data. Orbe (1998) classifies the communication approach of non-dominant co-cultural group members as either assertive, nonassertive, or aggressive, and preferred outcome as either separation, accommodation, or assimilation.

The themes of *advocacy as strategy* and *balance as strategy* can best be related to an assertive or a nonassertive communication approach used to achieve a preferred outcome of accommodation, respectively. The assertive communication approach promotes affirming self/one's needs (similar to that of *advocacy as strategy*) while the nonassertive communication approach promotes more of a balanced strategy when approaching difference (similar to that of *balance as strategy*). These approaches,

combined with an outcome of accommodation, promote both *advocacy as strategy* and *balance as strategy* as the preferred outcomes of accommodation, promoting both the perspectives of the non-dominant and dominant co-cultural groups. *Avoidance as strategy* can be best related to a nonassertive communication approach with a preferred outcome of assimilation. While the perspectives of the employee with the visual impairment are not completely abandoned when using an *avoidance as strategy* approach, the focus is on assimilating into the organization and avoiding highlighting differences.

In this co-cultural context, the following are three quotes, each representing a communication strategy.

Advocacy as Strategy:

> Make yourself your own biggest advocate, in doing so, do not hesitate to make your employer aware of your needed accommodations and the benefit it will have on your over all work. (qDat, 80-4)

Balance as Strategy:

> Let me just say up front that I believe in approaching any conversation with regard to accommodations with the respect of the company in mind. In other words, I don't focus so much on how the accommodations will help me, but more of how with a combination of explaining that the accommodations are provided by the state at no cost to the company, as well as how these accommodations will ultimately allow me to be successful in me fulfilling the company's needs. (qDat, 41-4)

Avoidance as Strategy:

> Do it as little as possible, but do what is really necessary. You do not want to be perceived as demanding. I could have, for instance, but I have never requested the county [to] pay for a Braille display or portable notetaker. (qDat, 82-5)

Previously used as exemplars to represent the communication strategies under discussion, when juxtaposed these quotes represent the continuum of communication strategies used by visually impaired employees in the workplace in order to access technology. Ranging from *advocacy as strategy*, to *balance as strategy*, and to *avoidance as strategy*, these three approaches are all used in the interest of improving workplace efficacy by means of different levels of expressing one's needs and reaching an outcome of either accommodation or assimilation.

Supporting co-cultural theory (Orbe, 1998), these findings join a growing literature that promulgates the rich value of this theory, in general, (Orbe & Roberts, 2012) and, specifically, with relation to disability in the workplace (Camara & Orbe, 2010; Cohen & Avanzino, 2010). Corroborating the findings from Cohen and Avanzino (2010), the employees in this study are portrayed as non-dominant group members as they interact and employ communicative strategies in order to gain access to technology at the workplace. These interactions highlight the non-dominant position of employees with disabilities in the workplace. Cohen and Avanzino also highlight the use of the assertive accommodation communicative strategy by people with disabilities in the workplace; this is reflected by the theme of *advocacy as strategy* used to educate employers and obtain products associated with technology accessibility. In the general

portrayal of workplace interactions, notions of the impact of public policy in the empowerment of participants to self-advocate for technology access could be explained by the impact of the ADA and other relevant policies on interability communication (Bourhis et al., 1997). Meanwhile, the pressures to avoid discussions of workplace technology access and to attempt to balance the needs for access with those of the organization could be prompted by the perceptions of employers regarding employees with disabilities (Bruyere, 2000; Heslin et al., 2012; Stone & Colella, 1996). This analysis of the communication strategies used in obtaining technology and information access in the workplace is, once again, built on the framework of ableism (Campbell, 2001; Campbell, 2008). With specific regards to communicative strategies used to approach the interactions in this environment, said strategies are used that promote the perspective that discourse provides a key site for the production of ablest ideals.

Implications and Future Directions

The implications from the results of this study are far reaching and include significant findings for both theory and practice. Building on the discussion of disability as both a physical and a social construction (Hughes, 2009), the experiences of these employees with visual impairments lend support to the notion that disability (specifically visual impairment in this study) as experienced in the workplace manifests itself by two means. These manifestations are enacted by way of physical accessibility impacts regarding access to technology as spawned by both physical barriers to information and the social framework that supports the continual development and adoption of inaccessible technology (perhaps as bolstered by ableism). In order to navigate these physically as well as socially constructed inaccessible technologies, employees with

visual impairments must adapt to their work environments by the use of access technology and educate others about inaccessibility issues. Visual impairment presents itself as both a physical disability and a socially defined category as experienced with relation to workplace technology.

In future research, utilizing an all-encompassing definition of disability that is inclusive of both the physicality and the social construction of disability is paramount. According to the perception of workplace technology access and communicative strategies used to promote accessible technology in the workplace, aspects of disability that seemingly are built around the concept of the physical manifestation of disability (prompting inaccessibility barriers) should be investigated further to gage the impact of the social construction of the specified disability behind the access issue. For example, difficulties with accessing printed material on computer monitors can be initially perceived as a physical manifestation of disability. After further evaluation, this issue can also be understood as a larger problem of inaccessible technology development as produced by a lack of knowledge about/social prioritization/associated with universal/accessible product design.

A fruitful future line of research could focus on the inclusion of universal design in the technology development process, leading to a better understanding of the portrayal of accessibility in the design process. Future research could also investigate communicative strategies used to promote accessibility features by product accessibility officers and accessibility consultants. Understanding these strategies could lead to an accurate explanation of how accessibility is championed in the technology development

process, thus allowing us to gain further insight to problematic aspects and portrayals of the meaning of accessible technology that, in effect, can impact people with disabilities.

Aside from the discussions of theoretical implications and future research prompted by said implications, two practical propositions are especially salient in the data. In promoting best practices for building accessible workplaces for employees with visual impairments, a continuous (as opposed to a one-time) process for ensuring accessibility is required as the complexities of developing technologies are many and the ever-changing technological landscape can simultaneously increase and decrease the accessibility status of various features of technological systems. This implication has already been partially realized by previous research (Langton & Ramseur, 2001); however, it is portrayed as a linear process that is built around a framework that responds to technological change and does not proactively anticipate such changes and that intervenes during the development and adoption processes of workplace technologies. The *advocacy as strategy theme* highlighted in the results best exemplifies this continuous proactive process to managing technology accessibility. Employees using this strategy are not waiting to encounter inaccessibility, but instead are actively educating and promoting accessible technology as well as promoting the general importance of accessibility.

The second practical implication is focused on the status of accessible technology design in the technical development process. According to the themes of *the power of change* and *requesting accommodations: an always ongoing process*, most issues with relation to inaccessible workplace technology are based on inaccessible technical features. This form of inaccessibility could be eliminated, or at least greatly diminished,

if the technology development was more proactive regarding universal design. That this issue with technology development still exists regardless of accessibility standards for the development of technological interfaces is a testament for the need to champion accessible design and prompt research into the place of universal design in the technology development process. A series of best practices, or successful practices, could be useful in encouraging initial accessible technology design.

While laws promote accessible workplaces, including access to technology (ADA, 1990), the continual development of technology that is not designed to be accessible or to be accessed with third-party access technology products brings focus to the problematic place of universal design in the workplace technology development process. Understanding the communication strategies used by employees with visual impairments when requesting access to workplace technology is a significant step. Understanding the technology development process with a focus on communication strategies used by advocates of accessible design is the next logical step, not only for a better theoretical understanding of definitions of disability and accessibility as discussed above, but for the possible practical implications that might surely arise.

Limitations

This investigation of technology inaccessibility in the workplace for employees with visual impairments and the strategies used to manage inaccessibility shows its strengths in the in-depth data collected and the analysis conducted. Three limitations are apparent when evaluating this study as a whole. As an investigation of employed individuals, the perspectives and experiences of those who have attempted, but have not been successful, at effectively maintaining employment are not represented. These

perspectives might lend greater understanding to communicative strategies to avoid or to other problematic factors regarding gaining access to workplace technology.

As this study investigated the experiences of those with visual impairments, the perspectives of those with other types of disabilities that may be relevant to accessing workplace technology are not investigated and making generalizations is not recommended. The third limitation of this study is due to its design as a one-time qualitative survey. In future investigations, using longitudinal techniques and/or narrative approaches could prove to be fruitful. Designing such a study could be made possible by the results of this study, and further insight could be gleaned from in-depth interviews and multiple data collection time points.

Conclusion

This study has brought focus to the problematic concept of accessing technology and printed material in the workplace for employees with visual impairments. Employees revealed their dilemmatic communicative experiences in navigating the organizational hierarchy while strategically using communicative strategies to make salient, and find solutions to, issues of workplace technology access while maintaining face. Introducing the notions of technology access limitations (and specific communication strategies), this study conceptualizes accessibility as both technical and social as well as investigates contextual factors used to obtain access to workplace technologies. The dearth of literature combining technical and social understandings of workplace technology access, along with the high unemployment rate and issues with workplace technology access, bring this research to the forefront of literature on diversity, disability, and visual impairment in the workplace. The role of dilemmatic

communication processes in advocating for accessible technology and further understandings of persisting inaccessibility in the workplace context are highlighted as key to future research, theoretical inquiry, and practical implications.

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APPENDIX A: QUESTIONNAIRE

1. Describe, in detail, any access technology and/or special techniques (relevant to your visual impairment) you use in order to access information and to complete job-related tasks in the workplace.

2. In thinking about your overall employment experiences, what was the most challenging workplace access issue you have faced (for example, a specific web interface, a piece of machinery, or an inaccessible document)? What made this experience challenging?

3. What actions did you take if you have ever had a situation where you were not able to access a computer program, web interface, multifunction copy machine, and/or other technology at the workplace? Provide examples and explain in-depth the accessibility issue and your subsequent actions. What was the outcome of your actions?

4. Reflect on a time or a specific situation in which you had to request access technology or any other accommodation related to reading printed materials at the workplace. Describe the interactions between yourself and your supervisor/manager, human resource department personnel, or government agency employee when making your request. If possible, provide examples of any specific language used during the interaction, or key phrases you remember from the interaction.

5. When requesting a workplace accommodation, including any form of access technology, how do you typically explain your need for the accommodation? If the accommodation requires a monetary cost to your employer or any change to workplace procedures/ policies, how do you justify this when making the request? Please highlight language and/or specific phrases you might use when making your request.

6. Do you believe your organization provides adequate workplace accommodations for employees with visual impairments? Please discuss some positive and/or negative examples.

7. Taking into account your overall workplace experience, what other comments would you like to provide regarding the process of requesting access technology, and other accommodations, in the workplace?

8. Please provide any additional comments or information about access technology, visually impaired employees, and/or relevant workplace policies.

Demographic Information

To what extent is using technology necessary for completing job related tasks in your current employment situation?

- Not Important
- Slightly Important
- Somewhat Important
- Important
- Extremely Important

How often do you use any form of technology at work?

- Never
- At least once a month
- At least once every two weeks
- At least once a week
- At least once a day

How often do you use access technology at work?

- Never
- At least once a month
- At least once every two weeks
- At least once a week
- At least once a day

Age:

18-21 _____
22-30 _____
31-40 _____
41-50 _____
51-60 _____
60+ _____

Gender:

M ____
F ____
Other _____
Undisclosed _____

Race/Ethnicity: (Please check all that apply)

Caucasian/White _____
Black/African American _____
Hispanic _____
Asian _____
Native American _____
Pacific Islander _____
Mixed _____
Other _____
Undisclosed _____

Highest Level of Education Completed:

Non-High School Graduate _____
High School Graduate _____
Some College _____
College Graduate _____
Some Post-Graduate _____
Graduate Degree _____
Undisclosed _____

State of Residence: (Combo box with list of states/territories will be provided)

Number Years with Current Employer: (Combo box with options ranging from “Less than 1 year” to “15 or more years” by increments of 1)

(Please fill in answer)

Industry:

Approximate Number of Employees in Organization:

APPENDIX B: EMIC CODES USED TO CATEGORIZE DATA

1. Self-disclosed personal information (amount of vision loss, demographics)
2. Access technology set-up information
3. Workplace experiences regarding accessibility issues
    a. Access to computers/technology
    b. Access to printed materials/inaccessible electronic documents
    c. Antecedents of inaccessibility/acccessability
    d. Impacts of inaccessibility/acccessability
4. Interactions with coworkers regarding inaccessibility in the workplace
5. Interactions with managers/supervisors regarding inaccessibility in the workplace
6. Steps/strategies utilized to increase workplace accessibility
    a. Related to access technology
    b. Related to mainstream technology
    c. Related to printed content
    d. Related to transportation/navigation
7. General information regarding workplace experiences related to having a visual impairment
8. Skip, incomprehensible, or miscellaneous

APPENDIX C: BASIC DEMOGRAPHIC INFORMATION

(60 participants partook in the study, but not all participants filled out the demographic information.)

Age:

18-21	2 Participants
22-30	13Participants
31-40	12Participants
41-50	11 Participants
51-60	13 Participants
61-65	7Participants
Total	58 Participants

Gender:

Male	14 Participants
Female	43 Participants
Other	0 Participants
Undisclosed	1 Participant
Total	58 Participants

Race/Ethnicity:

Caucasian/White	47 Participants
Black/African American	3 Participants
Hispanic	3 Participants
Asian	3 Participants
Native American	0 Participants
Pacific Islander	0 Participants
Other	1 Participant
Undisclosed	2 Participants
Total	57 Participants

Education Level:

Non High School Graduate	0 Participants
High School Graduate	0 Participants
Some College	9 Participants
College Graduate	19 Participants
Some Graduate/Professional Education	5 Participants
Graduate/Professional Degree	23 Participants
Undisclosed	4 Participants
Total	56 Participants