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The Work of Identity Construction in the Age of Intelligent Machines

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Communication

by

Camille Grace Endacott

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June 2021

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Organizational membership and membership negotiation
Remote work

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ABSTRACT

The Work of Identity Construction in the Age of Intelligent Machines

by

Camille Grace Endacott

The ways that people construct their identities at work organize their social actions. Considering that so much of people's work increasingly involves technology, a significant body of research has focused on what people do with and through technology to construct distinct and desirable identities. But emerging developments in artificial intelligence (AI) make it possible for technologies to be part of identity construction in a way that has not yet been explored: by acting autonomously on behalf of the people who use them. Individuals' growing reliance on intelligent machines in their work requires reconceptualizing identity construction as a process that people share with technologies themselves, which I call a joint action perspective of identity construction. I argue that two capabilities of AI technologies— their capability to learn from aggregated data and their capability to make decisions autonomously—shape identity construction processes when these technologies mediate people's interactions. I explored these possibilities by conducting a comparative field study of two AI scheduling technologies created by different companies. I followed these technologies from development into use by working professionals to investigate how the

capabilities of AI scheduling technologies shape how they are involved in identity construction and with what consequences.

Through a set of three studies, my findings illuminate how people's outsourcing of work to AI scheduling technologies that facilitate communication and communicate on their behalf shape their identity construction. In the first study, I showed that AI scheduling technologies carry out new work practices on users' behalf, shaping how they enact identities, which users accepted or resisted depending on how these practices were presented and whether they helped users enact identities to which they had aspired. In the second study, I showed that communication partners can form impressions of AI agents that communicate on users' behalf, which sometimes were transferred to partners' impressions of users' identities when communication partners did not have a strong relationship with those users. Users worked to manage their own and communication partners' relationship with AI technologies in order to maintain or construct desirable identities for themselves. In the third study, I showed how one AI technology made it difficult for users to enact multiple identities, because the AI technology was optimized only for a narrow range of outcomes and limited users' flexibility to draw on different identities at different times. I discuss the theoretical and practical implications of these findings for individuals' identity construction in the age of intelligent machines.

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Technology and Identity Construction in the Age of Intelligent Machines

Across a variety of settings, people work to construct identities that are socially desirable and distinct (Ashforth, 2001; Brown, 2014; Cerulo, 1997; Wieland, 2010). These identities both motivate and validate the actions that people choose to take in the world. As such, identities are a mechanism through which social reality is organized and patterns of actions are sustained. In the context of work, people's identity construction shapes how they participate in organizations (Ashforth & Mael, 1998; Barker, 1993), occupations (Ashforth & Kreiner, 1998; Kuhn, 2006; Van Maanen & Barley, 1984), and communities of practice (Iverson & McPhee, 2002). People's identity construction shapes whether they reproduce counter-productive work practices or productive ones (Leonardi, Jackson, & Diwan, 2009), work in ways that threaten their personal time or protect it (Kuhn, 2006; van Zoonen, Sivunen, & Rice, 2020) and make choices for the good of others or their own self-interest (Endacott & Leonardi, 2020). The choices that people make in enacting identities do not only have consequences for their own role clarity, but also for the wider social networks into which they are embedded (Endacott & Myers, 2019).

Considering the centrality of technologies to individuals' work, existing research has focused on how people construct identities with and around technology. Though material artifacts have always played a part in helping individuals to enact their identities (Goffman, 1959), the increased sophistication of digital technologies has garnered significant attention on the relationship between technology and identity construction. Prior research has shown that people draw on technologies as resources for constructing their identities, such as by using them symbolically (Prasad, 1993), incorporating them into their routine work practices (Barley, 1984), or communicating with others through them (Walther, 1996). To date, the prevailing assumption

is that technologies are tools for identity construction which people bring into action when they are advantageous for their identities and discard when they are not.

Emerging technologies equipped with artificial intelligence present new possibilities for the involvement of technology in identity construction. Artificial intelligence refers to the processes through which machines make decisions, solve problems, and learn over time in ways that mimic human intelligence (Nilson, 2010). Unlike technologies that have come before it, AI technologies do not only afford possibilities for how humans behave. Instead, AI technologies can act on their own and on behalf of people. To do so, AI technologies learn from aggregated data over time to select a particular course of action, execute it without human oversight, and learn from human feedback (Faraj, Pachidi, & Sayegh, 2018).

While artificial intelligence as a technological field has existed since the 1950s, increases in the computing capabilities of machines and the amount of digital data available have led to dramatic improvements in the capabilities of AI. In nearly every professional domain, technologies equipped with artificial intelligence are being designed and implemented to accomplish work. More of these technologies are becoming available to consumers to implement for themselves. One increasingly common type of AI technologies that should especially interest communication scholars are those that can facilitate users' communication with others or communicate on their behalf. One particular type, AI scheduling technologies, facilitate communication in service of scheduling activities and interactions. People can deploy these AI technologies to make decisions about how they interact with their communication partners, directly implicating how they relate and present themselves to others.

The capability of AI tools to act on people's behalf requires a fundamental reconceptualization of how technology shapes processes of identity construction. While existing

work recognizes that people can use technologies to communicate their identities to others (i.e., Prasad, 1993; Walther, 1996, 2007), it does not consider how actions taken by intelligent machines on individuals' behalf shape their identity construction. Attending to how actions taken by AI technologies shape identity construction is crucial to understanding how work gets organized amidst the proliferation of intelligent machines, especially considering the projected ubiquity of AI technologies. Predicting the broad impacts of these technologies on work and society requires a careful understanding of how implementing these technologies shapes how people construct their identities.

In this chapter, I advocate for a reconceptualization of identity construction that can account for both human action and the actions taken AI technologies. To do so, I categorize and review existing perspectives on the relationship between technology and identity construction and advocate for a new perspective that recognizes that both people's actions and the actions of AI technologies shape how people's identities get constructed, maintained, and shaped. I discuss how two features of AI tools – the capability to learn from aggregated data to select actions and the capability to autonomously make decisions on people's behalf – may bring changes to the processes through which identity is continually constructed. Last, I present three key research questions for understanding how AI technologies shape identity constructions and their implications.

Identity Construction at Work

Identity has received enduring interest from scholars of work, organizations, and professions. Not only does work provide roles and social contexts for individuals to enact their identities, but how individuals enact their identities also makes a difference to how work itself unfolds (Scott, Corman, & Cheney, 1998). Identities, most broadly, refer to the meanings that

people assign to themselves, including their values, goals, beliefs, and ways of acting, feeling, and thinking (Ashforth, 2001), that shape how they choose to act in the world (Cerulo, 1997). A social constructionist view of identity assumes that these meanings are not essentialized or intrinsic to people, but instead are negotiated through ongoing interaction (Alvesson, Ashcraft, & Thomas, 2008; Goffman, 1959).

Theoretical Background on Identity Construction

A social constructionist view of identity is informed by the intellectual tradition of symbolic interactionism. Symbolic interactionism, as developed by Mead (1934) and later articulated by Blumer (1969), rests on the premises that people act towards others based on the meanings they assign to them and that those meanings are handled and modified through the interpretive processes of interactions. From a symbolic interactionist perspective, identities are not something that people possess a priori but instead are negotiated, reinforced, and modified in interaction. This view of identity suggests that the meaning of identities is never fixed but is always liable to change through patterns of interaction. The concept of *Identity construction* does not only refer to how identities get built but also refers to the processes through which people mold, maintain, remake, and mobilize their identities as they interact with others (Cerulo, 1997). Identity construction never culminates in one permanent singular identity but instead is an ongoing project as people negotiate their identities over time and across settings.

Identity construction involves several processes. First, it involves focal individuals' attempts to enact identities as they participate in interaction. As informed by Identity Theory (McCall & Simmons, 1978), people gravitate toward social roles that are consistent with their identity and engage in behavior that they see as consistent with their social roles. For example, a person may strive to enact their identity as a professor by acting in ways that she perceives as

professorial. Second, identity construction involves the actions that others take to interact with focal individuals. Others respond to the ways that individuals perform their identities with varying degrees of support (McCall & Simmons, 1978). Others may validate a person's identity, for example, by treating her as a professor, or they may call that identity into question by refusing to do so. Identity is never enacted without garnering responses to one's identity enactment, whether that feedback is validating (McCall & Simmons, 1978) or threatening (Petriligieri, 2011). A third process involves the focal individual's reflexive monitoring of the feedback they receive, through which they shape the meaning that they attach to themselves (the "me", Giddens, 1991) as well as how they choose to act next (the "I", Mead, 1934). Individuals interpret how others act towards them to decide if and how they should alter how they enact their identities.

Identities are not only socially constructed; they are also situated within social settings. Identity construction occurs in particular times and places that provide social structures on which people can draw to communicate their identities to others. These social structures help people to act in relatively patterned ways across time and space. People draw on rules and resources such as beliefs, assumptions, values, or norms to enact identities in recognizable ways. In drawing on the rules and resources that identities provide, people also express their identities to others (Scott et al., 1998).

Because identities are situated, identity construction never occurs in the abstract. Instead, identities are instantiated in the actions that people take in the world. To understand identity construction, it is necessary to understand the actions that individuals take in particular settings. For work-related identities, such as organizational members and professionals, it is important to look at what people actually do at work (Barley & Kunda, 2001). The world of work provides

people with codified and tacit role expectations (Van Maanen & Schein, 1979), formal and informal norms (Scott & Myers, 2010), and articulated and implicit guiding values (Ashforth & Vaidyanath, 2002) on which they can draw to act. Because these structures are often embedded in wider enduring systems like organizations, professions, and institutions, what these structures signify can seem taken-for-granted. The shared meaning that others attribute to these structures (signification, Giddens, 1984) allow people to communicate their identities to others through their ongoing practice (Leonardi, 2015a).

As people carry out more of their work by using technologies or communicating with others through technologies, understanding what people do at work to construct identities necessarily involves studying technology. How people draw on the symbolic (Prasad, 1993) and material resources (DeSanctis & Poole, 1994) that technologies present represents a key concern in the study of identity construction. Because identities are negotiated in interaction, it is necessary to consider how the technologies that people use in interaction shape their identity construction.

Technology and Identity Construction: Three Perspectives

The recognition that technology plays a role in individuals' identity construction is not new. Foundational writings on self-presentation discussed how material objects can afford different opportunities to construct identities. For example, Goffman (1959) described how a swinging door separated the front stage and backstage behaviors of restaurant workers, allowing them to enact multiple roles. Understanding the relationship between technology and identity has grown more important as the ubiquity and capabilities of information and communication technologies have advanced. As more and more of people's interactions are mediated by technology, the more technology is involved in how people construct their identities (Stein,

Gailliers, & Markus, 2013). Exploring the relationship between technology and identity construction is then important to understanding how people come to define themselves as social actors and the choices they make in their action.

The relationship between technology and identity construction can be studied from a number of different perspectives ranging from micro to meso levels of analysis (Ramarajan, 2014). However, the symbolic interactionist perspective described above focuses on the micro-sociological processes through which individuals use technology in interactions to construct their own identities, rather than on macro-level effects of technology implementation on collective identities, such as organizational identities (Kilduff, Funk, & Mehra, 1997; Tripsas, 2009). The types of identities which technologies could help individuals to construct are also multitudinous. Existing research has focused on how people draw on technology to construct, for example, identities related to religion (Kang et al., 2019), their personal interests (Saker, 2016; Shaw, 2011), sexuality (Duguay, 2014), politics (Gerbaudo, 2015) and gender (Butkowski et al., 2019). The current study focuses instead on identities that are relevant to contexts of work and organizing to understand how the implementation of AI technologies will change processes of identity construction at work.

A significant part of the research on identity construction has focused on the role of technology. Across these studies, scholars agree that technology makes certain ways of constructing identities easier for the people that use them, but how they conceptualize the relationship between technology and identity construction is not homogenous. To make sense of the variations in this conceptualization, I reviewed the literature on technology and identity construction, especially studies that were conducted in contexts of work and organizing. In my review of the literature, I found that studies varied along the dimension of how they

conceptualized the relationship between technology and identity construction, in other words, what technology made possible for identity construction and how it did so. In looking for patterns among these studies, I found that the existing work could be organized into three broad categories based on how they conceptualized the relationship between technology and identity construction: a *symbolic perspective*, which conceptualizes technologies as symbols of identities, a *structural perspective*, which conceptualizes technologies as tools that indirectly shape identities by restructuring work, and a *strategic perspective*, which conceptualizes technologies as media through which people engage in self-presentation to construct their identities. Below, I describe the guiding focuses of these three perspectives and the research questions that these perspectives motivate about AI technologies and identity construction. A summary of these three perspectives is shown in Table 1.

A Symbolic Perspective

I call the first approach through which technology and identity construction has been studied a *symbolic perspective*. Work in this perspective conceptualizes technology as a symbol on which people can draw to communicate important parts of their identities to others. For example, Prasad (1993) showed that nurses embraced the computerization of their workplace because their computers symbolized their status as professionals to others. Even when their computers were broken, nurses continued to keep them in their workspace because the technology was such a strong signal of their professionalism to themselves, their co-workers, and their families. Other work has shown how people use new technologies to signal their own identities as innovators (Smith, Treem, & Love, 2019) and how people's choice of which technology to use reinforces their identities as managers (Markus, 1994; Trevino, Lengel, & Daft, 1987). Other work has shown that people can use technology symbolically as a way to

Table 1. Summary of three existing perspectives on the relationship between identity construction and technology.

Perspective	Technologies' Relationship to Identity Construction	Research Focus of Perspective	Exemplar Studies	Possible Research Questions Relevant to AI	Possible Findings
Symbolic Perspective	Technologies makes it possible for people to symbolize parts of their identities through shared meaning	How do people use technologies as symbols of their identities?	Trevino, Lengel, & Daft's (1987) study of managers' choices about which communication technologies to use Prasad 's (1993) study of nurses' use of computers	What does AI symbolize about people's identities in different work domains? How do people make their use of AI visible to their communication partners?	People use AI technologies to signal their technological savviness to new clients People display their use of AI using digital artifacts like email signatures
Structural Perspective	Technologies makes new structures of work possible, which shapes identities	How do people use technologies to do work that shapes their identities?	Barley's (1986) study of technicians' use of imaging technologies Nelson & Irwin's (2013) study of librarians' professional identity construction around internet search	How do people redefine their occupational identity after some of their work tasks are completed by AI tools? How does the implementation of AI shape who is recognized as experts in organizations?	People redefine their identities around emotional or creative skills following increased automation in their work People who help to automate others' work tasks using AI are treated as

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					more influential over time
Strategic Perspective	Technologies makes it possible for people to attempt to present themselves to others in strategic ways	How do people use technologies as media through which they communicate their identities?	Leonardi & Treem's (2012) study of how knowledge workers' present themselves as experts on enterprise social media Gibbs, Rozaidi, & Eisenberg's (2013) study of distributed workers navigate tensions in their self-presentation through social media	How do people present themselves online in anticipation of AI-curated news feeds and searches? How do people implement AI-generated suggestions for communicating with others?	People attempt to use algorithms for strategic self-presentations by presenting themselves in ways that they assume the algorithm will amplify People follow AI-generated suggestions to communicate with others to increase liking

communicate their identities as compliant organizational members (Jian, 2008) or as resistant

ones (Jian, 2007).

Work that that adopts a symbolic perspective focuses on what technologies mean in a

given domain and assumes that technologies communicate aspects of individuals' identities

because of their shared cultural meanings. To draw on Goffman's dramaturgical metaphor, a

symbolic perspective focuses on how technologies serve as props through which human actors

can engage in self-presentation. This approach highlights the socially constructed meaning of

technology, but it does not address the type of actions that technologies make possible for

people. Instead, from this perspective, even complex digital technologies function just like any

other material artifact – as a symbolic display of one's values or skills (Elsbach, 2004).

Applying a symbolic perspective to understanding how AI technologies shape identity

construction could illuminate how people draw on and manage the meaning of AI technologies

in their work domains to signal their identities to others. For example, people might use AI

technologies to symbolize their enthusiasm for technology and indicate their identities as early

adopters (Rogers, 1962). People may also find ways to make their use of AI more conspicuous to

their communication partners, for example, in contexts of entrepreneurship where founders may

want to use AI as a symbol of their identities as revolutionaries or innovators (Zuzul & Tripsas,

2019). There also may be contexts where AI technologies are a contested symbol and are

problematic as a symbolic artifact of one's identity. For example, the use of AI technologies in

industries or occupations where automation anxiety is high (Piercy & Gist-Mackey, 2021) may

symbolize deviance from accepted norms in one's organization or profession or appear

inappropriate to coworkers who are concerned about losing their jobs to AI tools. Investigating

AI technologies from a symbolic perspective could offer rich descriptive data about what AI

technologies symbolize about people's identities within communities of practice and may surface additional mechanisms through which people manage the meaning of technologies for the purposes of identity construction.

A Structural Perspective

A second approach through which scholars have attended to the relationship between technology and identity is what I call a *structural perspective*. This perspective focuses on how the implementation of technologies indirectly influences identity because it prompts new work practices (Leonardi & Bailey, 2008). These new work practices restructure work roles and relationships (Stein et al., 2013). Scholarship in this vein has focused on how the work that people do *with* technology reshapes their identity. For example, existing work has shown that the implementation of new technologies can create opportunities for people to reevaluate and reconfigure their work practices (Barley, 1986; Korica & Molloy, 2010) and prompt them to redefine their professional role (Garcia & Barbour, 2018; Lamb & Davidson, 2005; Nelson & Irwin, 2013).

Unlike the symbolic perspective, a structural perspective assumes that technology shapes identity construction not only because of what it means, but because of how people use it. To the extent that new technologies make it possible for people to work in new ways, technology use can indirectly prompt changes in people's identities by shaping how they relate and negotiate influence with others around them in the course of their tasks (Barley, 1986). People may also enact new work practices to redefine their professional identity in light of the threats that technologies pose to their expertise, threats like democratizing access to specialized knowledge (Lifshitz-Assaf, 2017; Nelson & Irwin, 2013).Such an approach gets "closer" to the actual material design of the technology than the symbolic approach in that it can account for what

human actions technologies make possible or constrain (Stein et al., 2013). Because a structural perspective accounts for the types of actions that technologies afford, it foregrounds the actions that people take around and with technology as constitutive of their identities.

A structural perspective on AI technologies and identity construction could show how people restructure their work to redefine their professional identity after outsourcing aspects of their work to automation. For example, people may spend more of their time on creative tasks that they see as especially well-suited for human intelligence after implementing AI technologies to carry out more of their mundane tasks. Or, people could entrust AI technologies to perform actions that go beyond a human experts' ability, such as making predictions about financial markets, and may then redefine their professional identities, for example, by positioning themselves as interpreters of AI-facilitated decisions. A structural perspective could also show how organizational members engage in new work practices after machine learning algorithms are implemented into their work routines, as Christin (2017) showed in her study of web journalists whose work became increasingly ranked by algorithms on social media. As with other stories of technological implementation (e.g., Barley, 1986), research in this perspective could demonstrate that people do indeed change their work in expected and unexpected ways when AI technologies are introduced into their work routines, which restructures their work identities.

A Strategic Perspective

The third approach through which scholars have studied the relationship between technology and identity is what I call a *strategic perspective*. This perspective focuses on how people use technologies mediate their interactions and craft messages through which they construct their identities. Scholarship in this approach has focused on how people use the features of communication technologies to strategically present themselves to others, for

example, by devoting their full attention to crafting socially desirable messages instead of devoting attention to monitoring their nonverbal communication (Ellison, Heino, & Gibbs, 2006; Walther, 1996, 2007) or by gathering validation for their identities at scale (Gonzales & Hancock, 2008). In contexts of work and organizing, research in this area has shown how people use advanced communication technologies to garner recognition for important parts of their work-related identities. For example, existing work has shown that people can draw on the affordances that communication technologies provide to craft persistent and public messages that promote their roles as experts in organizations (Leonardi, 2015) and in their communities of practice (Wasko & Faraj, 2005).

From the strategic perspective, communication technologies are tools through which users communicate to regulate self-presentation so that others can perceive them desirably (Walther, 1996, 2007). In other words, technologies are media *through* which people communicate in order to construct their identities. While different technologies can afford different strategies of self-presentation, for example, based on the richness of information that they can communicate (Daft & Lengel, 1984; Short, Williams, & Christie, 1976), or what behaviors they can make visible (Leonardi & Treem, 2020; Treem & Leonardi, 2012), people ultimately retain control over how they present themselves using the technology.

A strategic perspective that focuses on the actions that people take to attempt to present themselves desirably using AI technologies could extend our understanding of communication practices in digitally-mediated communication environments. A strategic perspective on AI technologies might focus on how people present themselves in algorithmically-shaped communication environments such as in online dating applications (Tong, Hancock, & Slatcher, 2016) or other social media (Alvarado & Waern, 2018). For example, people may attempt to

game or satisfy the algorithm by posting pictures that they think will be shown more prominently in algorithmically-curated news feeds. To understand these practices, research using on a strategic perspective may focus on the folk theories that people develop about how AI technologies learn and make decisions and how these theories shape their communication choices (Bucher, 2016).

Studying AI Technologies with Existing Perspectives

Utilizing any of the three perspectives described above could provide insight into how AI technologies shape identity construction. Applying these perspectives to the new empirical context of AI technologies could broaden our understanding of how technologies are involved in identity construction. Studying AI technologies could help to surface new mechanisms involved in each perspective by helping to uncover new patterns of action that people take around emerging technologies. These three perspectives could also be beneficial in framing descriptions of AI technologies as a novel empirical phenomenon, descriptions like what AI technologies symbolize in different work settings or the theories that inform how people assume AI technologies work and how they use these assumptions to engage in self-presentation.

Though studying AI technologies from any of these three perspectives may help to broaden our theoretical understanding of identity construction and technology in general, doing so does not enable theorizing about how the unique capabilities of AI tools shape identity construction. Certainly, AI technologies can be used symbolically or brought into use for work or communication purposes and these perspectives help to frame what the consequences of doing so are for people's identities. But in any of the perspectives described above, any technology could be substituted in place of AI technologies and the general research focus would remain unchanged.

Treating AI technologies like any other technology is insufficient because AI technologies are not like other technologies. They differ from other technologies in two ways that are significant for how people construct their identities. First, AI technologies can "learn" on their own. Unlike previous technologies, AI technologies can learn from large sets of aggregated data and detect patterns without relying on programmed instructions and can capture, analyze, and implement these patterns over time and through use (Faraj et al., 2018). And second, AI technologies can act on behalf of people. AI technologies take action using probabilistic decision making, selecting the action with the greatest likelihood of securing a particular outcome. Unlike other technologies, which are reliant on volitional human action to be brought into action (the way a person might pick up a screwdriver to fix a doorknob, use a new imaging technology to take an X-ray, or send emails on a computer), AI technologies can make things happen without direct and proximal human action (human action is required to make AI tools, for instance, but not for each of the actions taken by AI) and without explicitly programmed decision making criteria.

Because AI technologies can learn on their own and act on behalf of people, the people who use them face a puzzle for their identity construction. This puzzle is that when people use AI technologies to make decisions about their own work, they externalize certain decisions about how they interact with others, but they do not extricate themselves from the consequences of these decisions for their identities. Because AI technologies are making decisions on their behalf, technologies' actions still reflect back on their own identities. In other words, people rely on AI technologies to represent them by making decisions that they as individuals ultimately do not completely control. This is a dynamic that is not captured by any of the existing perspectives and

is one that could have important implications for how identity construction unfolds when AI technologies represent people in ways that they themselves did not choose.

AI technologies are not merely symbolic nor are they only tools which people can deploy in their work. AI technologies are not only channels through which people communicate. AI technologies are actors in their own right and their capabilities for learning and acting require reconceptualizing technology's role in identity construction[1]. Because AI technologies differ from technologies that have previously been studied, a focus only on what technology means or what people do with it is insufficient. Instead, it is necessary to understand what technology does on behalf of people and how that frustrates, augments, or supports their efforts towards identity construction. To do so, a perspective that can account for the unique capabilities of AI technologies is warranted.

Artificially Intelligent Technologies and Identity Construction: A Joint Action Perspective

To theorize how AI's unique capabilities to make decisions autonomously on behalf of users through machine learning relates to identity, a new perspective of technology and identity is required. I propose an approach that I call the *joint action perspective of identity construction* A joint action perspective of identity construction assumes that actions of both AI technologies and the people who deploy these technologies construct those people's identities. When people deploy AI technologies, they share the process through which they select actions and they share the process through which they act (Murray, Rhymer, & Sirmon, 2020). To advance a joint action perspective of identity construction, two unique capabilities of artificially intelligent technologies need to be studied in relation to identity construction: 1) their capability to learn

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[1] Work that draws on Actor-Network Theory (ANT) shares the perspective that technologies are actors in their own right (Callon, 1980, Law, 1994; Latour, 1992, 1999). However, because ANT considers all technologies and material artifacts as capable of acting, this perspective does not lend itself to understanding unique capabilities of AI technologies.

from aggregated data to select an action that is most likely to produce a desired outcome, and 2)

their capability to autonomously execute decisions to bring them into the realm of social action,

where they can be evaluated by others. Below, I describe how these two capabilities motivate the

need to reconceptualize AI technologies' role in identity construction.

From Reflexive Monitoring to Machine Learning

The capability of AI technologies to learn from aggregated data challenges the

assumption that people are knowledgeable actors that can choose and adapt the practices through

which they enact their identities by reflexively monitoring others' responses. Below, I describe

how people's capacity to choose how to enact their identities is theorized in the existing identity

construction literature and how it warrants reconceptualization in light of the capabilities of AI

technologies.

Reflexive Monitoring of Identities

A guiding assumption of the existing literature on identity construction suggests that

people reflexively make choices about how to enact their identities depending on the social

contexts, especially real and anticipated responses from others (Cooley, 1902). To do so, people

engage in reflexive monitoring, which refers to how people understand and evaluate their actions

and their suitability for a given setting (Giddens, 1984). This monitoring allows people to (more

or less) skillfully select the practices through which they enact their identities in different

interactions.

Overwhelmingly, the literature on identity construction focuses on people's efforts to

craft their own identities by selecting communicative practices, such as telling stories (Ibarra &

Barbulescu, 2010; Watson & Watson, 2012), making decisions about how to spend their time

(Evans, Kunda, & Barley, 2004); expressing emotion (Rafaeli & Sutton, 1987); or engaging in

self-questioning (Beech, 2011). For example, Ibrarra's (1999) study showed that new managers experimented with provisional selves by acting like their role models and then modifying their performances based in part on how others reacted to them. Similarly, Wieland (2010) showed that workers drew on "ideal selves" as a resource in their identity construction to communicate their identities as hard workers and as healthy ones. And Kuhn (2009) showed how lawyers engaged in discursive practices to construct their identities as moral people despite pressure to behave in ways that could be perceived as immoral on the job.

The existing work on the practices through which people construct their identities suggests that people enjoy a relatively high degree of agency over how they choose to present themselves to others. Certainly, a large portion of the literature on identity has focused on how identities are regulated and disciplined by mechanisms of control (e.g., Anteby, 2008; Barker, 1993; Trethewey, 1999). This work rightfully points out that teams, organizations and professions discipline individuals to perform identities in ways that serve their purposes. However, these mechanisms of control focus on ways that people and collectives can coerce action from individuals, rather than focusing on how people act on individuals' behalf but without those individuals' consent (Peterson and McNamee's 2017 study of inmates in correctional institutions could be considered a notable exception). Even in arenas governed by managerial control, people still have agency in choosing how to enact their identities, though there are almost certainly negative consequences for some of their choices. Giddens (1984) described this as the dialectic of control – people always have the ability to "act otherwise" even when it seems that, circumstantially, they have no choice (p. 14).

Reflexive Monitoring and Technology Use

The assumption that people have agency over the practices through which they enact their identities also guides research on how people do so with technology. Existing work has focused on behaviors through which people construct their identities using technology. For example, Golden and Geisler's (2006) study of knowledge workers' use of personal digital assistant technologies showed that workers used the technologies to help remember commitments that allowed them to enact work and non-work identities. Other studies have focused on how people draw on the affordances of technologies to make important parts of their identities visible to others (Leonardi & Treem, 2012). For instance, Cristea and Leonardi (2019) found that geographically distributed workers constructed their identities as committed workers by signaling their constant availability, such as by logging on to video meetings in conspicuous ways. Again, while people certainly face social pressure to construct their identities with technology in particular ways such as facing expectations for constant connection (Gibbs, Rozaidi, & Eisenberg, 2013) and technologies can make some forms of communication easier or more difficult, the technologies itself are not selecting the practices in which people are engaging

Machine Learning in AI Technologies

AI technologies represent an entirely different class of tools than those previously studied. AI technologies differ from other technologies because they are able to learn supervised and unsupervised from aggregated data. Even digital technologies that make complex decisions rely on written code that programs their decisions, but AI technologies can process data themselves without being explicitly told how to do so. AI technologies detect patterns by analyzing data to identify which patterns predict certain outcomes. This allows AI technologies to detect patterns that would have been difficult for people to find, because people cannot process high volumes of data as quickly as machines, or, even at all (Simon, 1947). And because

AI technologies can detect these patterns without supervision, they are not reliant on the rules to which explicit human programming would confine them.

Machines require a high volume and variety of data in order to learn well. If the patterns that AI detect are going to be robust enough to embed into products and realized to consumers, those patterns must hold across a variety of contexts and at a sufficient statistical threshold to be considered trustworthy enough. To do so, machine learning must utilize large and varied datasets that are reliably labelled for desired outcomes in order to generate responses, classifications, or dynamic patterns in ways that imitate, or, ideally, exceed human decision making (Faraj et al., 2018). Such data is often only achieved by releasing AI technologies into use so that they can continue to learn and improve their ability to predict the right outcome over time and in a wider range of situations (Schestakofsky & Kelkar, 2020).

Machines' reliance on large, aggregated datasets means that the patterns they detect to predict outcomes are decontextualized from particular social settings. In fact, the *telos* of machine learning in most cases is to develop sufficient intelligence so that AI technologies can act reliability despite environmental changes. For example, the most marketable self-driving cars are those that can most reliably keep the driver (or other drivers, depending on the nature of the model) safe, regardless of the features of the terrain. Similarly, AI technologies in other domains are designed to better predict desirable outcomes for the masses over time. When AI technologies select actions on behalf of users, they are doing so based on the likelihood that the action produces a correct outcome for the highest number of people.

The implementation of artificially intelligent technologies that learn from aggregated data challenges the assumption that the locus of decision making about the right behavior for an individual always resides in the individual. When people deploy artificially intelligent

technologies to make decisions about their actions, they are allowing the tool to engage in practices drawn from aggregated data, rather than from their own reflexive monitoring. Rather than a person choosing a practice based on its appropriateness for a social setting, an AI technology choosing a practice based on its likelihood to serve the majority of users.

Machine Learning and Identity Construction

This shift in how the practices through which people enact their identities are selected has important implications for identity construction. First, it implies the possibility that practices will be implemented into individuals' identity construction that they did not choose, which challenges the assumption that people are always knowledgeable and agential actors that can choose their course of action. The enactment of identity then becomes a shared accomplishment between a person and the intelligent machines that they deploy to make decisions about their actions for them. It cannot be assumed that technology can be deployed in practice in ways that always align with how individuals prefer to enact their identities, because the technology is making decisions based on preferences beyond the individual user.

Second, the selection of practices by intelligent machines that are learning from aggregated data presents the possibility of practices becoming stretched over time and space into realms in which they did not originate, a phenomenon that Giddens (1984) called *time-space distanciation*. This change represents a shift not only in how identities are constructed but also in their content. As AI technologies learn to implement practices that are drawn from aggregated data on behalf of users, they may also shift the social resources on which individuals draw (norms, guiding values, etc.). People will enact identities in ways that are not selected for their situated action but for the good of the crowd, as determined by the goals and criteria embedded in the algorithm. The widespread implementation of AI technologies may homogenize the

content of identities, such that the actions through which people enact their identities become more similar over time as the selection is delegated to AI tools that are engaged in machine learning.

Existing work on artificially intelligent technologies and work point to several possibilities for how people could respond when AI technologies make choices about their work. A growing body of work on algorithmic management, or algorithmic techniques that assume managerial functions (Lee et al., 2015), suggests that workers will allow their work to be shaped by decisions made by intelligent machines without resisting it (Kellogg, Valentine, & Christin, 2020; Rosenblat & Stark, 2016; Wood et al., 2018). Existing work has shown that individuals' acquiescence to the practices that are selected by AI tools is enabled by the opacity of artificially intelligent decision-making processes (Bucher, Schou, & Waldkirch, 2021; Burrell, 2016). At the same time, other studies show that people are willing to engage in extra work to take back control over their work practices from AI tools (Bucher et al., 2021; Christin, 2017). For instance, Christin's (2017) study of web journalists and legal professionals showed how professionals engaged in buffering strategies to reduce the impact of algorithmic tools on their work and work identities.

The selection of practices through which people enact identities by AI technologies rather than by individuals themselves poses a challenge to the fundamental assumption that people are knowledgeable actors in socially constructing their identities. People may embrace this shared responsibility for identity construction by accepting changes in their practices and allowing their work to be made more similar to the aggregate (DiMaggio & Powell, 1983). Or, they may resist the choices made by the AI tool to buffer their work and the content of their identities from change. To explore these possibilities, I ask:

RQ1:   How will the implementation of practices by AI technologies shape individuals'

identity construction?

From Human Control to Autonomous Decision Making

The capability of AI technologies to autonomously make decisions challenges another

assumption of existing work on identity construction: that people's identities are shaped as their

communication partners respond to how people themselves enact their identities. Below, I

describe how this is not always the case when AI technologies mediate interactions between

people and their communication partners.

Communication Partners' Responses in Identity Construction

Existing literature on identity construction assumes that individuals' communication

partners are interacting with them based on how the individuals themselves are attempting to

construct their identities. For example, work on how people construct their identities in groups

(Moreland & Levine, 2001) and organizations (Swann, Johnson, & Bosson, 2009; Van Maanen

& Schein, 1979) has assumed that people negotiate their roles with their communication partners

by seeking recognition for important parts of their identities. How communication partners

respond to focal individuals' attempts to enact identities can have powerful impacts on those

individuals' identity construction. For example, how others communicate with individuals

constructs those individuals' identities as outsiders (Gossett, 2002) or experts (Endacott &

Myers, 2019).

Communication Partners' Responses and Technology Use

More specifically, existing work has shown that how people communicate through or

with technology can shape how others view them. For example, Walther and Tidwell (1995)

found that communication partners perceived focal individuals as more likeable when those

individuals communicated more quickly in computer-mediated communication. Other studies show that people are more likely to speak with and assign influence to early adopters of new technologies (Burkhardt & Brass, 1990; Burt, 1999), because early adoption of new technologies can signal innovative capability (Smith et al., 2019). In these cases, the communication partners of individuals judged individuals' own actions that were enabled or constrained by the technologies they used, because the technologies involved could not act on their own.

Autonomous Decision Making in AI Technologies

However, AI technologies differ from previous technologies in that they can make decisions on users' behalf without their explicit consent and/or awareness. While AI tools differ in whether they present these decisions as actions or as suggestions (Hancock et al., 2020), they can arrive at decisions and execute them without being programmed or selected to do so by a user. As described above, these decisions are enabled by machine learning, which can lead to shifts in how individuals enact identities. But AI technologies' capability to make decisions can also intervene in identity construction through another mechanism: by changing how communication partners assign meaning and act toward people that use AI tools.

One starting point for understanding how people evaluate and act towards the decisions that technologies make is the computers are social actors (CASA) paradigm (Nass and Moon, 2000). Informed by a programmatic series of experiments by Reeves and Nass (1996), the CASA paradigm states that people act socially towards computers and evaluate computerized decisions as if they were made by humans. They found, for example, that people communicate politely with computers despite the fact that computers do not feel emotion.

Studies situated in the CASA paradigm present compelling evidence that people will judge digital AI tools as social actors too; indeed, a growing body of work suggests that people

are continuously forming impressions of AI tools themselves. Glikson and Woolley (2018)

reviewed the wide landscape of studies that have focused on how variations in the design of AI

tools predict the extent to which people trust the decisions they make. They synthesized

scholarship in this area to suggest that people are more likely to trust AI tools when they are

anthropomorphized as AI agents (Kahn & Sutcliffe, 2014; Oistad et al., 2016; Verberne et al.,

2015) and when they display immediacy behaviors (Dabholkar & Sheng, 2012; Mimoun et al.,

2017). And while many studies have focused on how people form attitudes *about* AI tools rather

than the behavior with which they respond *to* AI tools, a handful of emerging studies suggest that

people do indeed treat AI tools as social actors, as Reeves and Nass's (2002) paradigm would

predict. People do so by, for example, speaking to AI tools colloquially (Park et al., 2021) and

disclosing personal information to them (Lee et al., 2012).

Autonomous Decision Making and Identity Construction

Despite wide interest in how people form attitudes toward and respond to AI tools, there

are few studies that focus on how people's impressions about AI tools relate to their impressions

about entities that implement them. Studies that have investigated people's perceptions of AI

tools and their impressions of organizations that deploy them suggest that the two are related

(e.g., Kim & Heo, 2021; Moriuchi, 2019; Youn & Jin, 2021). For example, Castillo, Canhoto,

and Said (2020) found that customers perceived companies that deployed AI-powered chatbots

more negatively, especially when chatbots made mistakes. In contrast, Trivedi (2019) found that

customers' engagement with chatbots strengthened their love for companies that deployed them,

as long as the customers did not perceive a high risk to using the chatbots.

Compared to the preliminary studies about how people's perceptions of AI tools shape

their actions toward organizations, even fewer studies have focused on how people's perceptions

of the actions of AI tools shape their views of individuals that use them. The findings they do

offer present multiple possibilities for how people's perceptions of AI tools shape their

perceptions of people that use them. The first possibility is that AI shapes people's perceptions

of users' identities, but only as a symbol. For example, in Hohenstein et al. (2021), people were

evaluated more harshly if their communication partners suspected that they were using artificial

intelligence to generate their messages (Hohenstein et al., 2021). This finding makes it difficult

to know whether this negative effect is because of communication partners' interpretation of AI

as a symbol (for example, interpreting AI-generated responses as a sign that the user does not

value their conversation) or because they judged the user based on their interpretation of the

actions taken by AI.

A second possibility is that people do indeed make interpretations about the actions that

AI tools take, but that these interpretations do not shape how they treat the people who use them.

For example, Hohenstein and Jung (2020) found that people's use of AI-powered smart replies

increased their communication partners' trust in them. They also found that when AI performed

poorly, communication partners blamed the AI tool rather than assigning blame to the person

using it. That finding suggests that people may see AI agents as responsible for their own actions

rather than attributing blame to the person who used them, which would mean that they would

not change how they act towards the user based on the actions of the AI.

A third possibility is that people do indeed treat AI tools as social actors that can make

decisions, but still hold users responsible for these decisions. Such a possibility would exist if

communication partners treat AI tools as social actors *and* if they perceive that there is a

relationship between the user and the AI tool. Because there is evidence that people form

impressions about others based on the actions of people who are close to them (Cialdini, 1980;

Cialdini & de Nicholas, 1989; Cialdini & Richardson, 1980) – for example, someone blaming a manager for a subordinate's indiscretions or a mentor being praised for the success of their protégé – how others perceive the actions taken by AI tools may shape how they assign meaning to and act toward the people that use them.

Understanding how people interpret and respond to the actions that AI tools take on their behalf in all three ways summarized above is critical for understanding how AI tools shape identity construction. It may be that AI tools are related to users' identity constructions only as symbols (Trevino et al., 1987) or that people treat AI agents as their own entities whose actions do not reflect on the people that use them. But if people's judgments about the actions of AI tools also shape how they perceive the identity of the person that uses them, they will act towards the focal person based on that meaning (Blumer, 1969). For example, suppose a person chooses to deploy an AI agent that responds to her communication partners instantaneously. Her communication partner may begin to view the AI agent's actions as reflective of the focal person's constant connectedness to work. The communication partner may then begin to think of the focal person as a workaholic and treat her accordingly, for example, by expressing frustration if the user is delayed in her work. These interactions may lead the focal AI user to change the meaning that she assigns herself. If people alter their behavior towards a focal individual, that individual's own understanding of their identity may change, because identity is constructed in interaction and based on the feedback received from communication partners (Snyder et al., 1977).

The extent to which communication partners change how they communicate with a person who is using AI tools is important for identity construction because individuals' identities are derived from how others perceive and interact with them (McCall & Simmons, 1978). To

explore if and how AI tools intervene in identity construction by shaping others' actions towards individuals that use AI tools, I ask:

RQ2: How do communication partners' responses to AI technologies shape the identity construction of the people who use them?

From Crystallization to Optimization

A third assumption of the identity construction literature is that people's identities are multitudinous, fragmented, and contradictory. Across theoretical perspectives, the notion that people have multiple identities that they can enact at different times has been a central tenet of identity construction (i.e., McCall & Simmons, 1978; Ramarajan, 2014; Scott et al., 1998; Tracy & Trethewey, 2005). Although people's multiple identities can exist in concert with one another (for example, an identity as an accomplished professional may exist in harmony with another identity as a contributing organizational member), a significant area of research has focused on the conflicts that people experience among their identities, for example, between personal and occupational identities (Kreiner, Hollensbe, & Sheep, 2006). Though conflicts among identities can impact people's stress and well-being (Lammers, Atouba, & Carlson, 2013), people can generally navigate their multiple identities by enacting different identities at different times, depending on the nature of the situated action at hand (Endacott & Leonardi, 2020; Scott et al., 1998). Individuals' ability to choose on which identity they want to draw in different social settings allows them to sustain what Tracy and Trethewey (2005) called a "crystallized self": one that is "multidimensional", multi-faceted, and complex, which consists of a "a range of possible selves embodied in a range of contexts" (p. 189).

The combined capabilities of AI technologies to learn from aggregated data and autonomously make decisions challenge the notion that people are always free to enact the full

range of identities that could comprise their crystallized selves. Instead, AI technologies must be optimized for given outcomes in order to learn and make decisions. While a person whose interactions are unmediated by AI may choose to act as social chameleons who can draw on different identities depending on the needs of a social setting (Mehra, Kilduff, & Brass, 2001) – to be someone who is "all things to all people" – an AI technology cannot exhibit the same flexibility. The constraints that AI technologies present in flexibly enacting identities requires reconceptualizing how individuals choose to resolve conflicts among multiple important identities.

While virtually no research has focused on how AI technologies constrain individuals' enactment of multiple identities, some exploratory studies suggest that outsourcing work processes to AI technologies does limit the potential range of actions in organizational settings, for example, by transforming dynamic expertise into codified routines (Glaser, 2014) and limiting individual discretion over decisions to rely more heavily on predictions informed by big data (Brayne, 2017; Kiviat, 2019). And empirical stories of chatbots being easily trained to spew hate speech show that AI technologies can easily be taught patterns that are perpetuated across time and space (Schwartz, 2019). These cases present empirical evidence that suggests that AI technologies do indeed limit dynamism, which can pose a threat to individuals' identity enactment.

How AI's capabilities to learn from big datasets and make decisions on users' behalf work together to shapes how individuals enact multiple identities is a last key area for research on identity construction. Understanding if and how AI technologies constrain individuals' enactment of multitudinous, fragmented, and contradictory identities is important because it prompts reconceptualization of the control that people have to construct their crystallized selves.

On a practical level, constraint in enacting multiple identities could also perpetuate biases certain types of identities related to individuals' work if AI technologies are not optimized to help individuals enact these identities. To explore this issue, I ask:

RQ3:   How do the ways that AI technologies are optimized to learn and make decisions shape how users enact multiple identities?

Implications

As I have discussed above, people's use of emerging artificially intelligent technologies requires fundamentally reconceptualizing how identity construction occurs around and through technology. Because AI technologies select some of the practices through which individuals enact their identities and put them into action without always receiving their approval, they do not exist only as symbols with, tools to, or channels through people construct their identities. AI technologies also share in individuals' identity construction. A joint action perspective on technology and identity construction assumes that both people and technologies make a difference to how the identities of the people that use them get constructed. While the actions that AI technologies take are not agentic in the human sense – in that they are not selected through careful consideration with a full awareness of the possibilities to do otherwise (Giddens, 1984) – the actions that they take on behalf of individuals do make a difference, not just to how that individual enact their identity but also to the people with whom that individual interacts perceives them. Because identities are always constructed in action, any changes that AI technologies contrive in how people interact with others implicates those people's identity construction. This perspective has several implications for the study of AI technologies and identity construction as well as for practice, as I describe below.

Implications of a Joint Action Perspective of Identity Construction for Research

To appropriately theorize identity construction that occurs when people are deploying AI technologies, the mechanisms through which they do so need to be understood. Studying these mechanisms requires several important research considerations. The first is that *studying how AI tools learn and act on users' behalf* requires a careful understanding of how these tools work. AI tools vary in the types of aggregated data from which they are trained and continue to learn, the outcome(s) for which their models are optimized, and how AI agents are designed to execute their decisions (for example, as direct actions versus as recommendations). Understanding these variations is crucial because they inform how AI tools choose to act on behalf of users, which shapes the content of users' identities. People who use AI tools are unlikely to be able to articulate the nature of their respective technology's decision-making processes because the computing processes of machine learning algorithms are opaque (Burrell, 2016). To understand these computational processes, researchers need to investigate how AI technologies are made, including the design choices that developers make in selecting training data, choosing outcomes, and assigning control to AI agents. Crossing the "implementation line" (Leonardi, 2009a) to interview developers about these design choices can help make AI decision making processes less opaque and clarify the mechanisms through which AI tools are designed to make decisions.

Second, a focus on *how technologies are designed* to act should be complemented with careful attention to the human work that surrounds AI technologies. A growing body of work has demonstrated that technologies powered by artificial intelligence require multiple types of human labor, such as labelling data (Tubaro, Casilli, & Coville, 2020), verifying decisions made by algorithms (Gray & Suri, 2019), and helping to remedy errors made by AI (Schestakofsky & Kelkar, 2020). This body of work suggests that end users of AI technologies may also need to

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put in work to use them, especially when the actions of these technologies reflect back on them. While existing research has focused on how human labor benefits the companies that deploy AI technologies (i.e., Ekbia & Nardi, 2017), people's efforts to make AI technologies work may also function as sites where control over how they are presented to others is negotiated. A joint action perspective of identity construction and technology takes the labor that people contribute to bring AI technologies into use as part of their identity construction seriously.

Third, a broader view of *what actions constitute identity construction* is needed. Existing work on identity construction often focuses only on the active and conscious efforts that people take to negotiate their identities. However, the implementation of AI technologies suggests that strategic human action is not the only way that identities get constructed. Just because people do not strategically plan the actions that AI technologies take on their behalf does not mean that these actions are not part of their identity construction. Instead, the actions that AI technologies take on users' behalf can shape identity construction because these actions are interpreted by users' communication partners as well as by the uses themselves. AI technologies do not need to discursively frame the identities of users to qualify as part of the individual's identity construction. All work-related actions are communicative in that they communicate how work should be done (Leonardi, 2015). Erasing false boundaries between what work is considered "identity work" and what is not, and instead considering all actions as constitutive of identity, is especially important in contexts where work is carried out by intelligent machines that cannot discursively reflect on their choices.

Pursuing research that takes these considerations into account to explore how AI technologies intervene, bolster, or reinforce individuals' identity construction is important because how individuals construct their identity is a mechanism through which social reality gets

organized. Identities serve as rationalizations for action in and of themselves (Scott et al., 1998).

Which actions are rationalized depends on how identities are constructed. Consequently,

understanding how AI tools shape identity construction has important implications for

understanding all the choices that people make about how they ought to act: how they form and

maintain their communication networks (Endacott & Leonardi, 2020), how they exhibit power

over others (Ashcraft, 2007), and how they choose to work (Leonardi et al., 2009).

Implications of a Joint Action Perspective of Identity Construction for Practice

On a practical level, understanding how people's use of AI tools shape their identity

construction will help designers and users make informed and ethical choices in their technology

use. Surfacing intended and unintended consequences of the use of AI technologies in identity

construction can inform how AI technologies are trained and designed moving forward. Working

to understand what deploying AI tools means for users' identities also can inform the best

practices of implementing these tools in ways that minimize undesired threats to users' identities

(Petriligieri, 2011).

More broadly, understanding what AI technologies actually do on people's behalf

contributes to evolving conversations about artificial intelligence and the future of work. By

foregrounding how people and AI technologies share in identity construction, this approach

avoids complete fear or enthusiasm for how AI technologies will transform our identities.

Instead, it embraces a healthy skepticism and assumes that AI-enabled action and human action

can exist in tandem and in tension with one another to construct identities.

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Overview of the Dissertation

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In light of the areas for reconceptualizing identity construction in an age of intelligent

machines that I have described above, I conducted an inductive study of the development and use

of two artificially intelligent scheduling tools. The next chapter is an overview of my methodological approach to the study of these tools. Then, the following chapters present three empirical studies that correspond to the three research questions: how AI technologies select practices through which people enact their identities, how decisions made by AI technologies shape how their communication partners respond to them, and what the consequences of these two processes are for the multiple identities that people enact. Because each chapter draws on different theoretical framing, each chapter is written as its own empirical study with its own set of research questions and sections on existing literature, methods, findings, and implications. Because each of the empirical chapters is meant to read as its own standalone study, there are areas of overlap with the theoretical arguments described in this chapter. The final chapter describes the broad theoretical and practical implications of the findings as a whole.

Chapter Two:

Methods

Research Design and Context

To understand the relationship between users' identities and AI scheduling technologies, I designed an inductive study to examine and compare the development and use of two different artificially intelligent scheduling tools. Following previous research on technology use in organizations (Barley, 1986; Edmondson et al., 2001; Leonardi, 2012), I utilized this comparative design in order to surface variations in the design choices that developers made when building their AI technologies and to understand how those choices shaped which users adopted the tools and how their use differed. I designed my study to include three groups of participants: developers of AI technologies, users of AI technologies, and communication partners of users of AI technologies. I included developers as a proxy for understanding AI technologies as actors in identity construction, because developers could articulate how AI tools were designed to learn and make decisions about action. I included users as knowledgeable actors who could describe their own processes of identity construction, particularly their own identity enactment (which I use to refer to the actions that individuals themselves take to enact identities). Because identity construction is negotiated in interaction, I included the communication partners of users, who could discuss how they formed impressions and acted towards people that used AI technologies. A summary of this research design is depicted in Figure 1.

The context of AI scheduling tools lends itself to the questions of interest in this study in several ways. First, the artificial intelligence capabilities of both tools, which were powered by algorithms that learned from aggregated patterns of use, served as an exemplar case to study how

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work practices selected by AI shape how users' identities are constituted. Both tools relied on artificial intelligence to make decisions about how users' meetings and activities were scheduled. Second, these AI scheduling tools made decisions that facilitated users' communication with others, or communicated on their behalf, which meant that they directly intervened in users' identity construction. Scheduling is an interdependent process between and among people, so for users to implement the tool, they had to work in conjunction with others. The interdependence between users and their communication partners who had to also use the tool was well-suited for studying identity construction from a symbolic interactionist perspective, since these tools were always used in interactions with others. This meant that users were likely to consider how others perceived their use of the tool and that they could articulate the processes through which they formed, altered, or reinforced their identities based on the feedback that they received from others. Third, the two AI scheduling tools were most commonly adopted at the individual level, rather than at the firm or organizational level, which was apt for studying the multiple identities involved in individuals' use of emerging technologies. Individuals elected to use the tool, rather than being mandated to do so by their workgroup or organization. These patterns of adoption made it more likely that users' choices about how to enact their identities were implicated in their selection and use of technologies, rather than being mandated as part of an organizational initiative. Users then experienced freedom in the choices they could make about how they wanted to enact identities while using the tool within the constraints afforded by the tool itself. Accordingly, this was a useful context in which to study how the use of AI scheduling technologies shaped how users enacted multiple identities.

Figure 1. Research design.
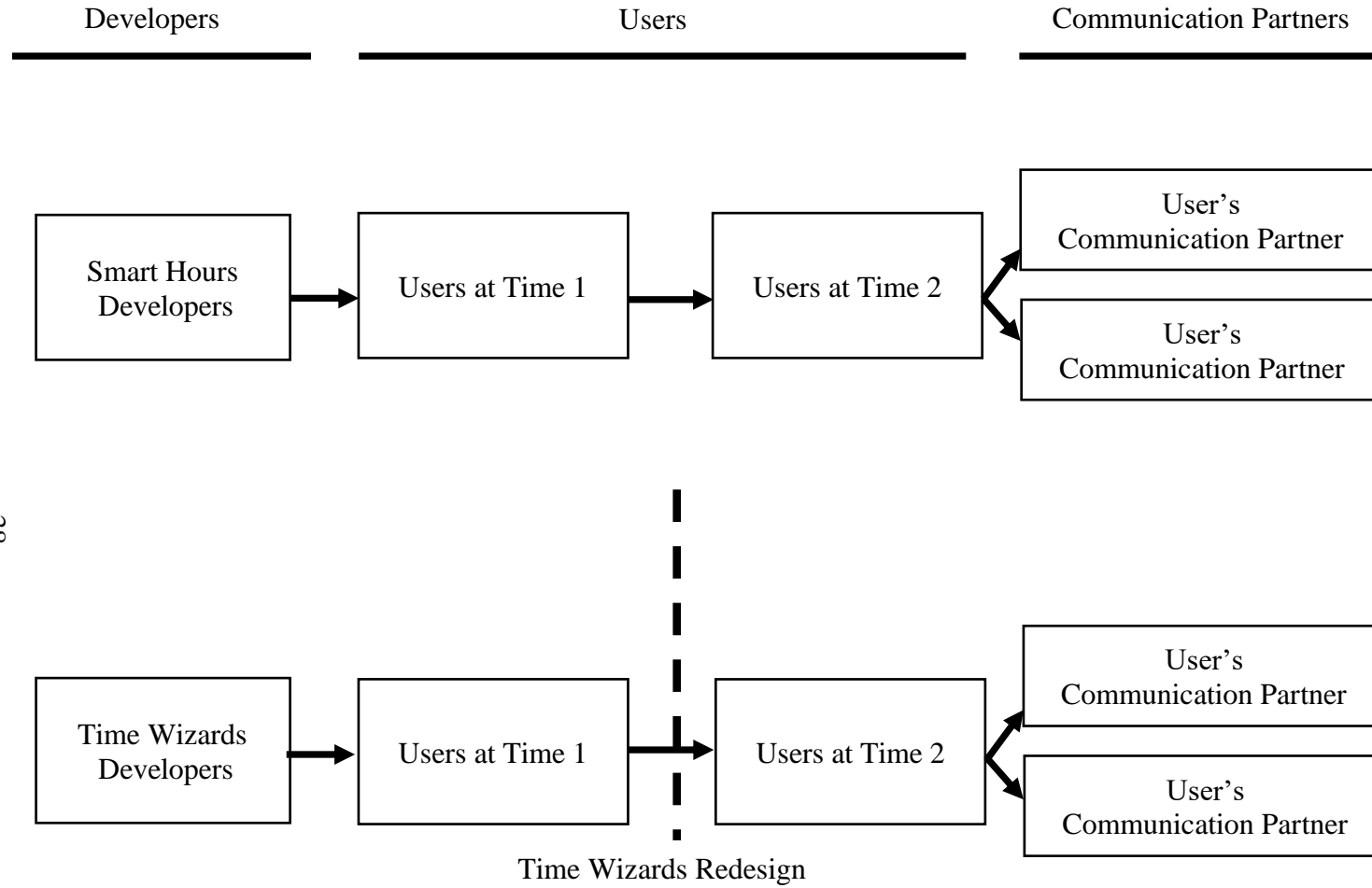
Using ethnographic interviewing (Spradley, 1979), I collected rich descriptions of the work of developing AI scheduling tools as well as how users' work is shaped by deploying these tools. I interviewed technology developers at two different companies who had each developed their own AI scheduling tool. I also interviewed users of each tool at two time points to understand how their use of the tool evolved and how their use of the tool related to their identities over time. In studying how people used the tool at two time points, I could capture how they changed or maintained their use over time and with what consequences. Beyond capturing changes in use, interviewing users at two time points also allowed me to see how changes to the technology itself changed users' work. In between Time 1 and Time 2, Time Wizards redesigned their tool. Consequently, my interviews with users at Time 2 also elicited users' responses about the developers' choices and how this redesign shaped how they enacted their identity using the AI tool. Because the AI scheduling tool was interactive (e.g., the user scheduled with their colleagues who also interacted with the tool), I also interviewed users' communication partners at Time 2. This research design allowed me to follow the recommendations of Leonardi (2009b) and Bailey and Barley (2020) to study emerging technologies by utilizing an ethnographic approach that follows a technology from design into use and then out into the social network into which it is embedded.

The companies that I studied varied on two dimensions: how visible they made the AI capabilities of their tool and how much control they afforded users over their schedules while using the AI-enabled tool. Time Wizards made the AI capabilities of their tool highly visible in an anthropomorphized agent and offered users less control over their schedules, while Smart Hours made the AI capabilities of their tool less visible and offered users more control over their schedules. These variations allowed exploration of how the flexibility afforded by the AI tool

shaped how users enacted these identities and how the visibility of AI affected how they were

interpreted by others. Both of these processes (enacting identities and receiving feedback about

identity enactment) are crucial for identity construction. The two research sites are described in

detail below.

Time Wizards

 Time Wizards was a start-up technology company based in New York City that

employed about 15 people. Their team included their CEO and co-founder, a lead data scientist,

several data engineers, a vice president of product management, a vice president of engagement,

and the head of the company's offshore human training unit. Though I flew to New York to

interview its developers at the company's headquarters in winter of 2019, many Time Wizards'

employees were already working remotely and since then, the company now operates completely

remotely.

Time Wizards developed an autonomous scheduling agent that was designed to interpret

and respond to meeting requests using natural language. On a subscription basis, users of Time

Wizards could employ the company's autonomous agent, which users often referred to as a

"scheduling bot," to arrange their meetings. Unlike previous iterations of scheduling tools, Time

Wizards' tool relied on a conversational user interface, rather than a graphical interface, meaning

that users deployed their tool using written natural language rather than clicking on icons. To do

so, users copied the agent into an email with another person and then asked the agent to

coordinate with that person to find an appropriate time and place for a meeting.

Users could pick one of two names for the agent: a feminine name, "Liz," or a masculine

name, "Leo." Though the company's developers said multiple times that having an

anthropomorphized agent was a liability because it heightened people's expectations of what the

technology should be able to accomplish, they also took pride that they had created an agent that was often mistaken for a human. For example, the company retweeted a photo from a user that showed the lunch that someone had mistakenly ordered for "Liz," who they had assumed was a human executive assistant.

From the inception of the company, Time Wizards was devoted to developing a tool that showcased how AI could be harnessed to handle the burden of users' scheduling problems. Mikkel, the company's founder, explained that scheduling meetings – including setting up meetings, negotiating times and locations, rescheduling meetings, and following up – is important for knowledge workers to do their work but is painful for them to do themselves. He explained that most people knew that scheduling was burdensome but also could not afford to hire a human executive assistant to help them. He said,

> Anybody two hours out of college can figure out that scheduling meetings is a pain, but they just don't know how to escape it. Or the only way to imagine escaping it is if somebody 20 years later as a CEO or whatever, they get a human assistant.

In developing an AI agent that could take over scheduling, Mikkel explained that they could make the type of scheduling support that a human executive assistant provides available to everyone at a fraction of the cost. Mehmet, a product manager, explained that, with their agent, "you don't need to have people within the loop and we can just make the predictions and decisions on your behalf." As a whole, the company held to the philosophical view that scheduling was a problem that could be solved using artificial intelligence. Mikkel explained that their job as a company was to help people to "wrap their heads around the fact that this particular chore [of scheduling] is not for humans. You shouldn't waste your time on it."

Time Wizards set out to apply artificial intelligence to scheduling with grand ambitions to develop an agent that could, as Mikkel put it, "function autonomously in this small corner of

the universe." He explained that this autonomy warranted applying the "AI" moniker to the agent. In developing an autonomous agent, Time Wizards foregrounded the artificial intelligence that empowered Liz and Leo to make decisions about users' schedules. As Sarah, the head of marketing explained, the company wanted to be known for their willingness to deploy artificial intelligence to solve scheduling. She said that the company started to "make a go at some real thought leadership around AI" and join "the revolution" of using AI for the chores of knowledge work. To do so, the company touted the natural language processing abilities (NLP) of Liz and Leo.

To train Liz and Leo to make decisions about scheduling using natural language processing capabilities, the company released the product to a group of beta testers that were willing to experiment with the product for scheduling meetings. At first, the company released Liz and Leo to act as agents for interested beta testers but used paid human coders located in the Philippines to generate the responses to scheduling queries. This human-in-the-loop approach generated initial training data for Liz and Leo. Early users of the product noticed that Liz and Leo seemed like polite human executive assistants, because Liz and Leo's responses were being drafted by paid human employees.

In the summer of 2017, Time Wizards removed a human layer of quality assurance (QA) from Liz and Leo in order to test the automated capabilities of the agent. Because there was less human annotation and intervention in Liz and Leo's decision making, the tool became "more robotic and harder to use," according to Sarah, who was in charge of marketing at Time Wizards. Sarah explained that to continue to recruit beta users who were willing to deploy an imperfect product, she had to make the product attractive to people who were both interested in saving time and in helping put in the technical work to train Liz and Leo. She said, "The product really only

could function for people who were very technical and were really so invested in saving time that they willing to do the work they needed to do to learn how to use the product. Sarah said that she drew on her previous studies of cults to recruit users who would be committed to enduring Liz and Leo's glitches. She said, "Cults are really good at creating really strongly bonded communities, creating the feelings of inside and outside, and sacralizing pain for a higher purpose." To apply her knowledge about cults to Time Wizards, Sarah started a group called the "Scheduling Magicians" and repositioned the product so that it spoke to "productivity ninjas who are super technical and are in a lot of scheduling pain" who would then become "super early adopters." She explained that,

> Before, our position was that our product magically scheduled meetings. Now, it's all about being part of the revolution… we made it seem like we wanted it to be hard and we wanted people who weren't up for the challenge to go away and only have people who were ready to take on this new thing and all the sacrifices that were required to get the outsized returns.

The most engaged users were invited in joining the Scheduling Magicians group, where they could connect and solve problems with one another as they deployed Liz and Leo. These members often had degrees in both computer science and business and served as "natural beta testers" according to Sarah.

The Scheduling Magicians' willingness to use Liz and Leo helped Liz and Leo to learn *in situ.* Time Wizards also added a rating feature that allowed users to rate how successfully Liz or Leo scheduled each meeting on a scale of 1 to 5, which helped developers identify edge cases where Liz or Leo needed additional training. Time Wizards also maintained their offshore human coding team who continued to label data to help the natural language processing capabilities improve. "Xiaotong, who oversaw all human coding at Time Wizards," said that she assigned workers micro-tasks related to labelling, which would help Liz and Leo learn to better recognize

important elements of scheduling language, such as locations, dates, and actions and, ideally, respond in increasingly humanlike language.

Time Wizards' decision to anthropomorphize their agent with human names foregrounded the artificially intelligent capabilities of the machine by encouraging comparisons to human intelligence. Developers acknowledged that AI could surpass human abilities in some ways. Mehmet explained that an AI agent allows users to implement scheduling assistance at a higher scale and speed than a human assistant, explaining that, "while a human will respond to an email in 10 to 15 minutes, our AI solution can respond in 6 seconds" and "for 10,000 managers, you only need two assistants." Diego, the head of engineering, explained that employing an agent means that users can have help with scheduling without paying the salary of an executive assistant. Sometimes, developers lamented the ways that anthropomorphizing agents increased users' expectations for what they could do. As Mikkel said, "People are not willing to forgive us our mistakes like they would for a human assistant." Still, the company held to their choice to foreground artificial intelligence by presenting an autonomous agent that, despite errors, would help get "the self-driving car [for scheduling] out of the parking lot."

Smart Hours

Smart Hours was a start-up technology company based in Silicon Valley that employed about ten people. Their team included a CEO and co-founder, a lead data scientist, a head of product design, several data engineers, and a few marketing consultants who worked for Smart Hours on a contractual basis. As at Time Wizards, most employees worked remotely, though I met with about half of their employees at their office space in Silicon Valley in the summer of 2019.

In contrast to Time Wizards' agent-based approach, Smart Hours designed a calendaring interface to facilitate smart scheduling. AI features were embedded within this calendaring interface, such as suggestions for calendar visibility settings, natural language processing that can identify emails related to scheduling and automate the creation of a calendar event from those emails, smart scheduling links to select meeting times among multiple participants' calendars, and smart event templates that could be tailored to learn users' recurring events and track time devoted to event categories. Founder David said that these features helped accomplish what he saw as the vision of the company: "to help users make better decisions about their time."

Smart Hours held a more circumspect view of how digital technologies should intervene in scheduling. David, the co-founder of Smart Hours, explained that if companies like Time Wizards were attempting to build the equivalent of the self-driving car, Smart Hours wanted to build lane assist technologies. As he explained, "We want to take over the boring, repetitive aspects of calendaring, but we're not trying to drive the car. We want to leave the human being in control." At Smart Hours, developers believed that their job was to create a tool that made scheduling easier for users but did not attempt to take over scheduling for them. Onat, the head of engineering at Smart Hours, explained that they designed the tool to be "flexible and intelligent" but not to impose best practices. However, they designed the tool to make suggestions to users that would be valuable to them. While developers at Smart Hours did want to help users better understand how they spent their time, they believed that users were always best suited to make decisions about how to allocate their time. Bruce, a product designer, said that the tool should help people spend their time the way they want to schedule it. He said, "It's helping you say, 'What do I want to do?' and get to that goal. And that, that combination of working around the reality and letting you think about the goal is super powerful."

Smart Hours began its product research by conducting qualitative focus groups with administrative assistants who were, as Bruce said, "expert schedulers." Bruce explained that they did not want to design a tool that necessarily mimicked the decision making of administrative assistants, but instead could support users who could not afford to spend the time and money on having a designated scheduler. Bruce said, "We are going to build for the people who look like admins for their personal lives." These people tended to be individual freelancers and independent consultants who frequently booked meetings with others. Smart Hours booked each new user onto a personalized onboarding call, during which a member of the team taught them how to use the tool. Users could also elect to participate in Smart Hours' user group that was hosted on Slack, an organizational social media platform, where they could ask questions, report bugs, and send features requests. Bruce said that the Slack group tends to consist of "the most engaged users, so we learn from them that way."

Unlike Time Wizards, Smart Hours did not choose to showcase artificially intelligent capabilities of the tool in an agent capable of natural language processing. At Smart Hours, machine learning was intentionally hidden so that users could experience a familiar product and so they could maintain a sense of autonomy over their scheduling. Although the tool was originally designed to showcase natural language processing to parse out emails related to scheduling, David explained that they "toned down" how they highlighted artificial intelligence in the product "because users need to find the product familiar." As he explained,

> AI gets into these domains where it, it's using fuzzy logic, not deterministic logic. And the decisions that it makes has to be significantly more valuable than the cost of it making the decision wrong. So, if the cost of it making the decision wrong has, um… isn't material, at all, it doesn't matter how smart the algorithm is. Unless it's going to be 100%, you probably don't want the system making that decision.

Such an approach was in stark contrast to Time Wizards, who specifically recruited users who wanted to experiment with artificial intelligence.

Smart Hours' tool did draw on artificial intelligence, but these capabilities were modulated to processes that only the user encountered. In other words, only the user encountered the AI capabilities of the tool; their communication partners did not. The calendar drew on machine learning algorithms in more subtle capacities so that Smart Hours could help the user in "intelligent ways," Onat explained. Smart Hours' calendar retained natural language processing to help users set their scheduling preferences within the tool. Onat said that the tool utilized NLP in "seemingly small places," for example, by featuring a box where users could type in a date ("12/25" or "December 25") or holiday ("Christmas," "Xmas") and be taken to that date on the calendar. The tool also used machine learning algorithms to offer users predictions about people with whom they should share availability. Onat said "these help you see things in a more sensible way, and we'll run around some kind of NLP algorithm that will help you in certain ways. But we never tried to take over the control. You're always in control."

As described above, Smart Hours took a very different approach to AI scheduling than Time Wizards. I studied how these differences in design decisions affected the influence of AI scheduling technologies on identity construction in later analyses. A summary of these and other important variations between the two sites is shown in Table 2.

Data Collection

Data collection unfolded in four phases of ethnographic interviewing (Spradley, 1979). Despite the limitations of interviews for capturing work practices (Nicolini, 2009), such an approach allowed me to access a diffuse network of users who were not centralized in any one

Table 2. Summary of similarities and differences between Time Wizards and Smart Hours.

Dimensions	Time Wizards	Smart Hours
Location of Company	New York	Silicon Valley
Year Founded	2014	2016
Target Market	Busy Professionals	Busy Professionals
Total Funding Amount	$44.3 Million (Series B)	$4.8 Million (Venture)
Product Cost	Free Plan Premium Plan for $8/Month	Free Plan, Premium Plan for $10/Month
Early Focus Group Populations	Technology Developers	Executive Assistants
Incorporation of Artificial Intelligence in Tool	Central	Modular
User Interface Paradigm	Conversational UI (Time 1); Conversational UI and Graphic User Interface (Time 2)	Graphic User Interface
How Tool Learns	Paid Human Coders, Beta Group, General Users	Beta Group, General Users
Natural Language Processing Capabilities	Interpret and Respond	Interpret
Who Interacts with Artificially Intelligent Capabilities	User, User's Communication Partners	User

organizational site. To elicit work practices from interviews, I followed the suggestions outlined by Leonardi (2015b) by having participants provide both abstract discussions of their work and specific exemplars of their work by asking them to recount specific behavioral events and to narrate their strategies and tactics for working through those events.

Developers

First, I collected interviews with developers at both Time Wizards and Smart Hours. In these interviews, I asked developers to discuss the company's approach to designing artificially intelligent scheduling technologies, their assumptions about users and their identities, and how and why they made design choices based on these assumptions. I conducted nine interviews with developers at Time Wizards and five interviews with developers at Smart Hours. I conducted these interviews at each company's office. These interviews lasted from 45 minutes to an hour. Just over half the sample were men and half were White.

Users at Time 1 and Time 2

Second, I interviewed users of both Time Wizards and Smart Hours' tools. Both companies aided my data collection efforts by recommending a few users to interview. At Time Wizards, I recruited additional users by asking Time Wizards to place a form promoting the study on the company website. At Smart Hours, I recruited additional users by asking Smart Hours to announce the details of my study and provide my contact information on their public company Slack channel so that interested users could reach out to me to participate in my study. Through these efforts, I recruited 15 Time Wizards users and 15 Smart Hours users to participate in my study.

Users of both Time Wizards and Smart Hours worked in positions for which scheduling with others while having limited visibility into others' calendars was an important task. Users of

both tools often worked as independent contractors and consultants in the areas of business development, marketing, graphic design, law, technology, or finance. Both groups of users described themselves as "busy" people for whom it was important to reliably set and attend meetings and who experienced a significant amount of stress related to their calendar. The sample for users of both tools mostly consisted of men (11 of the 15 Time Wizards users and 13 of the 15 Smart Hours users). They ranged in age from late 20s to late 50s, with most users in their late 30s and early 40s. About 85% of the sample was white and 80% worked primarily in the United States. Others worked in Canada, Europe, and the United Kingdom.

In my interviews with users of Time Wizards' and Smart Hours' technologies, I asked why they chose to adopt their respective AI tool, how they used it, what changes to their work they noticed (if any), and what challenges and benefits they experienced in using the tool. I also asked users to discuss their use of their tool in relation to their identities, including how their scheduling needs compared to how the tool itself operates. My approach to interviewing followed that of Spradley (1979) to elicit descriptions of categories of work and that of Leonardi (2015b) who recommended designing questions that elicit description of particular work practices (i.e., by narrating tasks). I supplemented questions about work practices with questions that asked users to discuss their own identities in broad terms and the relationships among their identities, time, and technology (Kvale, 1996). To embed a behavioral component in the interviews, I also asked users to narrate recent interactions that they had with others via the scheduling technology when referencing the actual conversation thread whenever possible. These interviews ranged from 25 minutes to 45 minutes and were conducted over the phone and via video-conferencing.

Third, I interviewed users again, at about eight months after their original interview (considering users' busy schedules, these interviews were sometimes conducted as late as a year after their initial interview). Interviewing users after they had used the tool for some time allowed me to ask them about any changes that they had noticed in how they enacted their identities or in how they used their respective tool. 13 of the 15 users at Time Wizards and 8 of the 15 users at Smart Hours agreed to participate in a follow up interview or interviews. The users who did not participate did not respond to requests for an interview. In these interviews, I asked users to discuss how their use of the tool changed, what work was required to use it, and how their use of the tool related to their personal and professional identities. Again, I embedded an observational component by asking users to narrate recent interactions that they had with others via the scheduling technology when referencing the actual conversation thread. As with interviews conducted at Time 1, these interviews ranged from 25 minutes to 50 minutes and were conducted over the phone or via video-conferencing.

Users' Communication Partners

Fourth, during Time 2, I interviewed users' communication partners, or the people with whom they scheduled using the AI tool. I asked users to recommend several people with whom they scheduled for me to interview. Through this recruitment process, I was able to interview 12 communication partners of eight Time Wizards users and 7 communication partners of four Smart Hours users. Of the 19 communication partners I interviewed, 14 were men and five were women and 11 worked in the United States. On average, the sample of communication partners was younger than the sample users, with more users in the late 20s and early 30s.

In my interviews with users' communication partners, I asked about their impressions of their tool, how the focal user's choices in deploying the tool shaped how the communication

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partners perceived the AI user's identity, and what changes in the user's work, if any, the communication partners had observed. These interviews ranged from 25 to 40 minutes and were conducted over the phone or via video-conferencing.

All together, these four phases of interviews yielded 85 interviews, resulting in about 1,300 pages of single-spaced data for analysis.

Analytic Strategy

To analyze the three key research questions posed in this study, I utilized an inductive approach to data analysis that was heavily influenced by Strauss and Corbin (1998), in that I used analytical techniques to identify emergent practices surrounding the use of AI-enabled tools through which users enacted their identities at work, including relevant conditions and consequences. Each of the research questions raised required a different analytical approach, which I describe below. A summary of the data sources on which I drew and the analytic approach for each research question is shown in Table 3.

Research Question One

To address the first research question, which asked how the implementation of practices by AI shaped people's identity construction, I drew on interviews with AI developers and users at the two time points from both companies. In this study, I used my interviews with developers to understand how both AI tools were designed to learn from aggregated data to implement communication practices on users' behalf. Then, I looked for evidence of users comparing their own decisions about their work practices to those enabled by the tool, which helped me identify opportunities for users to accept or resist these practices. I selectively coded text in which users described allowing the tool to make decisions about their work practices and the actions they took to resist decisions made by the tool. Using my comparative design, I was able to also

Table 3. Summary of the data analyzed and the unit of analysis for the three key

research questions

Research Question	Theoretical Focus	Data to be Analyzed	Units of Analysis
How will the implementation of practices by AI technologies shape individuals' identity construction?	AI-Aggregated Work Practices and Identity Enactment	Interviews with AI Developers Interviews with AI Users	Work Practices, Acceptance or Resistance of Work Practices
How do communication partners' responses to AI tools shape the identity construction of the people who use them?	Impression Formation and Identity Work Around AI Technologies	Interviews with AI Users Interviews with AI Users' Communication Partners	Impression Formation Processes, Communicative Practices
How do the ways that AI technologies are optimized to learn and make decisions shape how users enact multiple identities?	AI Technology Use and Multiple Identities	Interviews with AI Developers Interviews with AI Users	Multiple Identities Users' Identification (Enactment of Identities)

identify conspicuous absences by comparing my findings between users of the two tools– for example, Time Wizards' users' frequent descriptions of resistance helped me notice that Smart Hours users rarely discussed doing so. I also leveraged my comparative design to compare users' recounting of their acceptance and resistance of work practices based on whether the tool made decisions automatically (Time Wizards) or offered work practices as suggestions (Smart Hours). This approach to coding helped me identify patterns in how users of both tools described their patterns of use, in lieu of access to observational data. Because I theorized work practices as constitutive of users' identities (Leonardi, 2015; Kuhn, 2020; Orr, 1996), I used these findings to point towards how changes in work practices would shape users' identities.

Research Question Two

My second research question asked how communication partners' responses to AI tools shape the identity construction of the people that use them. To address this, I designed a study that allowed me to compare identity construction with the use of an AI tool in which artificial intelligence is foregrounded in an agent (Time Wizards) to one in which artificial intelligence is hidden in an interface (Smart Hours). Because identities are constructed both by people's attempts to craft desirable identities and others' interpretations of them, I drew on interviews with users and their communication partners.

I analyzed my data by constructing categories of practices and processes grounded in the data themselves (Glaser & Strauss, 1967). I examined the processes through which communication partners made attributions about users' identities when communicating with them via AI agents by identifying sections of talk where communication partners interpreted users' identities, openly coding them, combining similar codes, and describing them at a higher level of abstraction. I underwent a similar process to identify the communicative practices

through which users of AI tools engaged in identity work in response to communication partners'

interpretations, by identifying relevant text, describing it a low level of abstraction, combining

codes, and describing these practices at a higher level of abstraction.

Research Question Three

To address my third research question, which asked how users were enabled or

constrained in their enactment of multiple identities when communicating with others via

artificially intelligent tools, I drew on interviews with both developers and users. I first used

interviews with developers to understand how the assumptions they held about users' identities

shaped how they made choices in designing their respective tools. These interviews also helped

me to understand for what outcomes AI technologies were optimized. For the primary analysis of

the study, I compared interviews with users at both Smart Hours and Time Wizards. These

interviews offered me insight into how users of the two technologies perceived their efforts to

enact multiple identities and how they saw the tool as enabling or constraining them in these

efforts.

The overarching goal of this analysis was to understand the multiple identities that users

strove to enact and how their use of their respective AI tool helped or hindered their ability to

enact these identities. I first identified the multiple identities that were important to Time

Wizards and Smart Hours by openly coding the rules and resources on which they drew in

interaction (Corbin & Strauss, 2007). I grouped similar rules and resources together to

understand the identities that users described as important to enact. Second, I identified sections

of text in which users described their attempts to enact identities while using their respective

tool, including times of conflict, to look for patterns in users' identity enactments. Such an

approach allowed me to observe variations in how users' identities were configured (i.e., the

extent to which identities shared common rules and resources). In addition to looking at how users' multiple identities were arranged between the two types of users, my comparative design allowed me to see how the respective affordances of the Time Wizards and Smart Hours technologies enabled or constrained how they enacted multiple identities while using the tool.

Summary and Conclusion

These three research questions focus on understanding processes of identity construction when people use AI technologies that facilitate communication or communicate on their behalf. In the empirical chapters that follow, I answer each research question in turn, such that each research question is addressed in its own empirical chapter. In each chapter, I discuss the corresponding research question at a lower level of abstraction, how I specifically collected the data on which I drew for that study, offer more specific explanation of my data analysis process, and present the specific findings for its corresponding research question.

Chapter Three:

The Incorporation of AI-Aggregated Work Practices into Users' Identity Enactment

Technology companies are using advances in artificial intelligence to provide businesses and individuals with products that promise to increase workplace productivity and effectiveness (Trapp, 2019). Companies that produce AI tools tout the benefits that they offer for making data-informed decisions without the need for active human oversight. These tools process large volumes of data to detect patterns and form predictions that help them to carry out work on users' behalf. These capabilities offer workers and their organizations opportunities to utilize tools that have learned from larger and more diverse sources than any one person or organization could obtain.

For AI companies that sell software as a service (SaaS), the business case for their tools lies in their ability to improve the computing abilities of their technologies over time. To make the case for the viability of their product, companies selling software powered by artificial intelligence must be able to demonstrate that their products will produce a return on investment for users that outweighs the cost of switching and learning services (Davenport, Libert, & Beck; 2018; Yu, 2019). Although AI-powered functions of software can take advantage of *within-case* aggregation, or the aggregation of a user's individual data, to create a customized experience (such as personalized search engines), many technology companies champion the power of big data and predictive analytics to distinguish the value of their AI solution. This approach allows them to appeal to clients at scale and to increase the gross margins of their business (Casado & Bornstein, 2020). Thus, it is in companies' best interest to help the machine learning algorithms that power their AI tools to improve and to leverage the vast amount *across-case* aggregated data, or data gathered across all users, to position their products as desirably as possible.

The technical process of identifying best practices from aggregated data and replicating them across time and space can generate unintended consequences for how work gets accomplished. In the domain of scheduling, AI tools are trained to make decisions about users' work practices, such as how people work, with whom and when and how often. To decide what work practices to carry out, AI technologies have to make predictions about which decisions are most likely to lead to a given desirable outcome across a variety of different work settings. Though people may vary widely in how they go about their work, AI technologies have to appeal to a critical mass of users by making decisions based on common patterns in how people work. If people increasingly use AI tools to make decisions about their work for them, it is possible that people's work practices will become more similar to one another over time --- because the selection of these work practices is based on what serves the needs of the crowd, rather than by the preferences of the individual user. Such homogenization may ensure that the most data-supported best practices are implemented in organizations, but it may also reduce the requisite variety of processes from which organizations learn, change, and innovate (Weick, 1979).

If AI technologies change the practices through which people work, they will also shape the identities of the people who use them. People's identities are enacted through the recurrent practices through which they carry out their work (Leonardi, 2015a; Orr, 1996). If people rely on AI tools to make decisions about their work, they may inadvertently cede control to AI to choose which identities to enact on their behalf. Because people rely on their identities to serve as an anchor for how they should behave and as a rationale for their actions, changes in how their identities are enacted could cascade out into their work, networks, and organizations. Understanding how AI tools' reliance on aggregated data shapes how it configures work is of

key importance in understanding how the use of AI will affect what workers take for granted as part of their identities in the years to come.

To explore these issues, this chapter presents a practice-based view of identity to investigate how AI tools engage in new work practices informed from aggregated data on behalf of users by AI tools and how people resist or incorporate these practices in their identity enactment. To do so, the study draws on interviews with developers and users of Time Wizards and Smart Hours, as described in the previous chapter. These interviews show that developers of these tools recognized that users wanted the tool to implement work practices personalized to them but chose to design tools that learned from aggregated data to implement work practices. When the work practices that AI tools introduced helped users to enact identities to which they had aspired, they accepted these shifts in how their work was accomplished. But users also resisted work practices implemented by AI tools when these practices violated the boundaries of their identities. Of the two types of scheduling tools in this investigation, Time Wizards' tool that made decisions with less oversight from users encouraged more resistance than Smart Hours' tool, which encouraged user oversight. The data show that such dynamics occurred because the Time Wizards' tool made the consequences of its autonomous decisions obvious to the user. Paradoxically, users who implemented Smart Hours' tool that acted with less autonomy found it difficult to notice which practices they could or should resist. Last, I discuss the theoretical and practical implications of the introduction of work practices by artificially intelligent scheduling technologies for people's work and identities.

AI-Aggregated Work Practices and Identity

Understanding how work practices introduced by artificially intelligent technologies shape individuals' identities requires explicating the centrality of work practices for identity

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construction. Below, I draw on symbolic interactionism (Blumer, 1969; Mead, 1934) and structuration theory (Giddens, 1984; Scott, Corman, & Cheney, 1989) to theorize the relationship between work practices and identity. Consistent with a practice-based perspective on work (Kuhn, Ashcraft, & Cooren, 2017; Nicolini, 2009; Orlikowski, 2000; Vaara & Whittington, 2012), I conceptualize identities as ongoing accomplishments that are constructed in practice through the instantiation of rules and resources. I draw on Swidler's (1986) work on practical action to theorize the process through which people draw on rules and resources from their cultural toolkits to put into practice and how AI tools insert new practices into people's toolkits for action. From this perspective, the introduction of new work practices by artificially intelligent tools will shape people' identities, because identities are ongoing projects that are always constructed in practice.

A Symbolic Interactionist View of Action and Identity

Symbolic interactionism serves as a useful theoretical perspective for understanding how identities are constructed in action (Blumer, 1969; Cooley, 1902, 1918; Mead, 1934). The intellectual tradition of symbolic interactions rests on the premise that meanings are not fixed or intrinsic to objects or people. Instead, meanings are constructed in interaction as people act towards focal objects or people. People interpret how others act towards them to reform their understanding what it means to be themselves (Cooley, 1902). Because of this ongoing loop between action and meaning, people's identities, or the meanings that they assign to themselves, are not fixed. Instead, the self is a social product that is shaped as people interpret their own actions and how others act towards them. People's images of themselves are continuously shaping and being shaped by meaningful action (Prasad, 1993).

From a symbolic interactionist perspective, communicative behavior creates, alters, and reinforces the meanings that people assign to their identities. Individuals communicate to others in attempts to present their own conceptions of themselves (Goffman, 1990). I use the term identity enactment to refer to the behaviors that individuals themselves choose to communicate their identities to others. In turn, others interpret individuals' communication and interact with them based on the meaning that they assign to that individual. As individuals monitor others' communication with them, they reinforce or alter their existing conceptions of themselves (Cooley, 1902). For example, when an individual's identity is threatened by others, they may alter their identity performance by offering greater protection for the identity, restructuring their identity to be more desirable, or hiding parts of their identities from others (Petriglieri, 2011). In this way, the meaning that people assign to their identities are handled and modified through the interpretive processes of interaction.

Not only are identities constituted in interaction, they also do not exist in the abstract apart from other social structures. To situate identities within a larger landscape and to explain how people draw on social resources to enact identities, Scott et al. (1998) developed the structurational model of identification. Drawing on Giddens' (1984) structuration theory, Scott et al. (1998) conceptualized identities as organizing structures made up of rules and resources on which people can draw to produce action. The rules and resources of identities enable and constrain action by providing guidance for what patterns of action are considered acceptable. Examples of rules and resources are "core beliefs or assumptions, values, attitudes, preferences, decisional premises, gestures, [or] habits" (p. 303). People encounter rules and resources in the course of the work as they participate in organizations (Endacott & Myers, 2019; Scott & Myers, 2010), occupations (Endacott & Leonardi, 2020) and institutions (Barley & Tobert, 1997). The

rules and resources on which people can draw to enact identities coalesce into various identity targets as people draw on targets in similar ways over time (Scott & Myers, 2010). Because people tend to act in routinized ways to sustain ontological security (Giddens, 1984), certain sets of rules and resources tend to get legitimized as they are continuously produced and reproduced in specific domains. Through this reification, identities, such as an organizational identity or occupational identity, are constituted. Identities can then serve as anchored repertoires of communicative practices (enactment of rules and resources) that appear taken for granted on which people draw to act.

Research that has drawn on this structurational approach has shown how people draw on the rules and resources of identities in order to produce action and with what consequences. One stream of work within this approach has assumed that different targets of identification provide different rules and resources for action and so have measured people's identification as a predictor of various work-related outcomes, such as burnout (Lammers, Atouba, & Carlson, 2013), intent to remain in organizations and other collectives (Scott et al., 1999; Scott & Stephens, 2009), and willingness to share one's organizational membership on social media (Piercy & Carr, 2020). Other work has looked at the content of identities themselves to understand how identities shape ongoing work. For example, these studies have shown how identities provide rules and resources like emotion management norms (Scott & Myers, 2005; Tracy, 2000), professional codes of conduct (Endacott & Leonardi, 2020; Lammers & Garcia, 2009) and specialized sets of expertise (Beyer & Hannah, 2002; Endacott & Myers, 2020) on which people draw to accomplish their work. Other work in this vein of research has shown how people draw on rules and resources of professional identities to sustain their participation in questionable work practices, such as morally ambivalent work (Kuhn, 2009), counter-productive

work (Leonardi, Jackson, & Diwan, 2009), and overwork (Kuhn, 2006). Together, these studies show how people's identification shapes their action as they draw on the rules and resources that these identities provide.

While existing studies acknowledge that a structurational relationship between identity and action exists theoretically, this relationship is rarely represented empirically (for a notable exception, see Kuhn & Nelson, 2002). In the studies that test the relationship between identification and various outcomes, identities are treated as static entities that are assumed to contain different rules and resources that make a difference to various outcomes (e.g., Lammers et al., 2013; Scott et al., 1999). And even when studies do describe the content of identities by examining the rules and resources that they provide (e.g., Endacott & Leonardi, 2020), they tend to focus on how identities shape action, not on the ways that ongoing action shapes the content of identities themselves. The rules and resources that identities provide are not fixed, nor do they exist apart from how people put them into action. Instead, the content of identities can change as people adopt new work practices (Scott et al., 1998, p. 308), for example, following an exogenous shock (Barley, 1986) or more subtle and elective choices over time, because people's actions are also constitutive of identities themselves.

Theorizing how changes in how people work and communicate change the rules and resources that make up identities is important because identities turn ephemeral practices into rules that are taken for granted across time and space. If practices change the content of identities themselves, then those identities further guide and legitimate other actions across time and space. To theorize not just how identities shape action, but how identities are accomplished in practice, I turn to a practice-based view of identity.

A Practice-Based View of Identity

While the symbolic interactionist view of identity assumes meaning is constructed in action and the structurational view shows how social structures are drawn on to do so, a practice-based view of identity extends this thinking to argue that identities are always accomplished in ongoing practice. In the broader field of organization studies, scholars have taken a turn toward practice theory, a broad family of perspectives that "highlights how reality is a complex and ongoing accomplishment" (Kuhn, 2020, p. 2). This accomplishment occurs through people's practices, which are recurrent goal-oriented activities made possible by material resources (Leonardi, 2015a; Nicolini, 2009).

The turn towards practices affords scholars the opportunity to see how constructs like knowledge (Gheradi, 2001; Kuhn & Jackson, 2008; Rennstam & Ashcraft, 2013), expertise (Treem, 2012, 2016), and technology (Orlikowski, 2000) do not exist as *a priori* categories but rather are enacted by interactions among actors. Instead of conceptualizing knowledge or technology as nouns, a practice-based perspective conceptualizes them as verbs: they are things that people *do* rather than things that people *have* (Rennstam & Ashcraft, 2013). While these constructs may seem as if they exist apart from action (for example, the actions that a technology afford may seem embodied because lots of people use it in the same way; Orlikowski, 2000), it is only because the practices through which they are enacted have been taken for granted.

This same turn towards practice can inform theorizing on identities by conceptualizing identities as being made in what people do, not something that people have, that then motivates their action. I call this an identity-in-practice approach. An identity-in-practice approach extends the structurational underpinnings of Scott et al.'s (1998) model to fully acknowledge the role that action, as evinced in practices, plays in constituting identities. Instead of treating identities as

static, it explores how the ongoing streams of action in which people participate reinforce or alter what identities are. By assuming that identities are always constituted in practice, a practice-based perspective of identity also erases boundaries between what we might normally consider to be specific practices that are identity-related and those practices that are not. In the context of work, all work practices help people to construct their work-related identities. This is because work practices communicate "to other individuals the type of work one should do, how that work should be done, and the value of working in some ways over others" (Leonardi, 2015a, p. 249). Any choice that an individual makes about what their work is, how to do it, when to work and with whom to work communicates their identities to others.

Though emerging theoretical perspectives provide grounding for conceptualizing identities as accomplished in practice, they do not provide much guidance as to *how* this actually occurs. To theorize more concretely how practices constitute the content of identities, I draw on the work of Swidler (1986, 2001). Swidler argued that social landscape provides people with a vast array of rules and resources (norms, values, skills, etc.) on which they can draw. People select rules and resources on which they draw to act with varying degrees of consciousness, producing a practice. While all of these rules and resources are potentially available at any one time, people tend to configure their practices in relatively patterned ways over time to construct their "strategies of action" (p. 280). As people recurrently enact these practices, the associated rules and resources coalesce into frames of meaning that are taken for granted by actors themselves (Leonardi, 2011), including the meanings that people assign to their identities. Thus, individuals' choices about adopting some practices and not others are meaningful in that they form the boundaries of their identities.

In the context of work, the practices that people select to enact from the cultural landscape are meaningful for their identities in two ways. First, practices play an instrumental role in that they make it possible people to carry out the nature of their work. Practices help people fulfill the expectations that others have for them in their roles (Leonardi, 2015a). But second, an equally important function of work practices is that they are also *communicative* of people's identities. How people choose to act at work communicates what they value and the roles that they would like to play (Scott & Myers, 2010). For example, the practices that people choose to enact help them to signal their membership in a community of practice (Orr, 1996) or their desired role as an expert (Treem, 2016). Thus, even seemingly innocuous work practices communicate some aspects of people's identities to others around them.

Swidler's (1986) perspective highlights the agency that people retain over the practices that they choose to select. Though cultural expectations may lead to people enacting identities in relatively similar ways over time, people are free to decide on which practices they will enact to define their identity. I show this relationship in Figure 2. The white box shows a field of virtual rules and resources that are available for people to instantiate in practice. At any one moment, people draw on some practices but not others to enact their identities, as shown in the gray box. People may always choose to draw on different practices at different times, as depicted by the dotted lines around the enacted identity. However, people's agency to select work practices is challenged by the implementation of AI tools that make decisions about work practices on their behalf. For example, a person may choose to communicate their identity by engaging in work practices like treating every customer equally at some moments and adhering to a strict code of ethics but may choose to act with more discretion and/or act according to self-interest in other moments. However, if AI technologies artificially insert sets of work practices into this

repertoire and carry out action on their behalf, the content of their identity changes because the practices through which they enact that identity have changed. If, as I argue in the practice-based view of identity outlined above, changes in practices are always concurrently changes in the nature of work-related identities, then the practices which AI technologies afford have important implications for workers' identities. To take seriously the identity-related implications of changes in practices introduced by the implementation of AI technologies, the nature of these practices and how they originate needs to be understood.

Figure 2. The enactment of identity using work practices.

Possible Rules and Resources

Practice 1

Practice 3

Enacted Identity

Practice 2

Practice 4

Practice 5

Practice 6
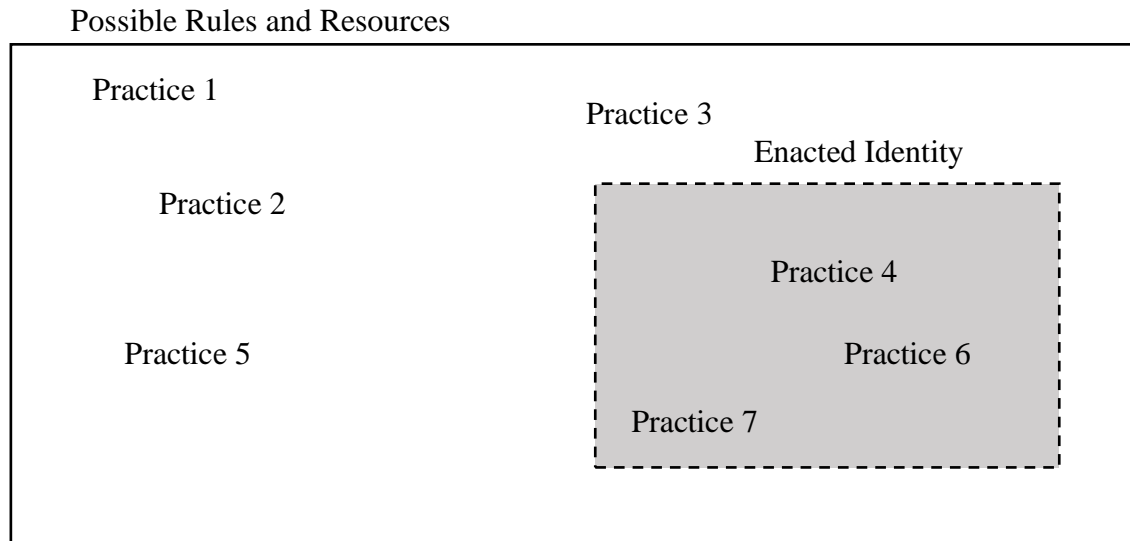
Practice 7

The Development of AI-Enabled Work Practices

Most broadly, artificially intelligence refers to computational processes that are designed to mimic human intelligence in how they learn, make decisions, and solve complex problems (Nilson, 2010). Artificially intelligent technologies make all kinds of decisions, such as assessments, forecasts, and diagnoses. While all these tools prompt the possibility of changing work practices, one emerging set of artificially intelligent tools, AI technologies that facilitate interaction or interact with others on users' behalf, may have especially significant implications

for work practices. These AI technologies are tools that are designed to autonomously make decisions about the nature of people's interactions, including with whom they communicate, via what medium, at what time, and for how long (Hancock et al., 2020). These tools directly implicate identity because interaction is the site where identity is constructed.

AI tools are able to make decisions, including decisions about work practices, via computational processes of machine learning. At the most basic level of explanation, machine learning is a method of analysis through which machines learn from patterns in data and execute decisions based on the likelihood that the decision will produce a desirable outcome (either determined by a programmer in supervised machine learning or inductively identified by the machine in unsupervised machine learning, Nilson, 2010). Machine learning algorithms, which build models from data to make these decisions, improve with more data. Most machine learning algorithms require more data than any one person could reasonably collect or analyze. These data inform decisions made by AI such that an action is selected based on the probability that the action will produce a desirable outcome for the majority of users the majority of the time. Accordingly, when AI tools make decisions on behalf of users, they make decisions that are optimized for the highest chance of success (as defined by the developers of the machine learning algorithms that make these choices) across use cases, especially when executing complex work practices like natural language processing in which AI tools interpret and communicate in linguistic text. The sophistication of these tools depends on their ability to improve over time for as many use cases as possible. Because AI decision making is, by definition, contingent on probabilistic decision making, it is in companies' best interest to design tools that have the greatest likelihood to make desirable decisions as often as possible.

As AI may learn how to identify and implement work practices in ways that regress toward the mean – that draw on the most robust patterns that hold across users, they may implement new practices that non-average users themselves would never have chosen. Work practices that are selected by AI tools from aggregated data are likely to differ from how people themselves select work practices. For example, Google's predictive text function uses machine learning to provide suggested text to users as they write emails. This function automatically suggests text based on data gathered from all users' emails. For example, if a user begins to write, "I hope," suggested text of "this finds you well" will be displayed. It could be, however, that the user had intended to write "I hope you're staying safe." But the machine learning algorithms that power this tool must predict text based on what is most likely to be optimal for the greatest number of users. If more and more users accept the suggestions of the tool, a likely outcome is that writing in general will become more homogenized, as people implement the patterned work practices gleaned from big data analysis that are suggested, or sometimes imposed, by the AI.

As AI tools bring about the possibility of selecting work practices that users themselves would not have chosen to enact, it also brings about the possibility of changes in users' identity. While people draw on their own preferred identity structures to produce action (Scott et al., 1998), an AI tool assumes that the work practices of the majority are constitutive of a desired identity for each individual user. Accordingly, as users draw on AI tools to make decisions about their own work, they may enact various work practices that change the rules and resources that make up identities. As others observe and respond to their work practices, the identify-shifting effects of AI are likely amplified, because of the symbolic interactional nature of identity. Because AI tools can introduce new work practices into how people normally go about their

work, AI tools may contrive changes in how people recurrently enact their identities. I depict this relationship in Figure 3, which shows that AI technologies are enacting different practices on users' behalf (practice 2 and 5 are now included in the practices through which identity is enacted). I also show that it can make enacting some practices difficult (practices 7 is now excluded from the box around the practices which are enacted). The solid line around the practices shows that the set of practices which AI technologies enact are more fixed than those which people can select at will.

Figure 3. The enactment of identity using work practices introduced by AI

Practice 1   Practice 3

                                    Enacted Identity

Practice 2

                    Practice 4

Practice 5   Practice 6

              Practice 7

Practices Implemented by AI Tools on User's Behalf
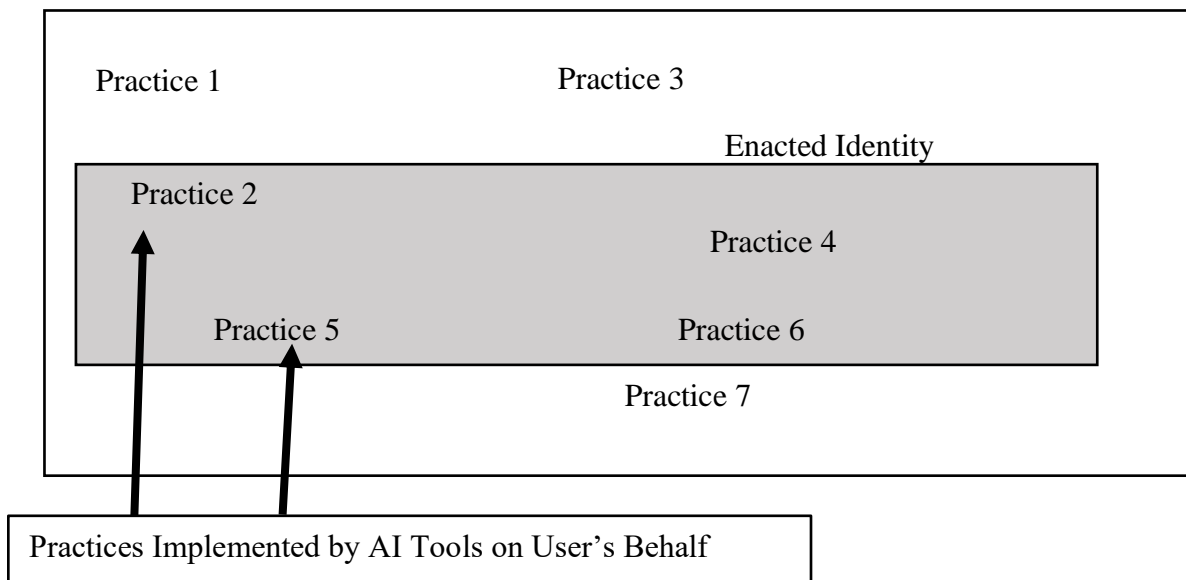
Changes in how work practices are accomplished are not innocuous, nor do their implications end with altering work itself. Instead, changes in work practices matter because they also change the content of identities, which further stretch these practices across time and space as they legitimize and organize them into coherent plans for action. From a practice-based view of identity, the introduction of work practices that are optimized for users in aggregation may also lead to a homogenization of identities themselves. It is imperative then to understand what

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these practices are and where they originate to understand what the larger impacts of AI technologies that facilitate interactions will be. To investigate how the introduction of work practices by AI technologies which may or may not align with users' desired identities shape their identity enactment, I turn to a comparative inductive study of Time Wizards and Smart Hours' technologies.

Method

Research Design

To explore how the introduction of new work practices by artificially intelligent technologies shaped users' identity enactment, I drew on interviews with developers and users of both Time Wizards and Smart Hours. Both of these companies sold software that helped individuals schedule and manage their calendar that was enhanced by artificial intelligence. Both companies implemented these tools across a wide base of users and gathered user data. Thus, both companies had aggregated data on which they could draw to gain insight into user behavior and to improve their machine learning algorithms.

Though both tools had access to aggregated data, they leveraged these data and presented decisions informed by these data in different ways. Time Wizards used aggregated data to develop natural language processing so that users and their communication partners could schedule using written prose. Their scheduling bot interpreted users' and their communication partners' requests to schedule meetings onto their calendars directly. The bot could send messages to others and make decisions about the user's interactions without the user's active agreement (though users could confirm the tool's decisions in later iterations of the tool). Time Wizards used aggregated data to train their agent to interpret requests as accurately as possible and to optimize its actions to yield the highest likelihood that meetings were scheduled.

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In contrast, Smart Hours used aggregated data to offer suggestions to users that they could then implement. These suggestions also required natural language processing, for example, to offer predictive text when the user was typing in the name of a calendar event, but in far more defined ways. Smart Hours also offered suggestions that were informed by artificial intelligence to users, for example, by suggesting default meeting times, the best times for scheduling a meeting, and who should be invited to a meeting. Unlike Time Wizards, which made decisions without users' consent, Smart Hour users had to select these options to implement them.

The design differences between these two tools allowed me to observe how the form in which work practices selected by machine learning were presented to users shaped their awareness and acceptance of these practices as part of their identity enactment. These variations helped me to avoid assumptions about how AI tools select work practices on behalf of users by helping me see *how* aggregated data can be assembled and presented to shape ongoing practice.

Data Collection

To first understand how AI technologies are designed to make decisions about work practices, I interviewed developers at Time Wizards and Smart Hours. I chose to interview developers because they could articulate the material choices that they made in designing the tools as well as the meanings that they attributed to the gathering of large swaths of data from users and what they planned to do with it. I asked them to discuss why AI is suited for helping people to manage their calendars, how relying on an AI scheduling tool shapes the identities of users, how their respective AI tool learns from aggregated versus individualized data, and what they hope that they can accomplish with their tool in the future. Altogether, I conducted 14 interviews with developers.

I also wanted to explore users' perceptions of the work practices that were offered by their respective tools what these new work practices meant for the enactment of their identities. To do so, I spoke with 30 users of Time Wizards' and Smart Hours' tools. Most users participated in two interviews over time, for a total of 52 interviews. In these interviews, I aimed to elicit users' perceptions of the decisions their respective tool made about work practices that were shaped by aggregated data. I could not assume that users knew how their respective tool was designed to learn from aggregated data, since they could only speak to their individualized experience of using the technology. For this reason, I could not ask users outright about how the tool's reliance on aggregated data shaped the work practices through which they enacted their identities. Instead, I asked users about instances in which the tool made decisions differently than how they would have made the decisions themselves. I also asked what changes they would make to the tool to help it better align with their identities, which helped me to understand ways in which they saw the work practices introduced by the tool as inhibiting the enactment of their identities.

Data Analysis

I took an inductive approach to analysis that utilized selective coding (Strauss & Corbin, 1998) to address my research questions of interest. To understand how both tools made decisions about work practices, I analyzed all interviews with developers from Time Wizards and Smart Hours. I flagged text that described how each company's respective tool was designed to learn from specific user data and aggregated data and how these data would be leveraged in the future. I found that developers at both companies described the importance of using aggregated data to help make their tools the best and most useful that they could be, but with different guiding visions about how best to accomplish that.

Next, I used interviews with both users and developers to understand the work practices that the tool introduced into use. I asked users for their own descriptions of what work practices the tool implemented on their behalf. I used data from developers to confirm users' perceptions that these work practices were being selected by artificial intelligence. I identified four work practices that the Time Wizards tool introduced into use (respond to requests quickly, follow up to make sure meetings happen, schedule at the first available slot, and take all participants' schedules into account) and four work practices that Smart Hours introduced into use (suggest rescheduling meetings to avoid conflicts, share availability with people with whom they schedule often, suggest video-conferencing integration, and suggest meeting duration). A description of these practices with exemplar data is shown in Table 4.

Finally, I analyzed all interviews with users of Time Wizards and Smart Hours. I used selective coding to flag instances of text that discussed the work practices made possible by the AI technologies and how they perceived the similarities and differences between how they themselves scheduled and how the AI tool scheduled. This allowed me to identify areas in which users might accept or resist these new work practices. I flagged users' descriptions of their acceptance (such as allowing the AI tool to continue to schedule them in many meetings) or resistance (such as blocking off time so that the AI tool could not schedule them then). Such an approach allowed me to access users' observations about AI-enabled work practices that differed from their own preferences and how they responded, as it was likely that participants could not directly speak to which practices were informed by aggregated data. I assigned open codes to the text I had selectively coded, such as "codifying non-work demands" and "responding to others more quickly." I then combined similar open codes to create axial codes at a higher level of abstraction. Through this process, I was able to identify users' two responses to work practices

Table 4. Work Practices introduced by Time Wizards and Smart Hours.

Company	Work Practice	Example Data
Time Wizards	Respond to requests quickly	"I would send out a thing that says, 'Yeah, let's do a meeting this weekend.' Immediately, Liz would start the process." -*Ethan*
	Follow up to make sure meetings happen	"I meet with more people because of the persistence of Liz. You know, on the follow-up. And when I get a weekly meeting report and someone hasn't responded, she passes it back to me." -*Ron*
	Schedule at first available slot	"Unless you tell them not to, Liz and Leo will take the first available slots. It's not like with a human assistant where you could say in some coded way, like, 'I want to have coffee with this person, but I want it to be low priority.'" -*Joe*
	Take all participants' schedules into account	"My assumption is that I put her in the email and hope for the best because my assumption is she's going to send everybody times to pick, and then she'll aggregate which ones overlap." -*Matt*
Smart Hours	Suggest rescheduling meetings to avoid conflicts	"There's the AI part of Smart Hours that I find very useful because it essentially preempts some of the things— it prevents me sometimes from overthinking what my calendar looks like. Because I can know that it's not going to double booked me."-*Jenny*
	Share availability with people with whom they schedule often	"Some people - they also use Smart Hours - I share availability with. And that's actually my least favorite one because they'll just book anytime in my calendar and it's annoying."-*Oliver*
	Suggest video-conferencing integration	"It understands what my Zoom line is and understands that it's a 30-minute meeting, but the rest of it kind of gets filled out a little bit more fluid and quickly while making it feel an actual part of the, the creation process."-*Daniel*
	Suggest meeting duration	"I think they have suggested templates when you start, if I remember correctly." -*Michelle*

implemented by AI: 1) accepting AI work practices to enact an aspirational identity, and 2) resisting AI work practices to avoid boundary violations.

Last, I compared users of Time Wizards to users of Smart Hours to see how differences in the ways work practices were presented (as autonomous decisions or as suggestions to users) shaped users' efforts to accept or resist them. I compared how users of Time Wizards discussed acceptance and resistance of AI-enabled work practices to how users of Smart Hours did. I found that Time Wizards users were more likely to discuss resisting work practices implemented by their respective tool than Smart Hours users were. I revisited the data to look for further explanation. While part of this difference stems from the fact that Time Wizards users had more AI work practices to resist (as the tool had a broader set of AI-powered capabilities), this was not the only explanation. It was also clear from interviews with Smart Hours users that they did not recognize which components of the tool were informed by AI and reported little resistance to default settings embedded in the tool. This was a conspicuous absence, especially compared to the efforts of Time Wizards users to push back against the homogenization of their work that they experienced when using Liz and Leo. These findings are discussed in detail below.

Findings

Developers at the two companies that designed and sold AI scheduling technologies described how gleaning insights from aggregated data helped them create tools that could make better decisions about users' work practices related to scheduling than users could make themselves. Users both embraced and resisted these decisions in use. Sometimes they embraced the work practices that their respective tool introduced because doing so helped them to enact their aspirational identities. But on other occasions they resisted the tool's attempts to shape their work and, by extension, their identities, by inputting their own specialized constraints and

preferences to override the decisions made by the AI tools. Time Wizards users were more conscious of choices made by their AI tool and, accordingly, were more likely to resist the work practices introduced by the tool than Smart Hours users were. These findings are explained in detail below.

Tensions Between Designing Tools for Personalization and Optimization

To explore how the introduction of work practices by AI tools shaped users' identities, I began by learning how these tools were designed to make decisions about work practices from developers. At both companies, developers spoke about how designing tools that could mimic how users themselves made decisions about work practices by learning from users' personalized data could be valuable. Developers at both Smart Hours and Time Wizards acknowledged, at least cursorily, that their tool was designed to learn from within-case user data and to make decisions about work practices based on these learning processes. For example, Onat, the lead data scientist at Smart Hours, recounted how they designed the tool to learn about all of users' previous events, to which users granted access when they allowed Smart Hours to schedule onto their calendar. He said, "When a user creates a new event, we will actually automatically pull past events that we think are related to what they're trying to do and suggest them as possible candidates." At Time Wizards, users could access a similar function, which suggested events that were specific to a particular user's preferences. Diego, the lead data scientist at Time Wizards, explained, "We have a smart way of guessing if a certain meeting is lunch meeting, because the algorithm gets to process all the things that it's guessing are lunch meetings and can see what the other times are when she [the user] has lunch and what's the typical window. So that becomes suggestive." Diego explained that being able to suggest decisions for users that are informed by their own unique data adds value: "We have this notion that we're very strongly trying to

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impose, which is that it adds a lot of value to our product to have suggestions… like if we can

pre-populate preferences for the user based on their calendar, their habits, that will delight them."

However, when it came to how these tools were actually designed to learn, developers

said that their tools were advantaged by the accumulation of large data sets. Developers said that

the fact that their tools could schedule based on patterns unearthed in the data was a benefit,

because the identification of these patterns transcended what one user alone could learn. Both

companies saw the accumulation of a high volume and variety of data as an asset to their

company. For example, David, the co-founder of Smart Hours explained, "One benefit that

we've encountered so far is that we have amassed a lot of data. We have access to 36,000

calendars and 50 million events. We can see into all the organizations that interface with one

user's calendar, so we get to learn about the meeting culture of all these organizations." And

Diego, the co-founder of Time Wizards, explained,

> We get to go deeper on how people schedule because we have a shit ton of data that no
> one else has… we've had the product out there in the real world collecting data for us. In
> academia, we would have like a tiny data set with students labeling some kind of crap,
> but this is not that. This is the real world, how people are scheduling meetings in the real
> world.

As both David and Diego's comments show, both companies had access to data that showed

them patterns in how lots of people scheduled across many different companies, data that were

above and beyond what individuals could have collected themselves. In the case of Time

Wizards, this data informed the autonomous decisions that Liz and Leo made, because the bots

needed to draw on vast amount of data in order to make complex decisions about users'

calendars. In the case of Smart Hours, practices informed by aggregated data were offered as

suggestions. But developers at both companies envisioned drawing on their data sets to teach

their tools to schedule in optimized ways across users, even if they acknowledged that users

themselves wanted tools that would learn their individualized patterns. Their reasons were doing so were twofold: 1) large datasets helped them overcome the technical constraints of machine learning, and 2) the mechanics of the market warranted an appeal to predictive analytics informed by aggregated data.

A Technical Case for the Optimization of Work Practices. Developers said that they used aggregated data across users because it was difficult for machine learning algorithms to learn from just one user's data. The dataset of one specific user was not sufficient to train machine learning algorithms that would have a reasonable degree of accuracy. As Diego explained, learning a specific user's preferences would be "impossible because there's not enough data." He said,

> To do any sort of training you need hundreds of data points, if you're doing deep learning which is what we are doing, then you need hundreds of thousands of trained data points. Or millions depending on what you're doing. So, a single user [wouldn't work], you have to play this game of training happening in aggregate, but user preferences are coming in as constraints.

And Onat, the lead data scientist at Smart Hours, explained that the AI capabilities of their tool were just not equipped to learn the subtleties of one person's style of work. He said, "There are things that require context that a machine, unless the machine was with you from your birth or at least whatever context you have, is not going to know." He compared understanding one person's specific preferences to the role of an executive assistant: "Even with executive assistants, you know, as human intelligence as you can get, they still need to constantly be fed the context of what's going on in your life to be able to manage your calendar." He explained that "a machine is not going to understand these things."

By relying on aggregated data, the companies ensured that their models would be able to continue to learn and improve. Xiaotong, who oversaw human training at Time Wizards,

explained that any work of paid human trainers or unpaid users will help Liz and Leo improve

and increase the probability that they will make more appropriate decisions. She said, "Liz and

Leo are constantly improving. Any input will feed the model." And as Diego explained, the

variation in Liz and Leo's decision making should decrease over time as the system optimizes:

"Let's say we see the agent take a decision at a juncture and 80% of the meetings get cancelled,

that's a red flag that it's the wrong decision. So, we try another decision that brings it from 80%

to 70%, we move it in a good direction. We're optimizing the system."

A Business Case for the Optimization of Work Practices. Developers did not only rely

on aggregated data because of technical limitations, but because they thought the market

demands warranted a reliance on aggregated data. Smart Hours co-founder David explained that

any sort of "entrepreneurial endeavor" involves figuring out "what's most valuable to the largest

number of people." He explained that this shaped how they trained the AI capabilities of the tool,

because they wanted to develop models that made decisions in ways that would benefit the

greatest number of users. He explained that the task for his company and others like it was to

determine the scheduling patterns that would apply to the most people: "We start seeing things in

scheduling behavior, like do people schedule more with other people individually or do they

schedule with groups? …We look at what's valuable for the masses and that serves as the

priority for us. And the data gives us lots of hints about what that is, even if it doesn't exactly

give us all the answers."

Developers at both companies saw the aggregation of user data to train an agent to make

decisions optimized on a given set of constraints as a unique *asset*, rather than as a limitation. In

other words, they saw their product as useful for users *because* of its capability to schedule based

on the aggregated crowd rather than individual users' preferences, not in spite of it. One rationale

for this is because developers perceived users as ill-equipped to know how to always best

schedule themselves, even if the reasons differed between the two companies. Time Wizards

developers saw users as ill-equipped to schedule themselves because they were not good at

codifying their schedules and because people often assumed they were better at scheduling than

they really were. He said, "When people codify the decisions they make, they codify the

aspirational self. So, they think Liz or Leo are making a mistake, but really, they just don't know

how to codify their preferences. Not to be crude, but we end up getting shit for the aspirational

self." At Smart Hours, developers perceived users as ill-equipped at knowing how they're really

spending time and making decisions based on priority, rather than availability. David explained,

"People often plan based on availability, rather than priority. And what our tool can do is track

and manage how people spend their time and make decisions for the user so they don't have to

make them every single day."

Considering that both companies perceived some flaws in what users were able to know

about their schedules, developers saw opportunities for their respective tool to improve upon

users' own decision-making capabilities about their calendars. For example, Mikkel pointed out

that, despite the pushback that they received from some disgruntled users, an agent could help

users become their "aspirational selves" by "helping you adhere to what processes you would

like to put in place." And Bruce, the head of product design at Smart Hours, assumed that their

tool would help users transform into the people they wanted to be. He said,

> The final stage in our economy is the business of transformation. That's when people say,
> 'I want to become this type of person and I would pay you to help me become them.' I
> think that's the final step… so our step is to think about, how would scheduling transform
> you?

Bruce went on to explain how understanding more about patterns that are likely to be valuable

for people's transformation – for example, knowing about what amount of time dedicated to

focus people need to be creative or how to prompt them to introduce more novelty into their days – is a key area where Smart Hours will contribute. And such contributions would only be made possible by the aggregation of data to help the tool learn more about the behavioral patterns that lead to the outcomes that the company wanted to help their users obtain.

Developers saw leveraging aggregated data to optimize how the tool made decisions about work practices as a key part of their business strategy for the future. For example, Smart Hours developers discussed how they could apply the behavioral patterns that they detected in the data to help develop tools that are most likely to suggest behavioral patterns that will please users in aggregate. David said that they could learn "how many days in advance people schedule meetings based on the number of participants." These types of insights could help Smart Hours develop decision making capabilities of its tool in ways that optimized the likelihood that meetings occurred. As David said, Smart Hours was interested in these types of possibilities because "we're really interested in shaping people's best practices." David said even though Smart Hours offered users lots of flexibility in scheduling now, he wanted the company to more explicitly help people schedule better in the future. He believed that the data the company had collected would eventually benefit users by offering them data-supported best scheduling practices. And Time Wizards developers discussed how they will develop an agent that will act based on the best practices gleaned from the data. Mikkel suggested a variety of ways that Time Wizards hoped to implement this, for example, by investigating questions like, "those managers who keep to their one-on-ones, do they retrain people longer? Those managers who delete or don't do their one-on-ones, is it not working out?" or "what is the perfect meeting cadence to keep a group of five people aligned to what they're supposed to deliver?" or "can we suggest meeting locations where people are most likely to meet valuable network contacts?" Mikkel, as

the CEO of Time Wizards, talked about how developing an agent that could use aggregated data to answer these questions and make decisions in line with the best practices these data suggested was crucial to developing the full capabilities of Liz and Leo. As Mikkel summarized, "There's plenty of insights that come out of assembling this data in aggregate."

As comments from developers at both Time Wizards and Smart Hours show, the aggregated data collected from users were utilized to train AI technologies to make decisions about work practices on users' behalf. At Time Wizards, aggregated data was used to train the machine learning algorithms that allowed Time Wizards' agent to communicate and schedule on users' behalf. And at Smart Hours, aggregated data was used to train the machine learning algorithms to offer suggestions about the work practices in which users should engage. In both cases, developers saw using aggregated data to train AI technologies to make decisions about work practices as both a technical necessity and an economic opportunity.

The Incorporation of Aggregated Work Practices into Use

After understanding how AI tools were designed to draw on aggregated data to make decisions about which work practices to implement on users' behalf or suggest to them, I focused on the implications of introducing these work practices for users' identities. Because of the nature of the phenomenon, users were limited in the degree to which they could articulate which practices were shaped by aggregated data. Because they could only know about their own practices, the design choices behind their respective tools were opaque. But users could make observations about how helpful they perceived the suggestions and decisions made by their respective tools to be and describe the extent to which they allowed these decisions to intervene in their work.

By comparing Time Wizards and Smart Hours users, I found that Time Wizards users made more conscious decisions about accepting or resisting the work practices introduced by the tool. Some Time Wizards users did accept the work practices implemented by Liz and Leo when these practices helped them enact their aspirational identities and so they welcomed the shifts to their identity. But many Time Wizards users resisted decisions made by the tool by overriding the aggregated work practices with their own constraints. Doing so allowed them to avoid shifts in how they enacted their identities. In contrast, Smart Hours users rarely noticed new work practices introduced by the tool. These work practices were introduced as suggestions, rather than as autonomous actions. Users often accepted these suggested work practices, which represents a more subtle way of shifting work practices and identities.

Time Wizards: Noticing AI-Produced Work Practices and Deciding whether to Accept or Resist Them. As Liz and Leo acted autonomously to manage their calendars, users said that they noticed many instances in which Liz and Leo made different decisions than they would have made themselves. For example, one user, Joe, noticed that Liz and Leo were trained to schedule with relative "uniformity," treating each meeting as equally urgent rather than capturing nuances involved in scheduling. This uniformity meant that he sometimes would agree to someone's request to meet with him to do them a favor, but the tool treated that meeting as equally important as his more pressing work meetings. The result was that he would find himself meeting with someone with whom he did not need to meet, giving him less time to attend to more urgent tasks. After observing this, Joe said that he realized that he had to be more cognizant of the tool's default decision-making processes. He said that he learned that a "perfect user for this is someone who has a high volume of meetings and for whom the interactions about those meetings are relatively uniform, like a recruiter or a salesperson." He said that his work did not

align with this model. Instead, he said that his work involves weighing different types of meetings against one another to make decisions about how to spend his time: "I have to do a decent number of meetings, but they are not uniform…I'm not like a recruiter where I would just need to talk to as many people as possible or a salesperson whose needs for outreach are very concrete and transactional." He said noticing these differences between his work and that of Liz and Leo helped him to learn that "If you're not really intentional about how you schedule your time, [Liz and Leo] will take the first available slot."

Users easily noticed how the tool did not schedule according to their preferences because they encountered the immediate consequences of the actions that the AI tool took on their behalf. As Liz and Leo set out to manage their calendars, users found that, without active intervention to override the default work practices of the tool, they were often scheduled in ways that differed from how and when they enacted their work identities. For example, Jenn, a college professor, noticed that Liz would put meetings on her calendar during times that she had set aside to eat lunch, go to the gym, or prepare for an upcoming lecture. Once the meeting request had been sent to a communication partner, she felt responsible for attending the meeting. Having to participate in meetings with "people I don't like or about a topic that I'm not excited about" led her to speculate about the differences between how the tool allotted her time and how she would have allotted it working alone. She said, "On the one hand, it forces me to think about my time and forces me to do things that I don't really want to do. At the same time, it decreases my flexibility for the things I really want to do." Like Jenn, other users experienced the consequences of decisions made by the tool that made them aware of the very real control that Liz and Leo had over their work practices. For example, Marie found herself getting scheduled

for meetings on "days that I was going to have to go pick up my child in the afternoon. So then I would be screwed."

Whether users saw themselves getting "screwed" by the decisions of Liz and Leo or aided by them, the fact that the tool made decisions about their work that were communicated to others helped them to become aware that the tool was introducing new practices that others used to make interpretations about their identities. As Marie pointed out, she learned all the unspoken rules of arranging her schedule that she hadn't previously noticed, like "all those little things into your calendar which normally you wouldn't have to, because, in your head, it just makes sense because you're the one looking at your calendar." She explained that if Liz and Leo are going to make decisions on her behalf, "You have to start seeing your calendar through the eyes of AI." The actions taken by Liz or Leo offered users an opportunity to consider whether they would accept or resist the new work practices that the tool implemented on their behalf.

As Liz and Leo implemented work practices informed by the aggregated data from which they learned, some users accepted these changes to their work practices because doing so helped them to enact work identities to which they had aspired. They embraced the ways that the AI tool scheduled differently than they would – because they aspired to enact a different work identity than they currently enacted. For example, Richard, who worked in sales for a start-up company, pointed out how "following up and making sure meetings happen is really, really important to what I do, even though it's also antithetical to my personality." He said that Liz's work practice of persistently following up to ensure meetings happened helped him to present himself as a more responsive and less forgetful person to others. He said that, since using Liz, he has found himself attending meetings that he would have forgotten if he were in charge of scheduling himself. He said, "So this one meeting, I didn't even remember scheduling it and this morning

when I checked my calendar, I remembered… so Liz does give me more meetings that actually

happen." This shift in his work practices, from consistently forgetting meetings to always

following through, helped Richard to communicate an identity of an organized and productive

worker to those with whom he met. Another user, Eric, who owned his own marketing company,

explained that he accepted Liz's persistence in scheduling meetings because "It helps me keep

my pipeline much fuller, just because of the follow-up and the staying on top of somebody about,

'Hey I want to meet, when can we meet,' sort of thing without being overly pushy." Like

Richard, Eric accepted the practices which Liz and Leo implemented because it helped him to

complete work at a scale that he alone could not have handled, allowing him to enact an identity

as a more prolific worker. And Benjamin, who was in charge of facilitating connections between

government and private companies, explained that Leo's persistence helped him to present

himself as an eager salesperson, even though he found himself struggling to participate in

meetings when he scheduled them himself. He explained,

> I think there's definitely mornings where I been like 'Aghh, I do need to check my email
> at some point, maybe I won't offer that morning anymore, I'll just move on to the next
> day and fill that up.' But then the AI doesn't know that and, yeah, it schedules you more,
> because it will still schedule a call. I'm certainly getting more of those calls, because
> that's easiest [for it] to do.

Benjamin explained how even though he might not want to do the meetings, using Liz and Leo

as tools that scheduled meetings whether he wanted to do them or not held him accountable to an

ideal work identity as a salesperson. He said, "In my work, being able to meet with lots of people

goes directly to the bottom line. If you're trying to be a good salesperson, you need to regularly

touch people and follow up, so being able to set these things up is pretty good." Users like

Benjamin and Richard chose to accept the work practices that Liz and Leo implemented because

doing so helped them to enact identities that they found themselves unwilling or unable to enact

on their own. Rather than appearing forgetful or disorganized to others, users allowed the tool to schedule on their behalf as a way to enact identities as conscientious workers who were always eager to meet, even though left to their own devices they would have been limited in their motivation or ability to organize their work in the same way. By choosing to accept work practices introduced by the tool, users could shift their work to align more closely with their aspirational work identities.

However, not all Time Wizards users accepted the aggregated work practices introduced by Liz and Leo. As stated previously, as Liz and Leo set out to manage users' calendars, the users found that, without active intervention to override the default work practices of the tool, they were often scheduled in ways that differed from users' own choices. Often, the decisions made by the tool violated how and when users enacted their work identities. In response, some users resisted the work practices implemented by Liz and Leo. For example, Ron worked long hours as a medical doctor but also worked as the primary caregiver for his children. Though he appreciated the efficiency that AI scheduling offered, he found himself facing a recurring problem: Liz would often schedule work meetings over the time he had set aside to spend with his children, such as attending their soccer practices. While users in sales positions may have appreciated Liz's commitment to scheduling meetings so they could enact identities as top producers, users like Ron found the introduction of work practices problematic for their identities (i.e., as working parents). In response, Ron chose to resist the choices made by Liz and Leo by augmenting how he managed his calendar. He learned to no longer mark events that he sometimes attended, such as his children's soccer practices, as tentative, because Liz would schedule over this time and prevent him from having the freedom to attend them. He said that he began to more frequently "artificially block off the time that I need, [because otherwise] she'll

still schedule something." When left unchecked, Liz's scheduling decisions were in service of a starkly different work identity, one marked by permeable boundaries that should be enacted at any time of day, than what Ron himself would have enacted. Marking off his time allowed Ron to fortify the boundaries around when he enacted his identity as a worker.

Other users also worked to minimize the encroachment on their work by resisting the decisions made by the tool so that they could continue to enact their existing and preferred work identity. For example, Matt, who ran his own marketing company, said that he would find that Liz would schedule meetings first thing in the morning on Mondays, leaving him little time to prepare. He remembered multiple instances in which he "would get a Monday call scheduled over the weekend, for like 6:00am on a Monday morning." Not only did the meeting time fall outside of his working hours (and violate the boundaries of when he enacted his work identity), the decisions made by the tool also compromised his ability to adequately prepare for the meeting: "[I'd get the meeting] and it's like, "Well, I didn't have any time at all to prep for this." Entrusting the AI tool to schedule meetings accelerated the pace of Matt's work and inhibited him from doing the preparatory work that he needed to appear competent and ready for the meeting at hand. Matt said that, to combat this problem, he began to block out his time more earnestly and changed his calendar preferences to more aggressively limit time available for meetings. He said,

> I had to start blocking out my time in earnest, full time, because I knew the AI wouldn't be able to tell what was movable and what was not…I tweaked my calendar pages, depending on the day. I probably spend too much time looking at how I spend my time [now].

Matt said that making sure he has adequate time to prepare for meetings has helped him ensure that he can "really chew on what we'll be talking about," so that he can be more "thoughtful" and creative for his clients and do "the business of his business." Another user, Jenn, also

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resisted the tool's tendency to schedule as many meetings as possible as quickly as possible by blocking out times on her calendar to engage in quiet, creative work. She explained, "You need to have the time to daydream to do more creative work." For example, she said that she learned that she needed to protect the hours before she taught her class that she uses to prepare for it. Blocking out that time to prevent Liz from scheduling helped Jenn to continue to enact her identity as a competent teacher, an identity that was enacted by devoting quiet, unstructured time to work. These efforts to contour decisions made by the AI tools helped users to maintain their current enactment of their work identities. Rather than transforming into heavily scheduled workers, users put in work to ensure they could continue to enact their work identities on their own terms.

Smart Hours: Few Opportunities to Notice New Work Practices Leads to Few Opportunities to Deliberately Adopt or Resist them. Unlike Time Wizards users, Smart Hours users enjoyed a relatively high degree of control over decisions made by their scheduling tool. Smart Hours users rarely reported noticing differences between their own work practices and those suggested by the tool, even when differences existed. Some users noticed that the default suggestions in the tool reflected what they speculated were the most common approaches to work, rather than their own unique style. As Oliver observed, "One of my biggest annoyances with Smart Hours is the lack of granularity on my end with more frequent meetings. The default for most meetings is like 30 minutes, which is not right for me… my schedule doesn't fall into neat hour blocks." Though occasionally Smart Hours users ignored some suggestions ("I used the suggested meeting templates at first and then made my own," explained Michelle), users rarely discussed resisting other suggestions, such as suggested availability or suggested meeting times.

Even though Smart Hours users occasionally noticed how the tool presented work practices that differed from their preferences, they rarely questioned these defaults or how aggregated data had informed them. Often, users did not know that any of the tool's capabilities were informed by machine learning. When one user, Martin, was asked how he perceived the AI capabilities of the tool, he responded, "This is going to sound embarrassing, but where's the AI component? I don't know." Another user, Jack, said that he also does not know how Smart Hours selected which times to suggest over others, rather than sharing his whole calendar availability. He said, "I don't know what went into decision making? Was it an assumption? Did they already think that through or did they see that people would find it problematic because of data? I don't know." Jack did not look for ways to work around the issue and instead accepted it as a subtle change from his preferences to those shaped by aggregated data.

Because they rarely noticed how aggregated work practices were incorporated into the tool, Smart Hours users did not discuss having to amend decisions made by the tool but instead discussed accepting many of the tool's default settings. For example, user Jenny allowed Smart Hours to choose which times would be shown as available to her communication partners. She said, "because of the smart functionality of how it identifies what's on my calendar, I don't have to double check anything, because I trust that it won't do something stupid." Another user, Oliver, explained that he trusted Smart Hours and its "AI stuff" to suggest meeting times with multiple people for one event: "it's automatically finding the times available across multiple calendars that work for people." And Daniel explained that he uses the recommendations offered by the tool to prepopulate his meetings: "typically, I would use it to be like, "Yeah, I need to have these types of meetings with these types of people on a recurring basis… so having all those things prepopulated allowing me to just define when I'm available is great."

The extent to which Smart Hours offered decisions made by aggregated data was relatively limited. But, like Time Wizards users, some Smart Hours users said that using the work practices, such as repeatedly allowing people with whom they schedule frequently to book time om their calendar or alerting them to double-booked meetings, suggested by the tool helped them to enact desirable identities. For example, Colin said, "I definitely noticed I've been able to get more scheduled, I've definitely more responsive to the people seeking to meet [with me]." He said being able to schedule more quickly helped him to avoid being "the guy who never gets back to you" and to instead enact an identity of a responsive professional. And Zach explained that being able to quickly form events using suggestions helped him to respond more quickly to people. He said, "[The tool] seems to be based around the idea of being able get information in quickly without a lot of the extra clicking around and typing around." He said that the tool saves him "a lot of keystrokes." The increased speed with which Zach could schedule did not only help him enact an identity as a more successful consultant, but it also helped him to better enact his identity as a productivity expert (Zach helped to sell subscriptions to classes about increasing worker productivity). Zach explained that because he spent less time scheduling, he had more time to plan out his week and help solve what he called the "me problem" of not using his time well. The introduction of work practices that increased the speed and scale with which users could schedule helped them appear more organized to others. As Michelle, a graphic designer said, scheduling efficiently and quickly "makes me seem like I'm much more organized, like I have my shit together."

However, even when Smart Hours users experienced suggested shifts to their work practices that did not help them to enact their desired identities, they did very little to resist them. For example, Oliver had utilized availability sharing, which offered AI-powered suggestions about

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people to whom the user should give full access to their calendar. Oliver noticed that he found

himself in many more meetings added by people to whom he had given full control over his

calendar, even though he did not want to carry out his work in that way. He said,

> I've noticed meetings are picking up, before my week even starts, I have like twelve hours of
> meetings scheduled for the week… I share availability with people who also use Smart
> Hours. That's actually my least favorite because they'll just book any time in my calendar
> and it's annoying.

Even though Oliver had experienced several weeks of working while he was what he perceived

as over-scheduled, he had only just begun to consider how to resist this work practice by

blocking off more of his time as unavailable (and he did not consider revoking the availability

sharing privileges of users that the tool had suggested he offer). Another user, Jenny, had a

similar issue with availability sharing that violated the ways she wanted to enact her work

identity. She said, "The clients that have availability sharing sometimes cancel the meeting that I

put on their calendars and will just grab time on my calendar without knowing whether or not I'm

available." Clients' entitlement to schedule her whenever was convenient for them also inhibited

Jenny from enacting her identity as a business professional who was in charge of her time, rather

than one who was at the beck and call of her clients. She said that she is someone who "really

enjoys having control over [her] time" but that being bookable by clients makes her "somewhat

at the whims of clients' needs changing on the fly," especially when they "screw it up." These

disruptions to how and when users wanted to approach the work created the same boundary

violations that Time Wizards users experienced – but users did not often realize that they could

resist these practices.

Discussion

This study investigated how the implementation of work practices that are drawn from

aggregated data by AI technologies shape how users enact their identities. Interviews with

developers showed that even though AI companies recognized the value that learning about *within-case* usage patterns offered to consumers, their tools were designed to learn from aggregated data across users. Both designed their tools to leverage the best practices gleaned from aggregated data to transform users' work practices in the domain of scheduling. When some users encountered work practices gleaned from machine learning processes drawn from aggregated data, they accepted them if they helped them to enact an aspirational identity. But in other instances, users resisted work practices to ensure the boundaries of their identities were not violated. Ironically, users who deployed the AI tool that autonomously made decisions on their behalf were more likely to notice and resist these practices, because encountering the consequences of these tools made the differences between their current work practices and those selected by the tool salient. Users who deployed the AI tool that offered work practices as suggestions were less likely to notice their existence and less likely to discuss questioning the suitability of these suggestions. Consequently, how they enacted their identity shifted in subtle but unchallenged ways.

Implications for Theories of Identity Construction with AI Technologies

These findings offer several implications for understanding the implications of artificial intelligence on work and workers. First, this study draws on a practice-based view of identity to show the identity-related consequences that implementing new AI tools may have. The practice-based view of identity developed here highlights how changes in practice change identities, because identities are always enacted through practices (Kuhn, 2020) and work practices in and of themselves are communicative of identities (Leonardi, 2015). This perspective is especially appropriate for studying identity enactment around intelligent machines, because it does not conceptualize identities as rooted in feelings of attachment but focuses on identities as *practices*

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(Rennstam & Ashcraft, 2013), which can be carried out by people or by machines. In doing so, it theorized how any shift in action can shape identities. This study traced the incorporation of new work practices from AI tools into people's repertoire of action and showed that, left unchecked, these new practices shaped users' identities by shaping their action. suggests that the implementation of AI tools that make decisions about users' work on their behalf likely works as a mechanism through which identities are altered in action, as they shift and narrow how people enact their identities from a field of practices (Swidler, 1986). If individuals' work practices include working with AI tools that are deciding how they ought to work, their work identity – what they do and the ways in which that they do signals who they are to others – will be affected.

On a broader scale, these findings provide empirical support for processes through which AI technologies shift the locus of making decisions about work from the individual to the aggregated crowd and, in doing so, shift the content of identities themselves (Scott et al., 1998). Specifically, it presents evidence for the subtle homogenization of work via the implementation of work practices drawn from aggregated data, for example, by scheduling meetings in ways that are optimized for the highest likelihood of acceptance on an aggregated scale. Because AI tools are designed to learn from the crowd and make probabilistic decisions, a potential homogenizing effect – making people work in more similar ways through outcomes identified by machine learning – will likely be amplified over time without users' intervention. The homogenization of users' work practices suggests that users' work identities will also become more homogenized over time, if they accept these work practices into their ongoing action. Increased homogenization of work identities may also shape organizational and occupational norms such that they become more similar over time (DiMaggio & Powell, 1983). This homogenization poses a host of possible challenges for workers and organizations, such as the perpetuation of

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bias against particular approaches to work (which are intertwined with biases related to gender, class, race, and ability) and a reduction in the requisite variety of working styles needed to prompt organizational creativity and innovation (Weick, 1979).

Implications for Theories of AI Technology Use

These findings also show two different ways through which AI tools can introduce new work practices – through autonomous action or through more subtle suggestions – and demonstrates that these differences shape how users respond to AI tools' shaping of their identities. *How* developers chose to present the decisions that were made using aggregated data shaped users' ability to recognize how these decisions encroached on their ongoing work practices to create possibilities for amendment. In this inductive study, users who encountered decisions made by AI on their behalf were more likely to say that they found ways to resist AI-enabled work practices, because clashes between these practices and their own were salient and easy to recognize, as opposed to users who encountered AI decisions as suggestions. This finding points to a mechanism through which people responded to alter decisions made by AI: the more that an AI tool acted without users' active control and oversight, the easier it was for its users to notice the tool's actions and amend or resist the choices that it made. It also suggests that decisions about work practices that are offered as suggestions may exert more influence over users' work because users are less likely to notice that they not tailored to their own preferences.

While alternative explanations for this relationship exist (for example, the recommendations that Smart Hours offered may have drawn in part on personalized data, increasing the likelihood that users saw these decisions as similar to their own), this possibility has important implications for the crossroads that people face when making decisions about if and how to incorporate work practices implemented by AI. More ambitious AI tools that act

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autonomously may make these decision points easier to recognize and encourage reflexive monitoring of action. Working with AI tools that made decisions on their behalf contrived an occasion for users to reflect on their work practices and then decide if a shift in these practices was desirable. Users seemed to move their awareness of their work practices from what Giddens (1984) called *practical consciousness,* or a tacit understanding that is so taken for granted it is difficult to articulate, to what he called *discursive consciousness*, or an explicit understanding that can be articulated in language. The suggestions offered by the second AI tool did not contrive such an occasion, likely because there was not a sufficient demonstration of contrast to invite reflection. The explanations for the findings offered here are preliminary and speculative, but future research can continue to explore them with longitudinal and experimental studies as part of a growing body of work focused on understanding users' acceptance of decisions made by AI (e.g., Fast & Schroeder, 2020; Wang, Harper, & Zhu, 2020).

Implications for Theories of Identification and Control

Relatedly, this study contributes to studies of identity and power by demonstrating emerging mechanisms of control and resistance over workers' identities that unfold around artificial intelligence. Existing work has traced the exertion of control over workers' identities from formal supervision (Edwards, 1981) to more subtle forms, such as hegemonic discourses (Clair, 1996), loyalty to a team or organization (Barker, 1993), and dedication to desirable organizational identities (Cristea & Leonardi, 2019). This study presents a new source of control over workers' identities that was prompted by their desired identities: artificial control afforded by artificially intelligent technologies. To date, most studies of power and control enabled by AI tools have focused on the use of AI tools by management for the surveillance and supervision of workers, such as the algorithmic management of workers on gig platforms like Uber or Lyft,

(Lee, 2018; Schildt, 2017). But in this study, those users who chose to accept changes to their

work facilitated by the AI tool did so with their own free will. In fact, they deployed AI tools for

the very purpose that it held them accountable to work practices that they otherwise would be

tempted to avoid enacting. They adopted and used these tools, in part, for the purpose of

regulating their own work and work identities. Whether these tools are transforming workers'

identities or colonizing them is an open question and likely depends on whether workers see the

work practices these tools introduce as constitutive of identities that they themselves want to

enact.

Directions for Future Research

This study prompts further research into how decisions made by artificial intelligence

should be communicated to users. A broad intellectual and technological conversation about the

"black box" of AI has focused on the need for transparency in how artificially intelligent

machines arrive at decisions (Asatiani et al., 2020; Burrell, 2016). This study contributes to this

conversation in two ways. First, it showed that discrepancies between how developers design

tools to learn and how users want the tool to learn can lead to confusion. Developers recognized

that consumers wanted AI tools to learn from their specific data, not from data in aggregate. But

the demands of the market and computational process required developers to draw on aggregated

data. This often left users confused about from what data source the tool was actually learning.

Second, the ambitious design of Time Wizards that attempted to make more autonomous

decisions on behalf of users actually helped users to learn more about how the tool worked so

they could respond accordingly. Without such attempts by Smart Hours, users were not able to

recognize components of the tool that were informed by machine learning. In this case, such

suggestions are relatively inconsequential – for example, accepting a default meeting length

rather than setting it to the desired duration. But other tools that present AI decisions as suggestions may have higher stakes (for example, suggestions about which candidate to interview, or giving up control to clients). Though the developers of Smart Hours designed the tool as to not inconvenience users by making wrong decisions, it did incur the unintended consequences of maintaining opacity around if and how the tool was learning from user data and how it was executing decisions with this data. A remedy for this opacity appears to be exerting a higher-risk process of trial and error by giving the AI more power to make decisions on its own, knowing that users will fix its mistakes.

Practical Implications

These findings also offer practical implications for users and developers of AI technologies. First, this study suggests that a gap existed between what users hoped the tool would do (to learn more about them in particular) and what developers wanted to create (tools that learned the best practices for the masses). Bridging this gap, either by changing the technical design of tools or managing users' expectations for the tool's capabilities, may help companies that develop AI tool retain users over time. And second, these findings show that AI tools have the power to implement work practices drawn from knowledge that users themselves could not gather on their own. Because changes in work practices can also change identities, users' acceptance of these practices provide them with an opportunity for transformation – to act like and be perceived as the type of person these tools are designed to help them become. The optimization of work practices that AI provides affords users the opportunity to transform in ways that would be difficult to accomplish on their own. At the same time, users also cede control over their work practices to the developers' vision of ideal work and an ideal work

identity (Wajcman, 2019a). Accordingly, it would be prudent for users to ask not only what AI

tools are designed to do, but to what end AI tools are designed to transform them.

Chapter Four:

Constructing Identities With and Around Artificially Intelligent Agents

The advancement and ubiquity of tools equipped with artificial intelligence have ushered in new questions about how communication processes unfold around these new technologies. One class of tools, artificially intelligent communication technologies, are directly relevant to these processes. New artificially intelligent communication technologies go beyond the capabilities of existing communication technologies by functioning as autonomous and agentic actors that can produce communication on users' behalf. Artificially intelligent communication technologies are programmed to make decisions without active human involvement by learning from aggregated data drawn from many users and adjusting their decision rules over time (Faraj, Pachidi, & Sayegh, 2018). In doing so, they act as agents on behalf of users (Sundar, 2020) and, using machine learning algorithms, execute decisions about what users communicate, with whom they communicate, and when and how they communicate it (Hancock et al., 2020).

Communicating with technologies is a fundamental way through which people construct identities. From the earliest writings on self-presentation (Goffman, 1959), scholars have shown how people draw on the affordances of technological artifacts to construct desirable identities (see Pinch, 2010 for an extended discussion). Because so much of our communication happens through communication technologies, understanding the processes of identity construction and maintenance necessarily involve understanding how technologies enable individuals to strategically present who they are to others. Existing research on computer mediated communication has shown that people take advantage of the affordances that communication technologies provide to communicate in ways that allow them to craft desirable and distinctive identities (Ellison, Heino, & Gibbs, 2006; Kim & Gonzales, 2018; Walther, 2007).

When people communicate with others using artificially intelligent technologies, they no longer maintain full control over how they present themselves. Instead, they cede varying degrees of responsibility and agency for how they construct their identities to tools that are designed to autonomously make decisions on their behalf. Artificially intelligent agents go beyond mediating communication to communicating as actors in their own right. The capability of AI technologies to communicate autonomously on users' behalf requires technology's role in identity construction to be reconceptualized. Because AI agents do not just generate messages for users but communicate on behalf of the users who deploy them, they may represent the user in interactions with their communication partners. AI agents may replace, modify, or support users' efforts they make to construct their identities.

This study investigates processes of identity construction that occur when AI agents communicate on behalf of users with others. Because identity is constructed in interaction, it investigates both how people form impressions of users' identities when communicating with them via autonomous AI agents and how users communicate to manage their identity while deploying AI tools. Drawing on interviews with users of two AI scheduling technologies and their communication partners, I identified three processes through which communication partners form impressions of users' identities when communicating with them via AI agents, which I call transference, confirmation, and compartmentalization. I also identified three communicative practices in which users engaged to preempt and amend threats to their identities: interpretation, diplomacy, and staging. I discuss the theoretical implications of these findings for understanding the technological mediation of identity construction in the age of artificial intelligence.

Artificial Intelligence Mediated Communication and Identity

A burgeoning area of work on the social implications of artificial intelligence is the study of AI-mediated communication, or AIMC. Hancock et al. (2020) defined AIMC as "mediated communication between people in which a computational agent operates on behalf of a communicator by modifying, augmenting, or generating messages to accomplish communication or interpersonal goals" (p. 90). Technologies that would fall into the domain of AIMC include suggested text, such as Google's smart reply features embedded into Gmail, AI-synthesized messages, such as suggested biographies based on users' LinkedIn profiles, and messages generated entirely by AI, such as chatbots deployed by people to communicate with potential clients. Using machine learning, these technologies craft messages on people's behalf based on programmed criteria and patterns gleaned from existing data.

The emerging studies of AIMC share much theoretical grounding with studies of computer mediated communication (CMC). Studies of CMC have repeatedly drawn attention to how people draw on the affordances of CMC to strategically present themselves to others (Chester & Gwynne, 1998; Ellison, Heino, & Gibbs, 2006; Tidwell & Walther, 2002; Wickham & Walther, 2007). For example, Walther (1996, 2007) theorized that people could take advantage of the asynchronous nature and reduced cues afforded by CMC to craft messages through which they presented themselves in more socially desirable ways than they could when communicating with others face to face.

As with CMC, AIMC provides individuals opportunities for strategic self-presentation in the arena of message crafting. Like messages crafted by people, messages that are augmented, suggested, or generated by artificial intelligence can garner trust (Matsui & Yamada, 2019), and encourage liking (Chattarman et al., 2014). Unlike CMC, however, AIMC relies on

computational approaches that require large swaths of data, more data than one person alone could gather or process. Accordingly, messages generated by AI can be linguistically optimized to meet particular goals using more robust patterns than a person could detect. For example, an AI messaging tool could be designed to optimize messages that lead to others' quick responses based on linguistic patterns detected in a bank of messages and the communication outcomes they produced. At the same time, this reliance on patterns detected in data also likely yields more homogenized responses than those improvised by people as they interact with others. And, because AIMC is implemented *on behalf* of users (Hancock et al., 2020), this communication does not exist as an abstract message but is linked to the person who uses AI and their communication partners.

Considering the new possibilities that AIMC offers for strategic self-presentation, scholars have begun to speculate about how using AI to communicate with others shapes how users construct their own coherent and distinctive identities. For example, Hancock et al. (2020) raised the possibility that AIMC could exert an identity shift effect (Gonzales & Hancock, 2008) in which users would change their perceptions of their own identity after observing the messages sent by AI on their behalf to others (for example, seeing oneself as more competent when an AI tool such as Grammarly sends messages optimized for clarity). I represent the focus of this research area in Panel A of Figure 4, which depicts the perceptions that individuals form of themselves when engaging in AIMC. The solid line depicts the communication that occurs between users and their communication partners when messages are generated by AIMC but are presented as coming from users themselves. The dashed line represents the impressions that users form about themselves based on the messages presented on their behalf.

However, I argue that the implications of AIMC for users' identities extend beyond their own perceptions of their self-presentation. Instead, I conceptualize identity from a symbolic interactionist perspective that assumes that identities are always constructed, negotiated, and altered in interaction (Blumer, 1969; Mead, 1934). Central to this understanding of identity is the notion that identities are not only crafted by those to whom they belong. Rather, people enact identities and reflexively monitor the feedback they receive from others about these enactments to amend their performance (Ashforth & Schinoff, 2016; Wieland, 2010). Through this symbolic interactionist lens, how communication partners respond to users' strategic self-presentation in interaction is a key process of identity construction.

Because AIMC intervenes in users' interactions, their identity construction is necessarily implicated, because interactions are the sites where identity construction occurs. To the extent that the communication generated by artificial intelligence presents a different version of users' identities to their communication partners, how they construct their identities in interaction may be altered as their communication partners respond to messages crafted as part of AIMC. Current studies of AIMC have focused on messages crafted via embedded AI, which is AI that is hidden to those besides the user and viewed as an extension of users' own communication (Glikson & Woolley, 2018). These tools do not autonomously communicate on the behalf of users; instead, these tools offer suggestions about messages that the user can approve or not. In these studies, evidence suggests that communication partners' evaluations of the communication produced by AI directly influence their perception of users themselves, both positively and negatively. For example, Hohenstein (2020) found that the use of smart email responses improved communication partners' interpersonal perceptions of the user. However, in other cases, when a message sender was suspected of using AI, their communication partner evaluated them more

negatively, suggesting that the use of AI might be interpreted symbolically to affect partners' view of the user (Hohenstein & Jung, 2020). These studies suggest that impressions of AI are closely connected to impressions of users themselves, because AI is embedded into communication that appears to come from the user and may or may not be detectable by users' communication partners.

The relationship between users' identity construction and AIMC is more complicated when AI technologies are designed to operate as autonomous agents, rather than as textual tools embedded within users' existing communication technologies. Autonomous agents, such as chatbots, are intelligent entities that can operate on an owner's behalf without the owner's active involvement (Franklin & Graessar, 1997). These AI agents, such as chatbots and AI assistants, are designed to function as their own entities and communicate on behalf of users. Unlike embedded AI tools designed to generate messages that appear to come from the user, AI agents are programmed as their own entities such that their actions are discernible from those of the user. And unlike services like predictive text, AI agents can act without explicit approval, review, or oversight from users themselves. Instead, AI agents make decisions about users' communication that may reflect back on users themselves, often without providing users the opportunity to approve or amend this communication.

The implementation of AI agents represents a growing use case of artificial intelligence. These agents engage in AIMC by communicating on behalf of the user, but unlike the technologies studied in existing studies of AIMC, these messages are sent by the agent itself rather than augmenting the user's communication. When users communicate with others using AI agents, a third actor is introduced into identity construction. Below, I use existing literature in

human-machine interaction to speculate about how the use of AI agents that communicate apart from but on the behalf of users could shape identity construction in AIMC.

AI Agents and Identity Construction

Scholarship in the area of human-machine interaction has shown that people frequently form impressions of AI based on its design and performance (e.g., Pak et al., 2012; Qiu & Benbasat, 2009; Rossi et al., 2018). For example, as documented in Glikson and Woolley's (2018) review, researchers have demonstrated that people's positive feelings toward AI are strengthened by immediacy behaviors (e.g., Dabholkar & Sheng, 2012; Mimoun et al., 2017) and anthropomorphism of AI agents (Blut et al., 2021; Kahn & Sutcliffe, 2014; Obaid et al., 2016; Verberne et al., 2015). The work in human-machine interaction presents robust evidence for the relationship shown in Panel B of Figure 4, which depicts how people who communicate with AI agents (as depicted by the bi-directional solid line) form impressions of these agents (as depicted by the uni-directional dashed line).

Most of the studies cited above focus on the AI agent as the focal object of assessment by measuring people's attitudes toward the AI agent itself. However, such an approach is not representative of how AI agents are deployed in situ. AI agents may act autonomously but they are implemented by and linked to human actors. Thus, a more naturalistic study of AI agents should go beyond assessing attitudes toward AI agents by also exploring how AI agents' actions shape others' attitudes towards the entities that deploy them. A handful of studies have begun to explore this by studying how people's attitudes toward AI agents shape their attitudes towards the organizations that deploy them (e.g., Araujo, 2018; Castillo, Canhoto, & Said, 2020; Trivedi, 2019). But, in addition to the enterprise level, AI agents are also becoming increasingly available at the consumer level. The AIMC facilitated by AI agents, such as chatbots or virtual AI

Figure 4. Summary of research on AIMC and impression formation.

Communication
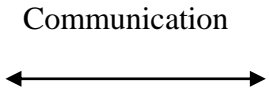
Panel A. Summary of existing research of AIMC.

Impression formation

AIMC

User — Communication Partner
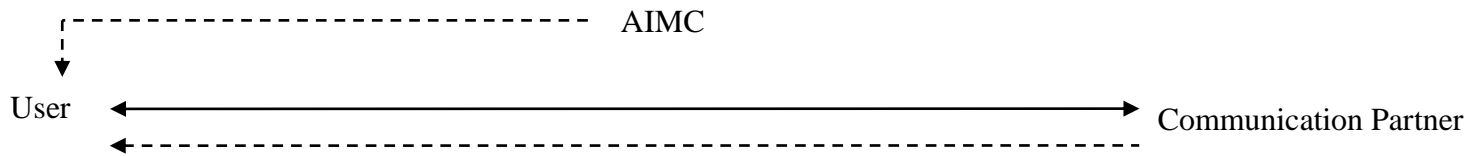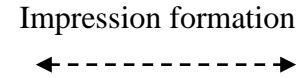
Panel B. Summary of existing research on AI agents in human-machine interaction.

AI Agent

Communication Partner
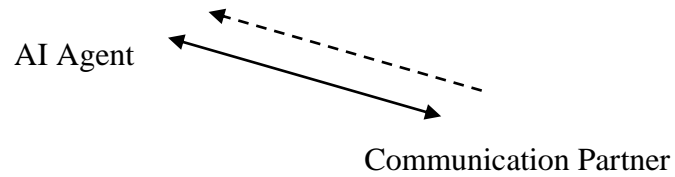
Panel C. Summary of the research focus of the present study.

AI Agent

User — Communication Partner
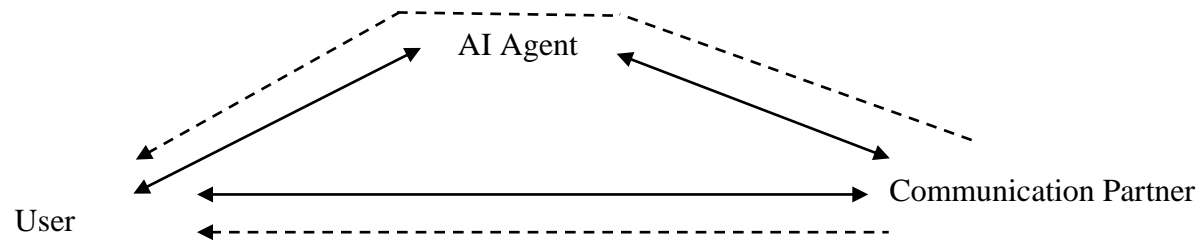
assistants, could have important implications for the identity construction of people who deploy them. This relationship is depicted in Panel C of Figure 4, which shows how communication partners' impression formation of the actions taken by AI agents could inform how they form impressions of the users on whose behalf these agents communicate (as depicted by the dashed line that goes from the communicating partner to the AI agent to the user). This process is the focus of the current study.

Despite the numerous studies that focus on how people evaluate AI agents, there are few studies that explore if and how such impressions are transferred to people who deploy AI agents. The existing literature suggests that agents may function as what Hohenstein and Jung (2020) called a "moral crumple zone," to which blame can be assigned when conversations go awry, directing blame away from the human communicator. This effect, along with the host of studies supporting people's tendency to attribute humanlike properties to computers in general (Reeves & Nass, 2002) would also suggest that people treat AI agents as their own entities (Beattie, Edwards, & Edwards, 2020). If this is true, people's impressions of AI agents may stay with the agent itself, with little effect on how they perceive the user who deploys the agent.

Another possibility is that users' communication partners will form impressions about users based less on what AI agents decide to do and more on what they symbolize in the local work domain. Studies of identity construction have shown that people can use artifacts as symbolic resources to communicate their identities to others. For example, Elsbach (2004) found that people's co-workers made interpretations about their identities based on their choices of office decor. Studies have shown that communication technologies in particular can carry symbolic weight in identity construction, for example, by serving as signals for

identities like innovators (Smith et al., 2019), managers (Markus, 1994), or valued professionals (Prasad, 1993). From this perspective, people's use of AI technologies may be seen as an artifact of their identity to which communication partners may respond.

Whether and how people's impressions of AI agents will shape how they act towards users is an open question. Though existing scholarship makes it clear that people will form a variety of impressions about the quality of AI agents, it is unclear if and how impressions of these agents shape how they perceive the users who deploy them. Understanding how the communication partners of users, not just users themselves, form impressions of AI agents and how these impressions shape their actions toward the user is essential for understanding the interactional processes of identity construction processes that occur when communication is mediated by AI. To explore this, I ask:

RQ1:   How do communication partners form impressions about focal users'

identities when an AI agent communicates on the users' behalf?

If and how people form impressions about a focal user when communicating with them via an AI agent likely has consequences for users work to construct their own identities. As people form impressions about a focal user based on the way that an AI agent communicates, the focal user may work to confirm, alter, or otherwise manage how others perceive them (Snow & Anderson, 1987; Sveningsson & Alvesson, 2003; Watson, 2008). To explore the communicative strategies through which users form, repair, maintain, strengthen, or revise their identity constructions when an AI agent communicates with others on their behalf, I ask:

RQ2:   How do users construct their identities when using an AI agent that

communicates on their behalf?

Method

Research Design

To understand how their communication partners interpreted focal users' identities when AI agents communicated on users' behalf and how these users worked to construct their identity, I drew on interviews with users of both Smart Hours and Time Wizards and their communication partners. Smart Hours and Time Wizards were representative of the two approaches to AIMC in the service of scheduling meetings on the market: 1) a user interface with embedded AI or 2) a conversational AI agent. The tool made by Smart Hours was a smart calendar interface equipped with links that users could send to their communication partners to communicate their availability, provide a meeting time, and place the meeting on all participants' calendars. Smart Hours designed their tool to draw on artificial intelligence to automate processes for the *user*. For instance, the tool drew on natural language processing to interpret users' input of "Christmas" as the date December 25 and could suggest possible meeting participants and times based on users' past scheduling. The decisions made by artificial intelligence were contained within the interface, for example, as suggested text within the interface.

In contrast to Smart Hours, Time Wizards developed an AI agent that assisted with scheduling by negotiating between users and their communication partners in natural language. The AI agent, which users could assign the feminine name Liz or the masculine name Leo, interpreted and responded to queries in natural language and automatically made decisions about meeting times using artificial intelligence. Rather than keeping the decisions made by AI contained within an interface, users could deploy Liz and Leo as agents on their email thread. This approach drew on conversational AI, which allows people to engage with

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machines in humanlike ways in natural language, instead of the "point and click" approach of a user interface.

The two companies took markedly different approaches to implementing AI in their tools, which allowed me to compare how design choices about foregrounding artificially intelligent processes as an agent or modulating the artificially intelligent processes in an interface shaped how users' communication partners interacted with users. While many studies have focused on how people's anthropomorphizing of AI shape what they think about and how they *respond to the tool,* there has not been systematic research that examines how the human likeness of AI tools shapes how they *respond to users* that deploy them. By investigating identity construction as it related to the use of both of these tools, I was able to separate how AI tools that make decisions on users' behalf *with communication partners* shape identity construction as compared to tools that apply AI as embedded components of the tool *hidden from users' communication partners*.

Data Collection

I interviewed 15 Time Wizards users and 15 Smart Hours users. Of those users, 13 Time Wizards users and 8 Smart Hours users participated in at least one follow-up interview, for a total of 52 interviews. In my interviews with users, I asked them to describe how they deployed the tool, how others reacted to it, how they manage others' impressions of themselves, and how the use of the tool was related to their identity. I also asked them to share recent interactions that they had via the tool and to narrate their perceptions of the conversation, so that I could gain a better understanding of how particular interactions mediated by AI tools unfolded and what these interactions meant to participants in relation to their own identities

I also interviewed users' communication partners. Eight Time Wizards users and four Smart Hours users were willing to recommend at least one communication partner who ultimately participated in an interview. In total, I recruited 19 communication partners to participate. In these interviews, I asked them about their relationship with the focal user, their impressions of the tool, and their impressions about the focal user's identity. As with users, I asked communication partners to narrate interactions that they had with focal users via the tool and to share their impressions as they did so

Data Analysis

I took an inductive approach to data analysis that allowed meaningful categories to emerge from the data. To address RQ1, I engaged in selective coding to identify sections of text relevant to processes of impression formation when communicating via AI agents (Corbin & Strauss, 2007). I primarily analyzed communication partners' interviews to flag content for RQ1, though I supplemented these data with users' own stories of how others responded to use of AI tools. This added necessary variation to the data, as the communication partners who users recommended for interviews often had longer-term, multiplex relationships with users, but users could discuss how others with whom they had weaker relationships reacted to their use of the tool. After flagging these data for further analysis, I assigned open codes to describe the processes and relevant conditions (Corbin & Strauss, 2007) through which communication partners formed impressions of users' identities based on the actions of the AI tool ("bot's actions made user seem rude," "experience with tool didn't affect view of user"). By grouping similar open codes together, I developed three axial codes that described processes at a higher level of abstraction: transference (when impressions of the tool shaped impressions of the user), confirmation

(when impressions of the tool reinforced existing impressions of the user) and compartmentalization (when impressions of the tool did not shape impressions of the user).

To address RQ2, I used selective coding to flag sections of text that described the communicative practices through which users managed their identity while using their respective tool. I looked for users' discussions of communication practices, assigned these practices open codes ("fixing glitches", "helping others learn how to use the tool"), and grouped similar codes together to form three axial codes to describe three practices of identity work: interpretation (framing the meaning of the tool to others, common to Smart Hours and Time Wizards users), *diplomacy* (managing the relationship between the AI tool and their communication partner, unique to Time Wizards users), and *staging* (managing how others saw their interaction with the AI tool, unique to Time Wizards users). Below, I describe how these practices were motivated by users' anticipation and experience of their communication partners' impression formation.

Findings

Users' communication partners formed impressions about users with whom they communicated using AI agents in three ways: *transference*, in which their impressions of the AI agent shaped how they formed impressions of the user; *confirmation*, in which their impression of the AI agent confirmed their impressions of the user; and *compartmentalization*, in which they formed impressions of the AI agent, but it did not shape how they formed impressions of the user. The data suggest that how communication partners formed impressions differed between the communication partners of Smart Hours users and those of Time Wizards. While the communication partners of Smart Hours users primarily saw the use of Smart Hours as a symbolic extension of the users' existing identities, the

communication partners of Time Wizards users tended to transfer impressions about the decisions of the AI agent to the identities of users themselves. However, when communication partners had a strong, multiplex relationship with users, these impressions were compartmentalized to the AI agent. Considering the possibility that their communication partners would misinterpret what their use meant, users engaged in three communicative practices: interpretation, diplomacy, and staging (RQ2). Both Smart Hours and Time Wizards users engaged in interpretation, which involved reframing the meaning of their respective tool to their communication partners. Time Wizards users also engaged in two practices to enhance their identity: diplomacy, which involved managing the relationship between their communication partners and the AI agent, and staging, which involving communicating with the AI agent in ways that would enhance their identity when observed by their communication partner. These findings are discussed in detail below.

Communication Partners' Impression Formation of Users' Identities Around AI Agents

RQ1 asked how communication partners formed impressions about users' identities when communicating with them through an artificially intelligent communication technology (see Figure 5). Communication partners of Smart Hours users interpreted use of the tool as a symbol that confirmed their existing understanding of users' identities (shown by the uni-directional dashed line), but rarely did the assessments of *decisions* made by the tool shape how they perceived users' identities. In contrast, communication partners of Time Wizards users spoke to how they formed strong impressions about the decisions of the tool itself, which could be transferred (as shown by the dashed line between the AI agent and the user) or compartmentalized (as shown by the dashed line between the communication partner and

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AI agent) in relation to users' identities depending on the strength of their relationship with the user.

Smart Hours: Symbolic Confirmation

Communication partners of Smart Hours users formed impressions about users' identities based on what they perceived as the symbolic nature of the tool. Communication partners discussed how what the tool symbolized, rather than the actions taken by the tool, was indicative of the users' identities. Largely, communication partners said that the tool symbolized users' comfort with and interest in using emerging smart technologies. Maurice, who met with Smart Hours user Noah to discuss business marketing strategies, said that the tool represented Noah's interest in automated technologies. He explained that he knew Noah loved experimenting with new technologies so his use of a tool for scheduling "didn't change my perception of Noah. It just made it even more as I thought it was." Adan, who consulted with Smart Hours user Gary, explained that Gary's choice in using a smart scheduling tool was "so, so Gary." He said that the tool is "a strong signal that he knows about what's going on with the latest technologies and will use the most current methods for his clients."

Multiple communication partners pointed out that the potential negative impacts of using Smart Hours for users' identity construction could be mitigated when users interpreted their use of the tool for their communication partners. Vicente, who met Smart Hours user Sean through a networking application, said that he would have been offended had Sean only sent a link with minimal explanation. But, "if it's framed as a way to find time in his schedule and that he's flexible to suit me for my benefit, that's better. That has the level of framing and set up… it's all about how it's framed in that mutual conversation."

Communication partners formed impressions about how well the tool made decisions about their interactions with users—but said that these impressions did not reflect on users' identities. Hassan, who had met Smart Hours user Sean through their work in venture capital, explained that he found some of the decisions made by the tool strange. He said, "I clicked 'confirm' and I didn't get a confirmation. It was a bit weird, and I didn't get my email to say that everything was confirmed even though he did." But when asked if the tool's glitches reflected on Sean, he said, "No, no, not at all. Because obviously, Sean doesn't own Smart Hours. Similarly, Maurice, who met with Smart Hours user Noah, said that the tool was "quite efficient" in terms of what it did, but "I don't think it changed my opinion of him."

Though the Smart Hours' tool did make intelligent decisions about interactions between users and their communication partners (for example, displaying a suggested meeting time out of the many slots of their shared availability), communication partners of Smart Hours users formed impressions about users as if it were any other communication technology. They assigned meaning to the use of the tool, interpreting users' willingness to deploy it as indicative of their technology enthusiasm, but they did not form impressions about users' identities based on the actions of the tool itself.

Time Wizards: Transference and Compartmentalization

Like communication partners of Smart Hours users, communication partners of Time Wizards users formed impressions about the symbolic nature of use and related it to users' identities. For example, Connell, who collaborated with Time Wizards user Nathan, said that when he noticed that Nathan was using Liz to arrange his meetings, it confirmed what he knew about Nathan's interest in new technologies: "Nathan is one of those people that I've

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always seen as on the kind of bleeding edge of anything new. So when he was using it, it confirmed what I thought about him, like, 'It'd be cool to see if this takes off.'"

Unlike communication partners of Smart Hours users, the communication partners of Time Wizards users went beyond interpreting the use of the tool as a symbol. Instead, they formed impressions about the decisions of the AI agent – Liz or Leo – that could then extend to impressions of users themselves. Jacob, who scheduled with Time Wizards user Animesh, recalled a very negative experience with Liz. He explained that he was meeting his friend in one part of the city, but 10 minutes before they were to meet, the person he assumed was his friend's personal assistant emailed him to say, "Can you meet Animesh downtown in this bar?" Jacob explained that the assistant continued to change their plans, which frustrated him:

> I thought, 'What the hell. I'll get into a taxi.' Not very convenient. And then Animesh tells me as I'm in the taxi, 'Can you actually meet me here?' And I'm like, 'Okay, fine. I'll tell them his personal assistant is hopeless when I see him.' So we go there, and just as a friend I say, 'By the way, mate, your personal assistant is awful. I came to see you because I'm not in New York very often. And I knew we would have a nice drink. But they just wasted $20 having me drive around town.'

Though his friend explained to Jacob that his assistant was an AI bot and not a person, the experience soured him on the tool and his relationship with his friend. He said, "It just makes it seem like he couldn't be bothered to schedule something properly or he couldn't be bothered to ask proper questions -- and that diminishes [him]."

I further understood episodes in which such transference occurred by relying on secondhand accounts from users and their close communication partners – because when such transference occurred, the relationships with communication partners was often severed or strained. For example, a communication partner named Kirsten said that Marie, a Time Wizards user with whom she collaborated, attempted to use Leo to set up a meeting with the

two of them and a new client. The new client had difficulty interpreting Leo's actions, which

Kirsten said led to the client being unimpressed with Marie as a professional. She explained:

> We were setting up a meeting with someone who was obviously outside of both of our organizations. Leo told her, 'Okay, these are the options. And you can pick a time.' Whatever happened, it just kind of blew this poor lady's mind. And she said, 'I have no idea what's going on here.'

Kirsten explained that she emailed Marie to ask her to "book it the old-fashioned way"

because the situation was "a mess." Kirsten said that the encounter likely led the client to

form a poor first impression of Marie: "[The client] just did not know. And it was not a good

first impression. The tool, it's just not consistent." Kirsten's story shows how communication

partners' confusion about the actions of an AI agent can lead to their formation of

unfavorable impressions about users themselves.

Communication partners did not always transfer their evaluations of Liz or Leo to

users' identities. Instead, some communication partners engaged in compartmentalization

when communicating with users via AI agents. In this process, communication partners

formed impressions of the tool itself, but these impressions did not carry over to the user.

For example, Nathaniel would meet regularly with Time Wizards user Richard, with whom

he used to work at their previous companies. He said that his perceptions of the tool "didn't

really" affect his perceptions of Richard. He explained,

> At first, I thought it was a human assistant and then I noticed the AI moniker and was slightly curious, I realized it was a program... Once I realized I was dealing with an AI, I immediately assumed it was an idiot and that I had to speak to it as simply as possible.

In this case, Richard formed impressions about the AI agent itself as an actor but not about

Richard's identity.

When communication partners had a strong relationship with the focal user, they seemed more willing to compartmentalize even negative impressions of the tool so that they did not change their impressions of users' identities. For example, Ross, who met regularly to discuss marketing with Time Wizards user Matt, explained that he had a horrible experiencing scheduling with Matt using Liz. He explained that he had to email Liz several times in order to get the meeting scheduled, only for Liz to cancel the meeting without an explanation. Ross explained that, despite the tool's mistakes, he did not change his impression of Matt, because he had a close and multiplex relationship with Matt (he even served as the best man at his wedding). Instead, he responded to Matt and jokingly said that he would copy Matt on all future emails with Liz "so that your time can be wasted as well" (and then did so). Ross explained that while his relationship with Matt afforded him the opportunity to criticize Liz, others would become offended more easily:

> I was never truly frustrated…I didn't really care. I was just kind of fucking around with Liz. But would have been an absolutely horrid experience that if I was a client…If Liz is making mistakes, so if it's asking me if I can do a certain time and then I say no and then asks me again if I can do that time, that's going to reflect poorly on Matt.

His strong relationship with Matt appeared to buffer his negative experience with the tool from shaping his impressions of Matt. Similarly, Nancy, who had met Time Wizards user Karen at a conference a few years ago and continued to discuss issues in their field together, said that when she first scheduled with Leo, she didn't know it was a bot. Nancy apologized to Leo without realizing Leo was not a human, which prompted Karen to tell her that Leo was a bot. Nancy said "I don't like the chatbots pretending they're a person without telling you that they're a bot." But Nancy said that the anthropomorphizing of Leo did not affect her

Figure 5. Processes through which communication partners of Smart Hours and Time Wizards users formed impressions about users' identities.

Smart Hours

Smart Interface

User ← - Communication Partner

Confirmation

Time Wizards Users

Strength of the relationship between user and communication partner

AI Agent
(Liz or Leo)

Transference

Compartmentalization

Communication Partner

User ← - Communication Partner

Confirmation
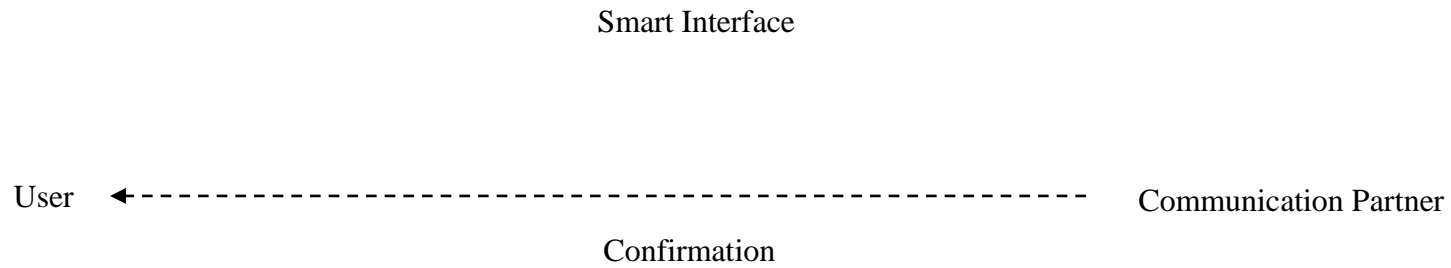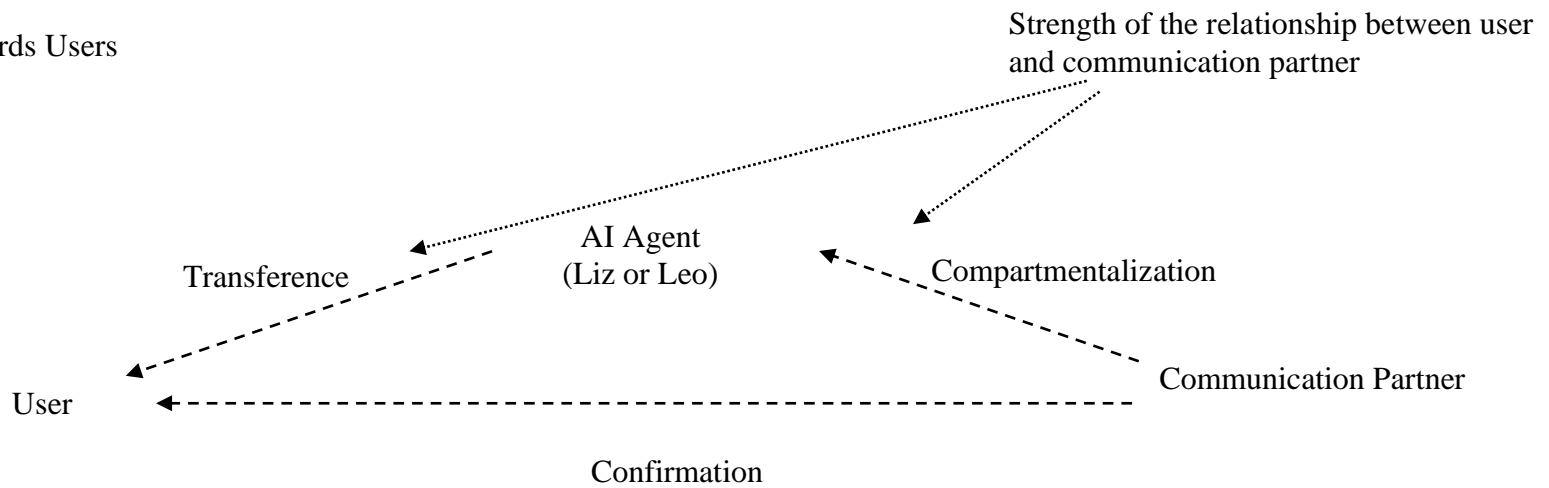
perceptions of Karen: "I think Karen is incredibly intelligent, so it didn't surprise me at all that she was using it. It did sort of surprise me that I could be fooled."

In contrast to communication partners of Smart Hours users, communication partners of Time Wizards users not only assessed the symbolism of Time Wizards as an AI-powered communication tool, they also assessed the decisions made by Liz or Leo themselves. Though communication partners who knew Time Wizards users well could compartmentalize their impressions of Liz or Leo from their impressions of users' identities, such compartmentalization seemed less likely to occur when communication partners did not know users well. Instead, communication partners transferred their impressions of Liz and Leo to the user. Such transference had consequences for users' identity construction by encouraging unfavorable impressions, such as interpreting the user as impolite or someone who was wasting their time.

Users' Identity Work Around AI Agents

Considering the ways that users' decision to deploy AI agents for scheduling could shape how others interpreted their identity, users engaged in identity work by drawing on several communicative strategies. Many Smart Hours users engaged in a communicative strategy we call *interpretation,* through which they framed the meaning of their use of Smart Hours to others. Time Wizards users also engaged in interpretation, but also drew on two other communicative strategies to manage their identities when communicating with others via AI agents. The first was diplomacy, which involved managing the relationship between communication partners and the AI tool to repair or preemptively address any threats to their own identities. The second was staging, which involved monitoring their communication to

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the AI agent itself, which was visible to their communication partners, to construct a socially desirable identity. I depict these communication processes as solid lines in Figure 6.

Smart Hours: Interpretation

Smart Hours users most commonly deployed strategies that allowed them to interpret their use of a communication technology as helpful to both parties, rather than as a signal that they were trying to contrive social distance between themselves and their communication partner. For example, Sean remembered sending an email to a friend with whom he wanted to catch up. He said that he accompanied the link with a message that said, "Hey, let's just book it on your calendar. Because, I mean, we're both human, we're both likely to forget so let's just put it on the calendar this way." Another user, Jenny, said that she strives to be "overly communicative" when scheduling with her clients using Smart Hours, because "who offers their time and whose calendar is being offered to set the boundaries is very much based on the rules of etiquette." When she schedules with clients using Smart Hours, she said, "I usually say, 'Here's my availability. Please book using this at a time that is most convenient for you. And if none of this works, let me know and we'll find something else." As her comment shows, Jenny could use the tool to mediate her connections with clients but helped clients interpret her use of the tool as something that made her more available to serve their needs.

Smart Hours users often recognized the importance of presenting the tool to others in such a way that it seems mutually beneficial to them and their communication partner so that they would not be seen as rude or self-aggrandizing. For example, Martin said that whenever he uses a Smart Hours link, he tries to "soften" how he presents it. He said, "I would say, 'Rather than us going back and forth, different times, do you want to just take a look at my

Figure 6. Practices through which Smart Hours and Time Wizards users engaged in identity work when communicating with others via AI agents.

Smart Hours

Smart Interface

User ———————————————————————————————▶ Communication Partner

Interpretation

Time Wizards Users

AI Agent (Liz or Leo)

Staging

Diplomacy

User ———————————————————————————————▶ Communication Partner

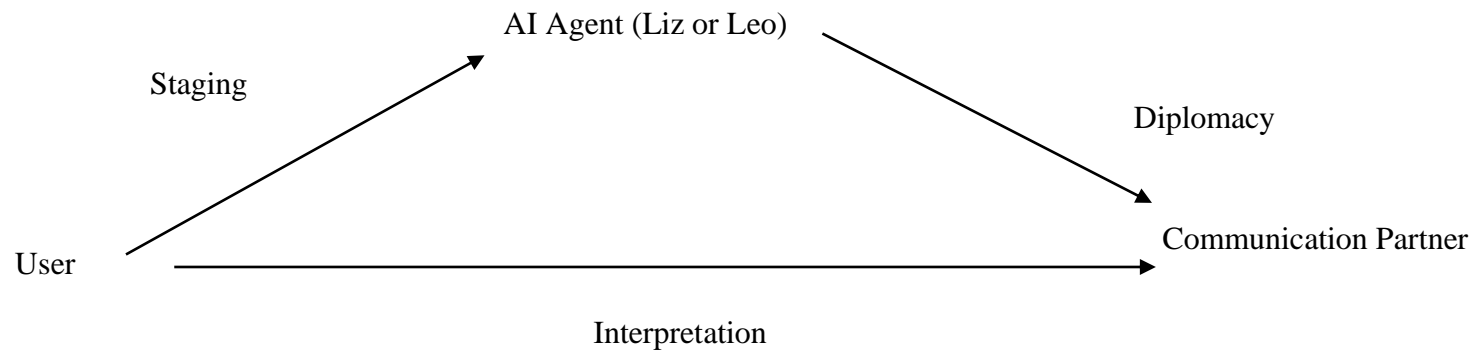Interpretation
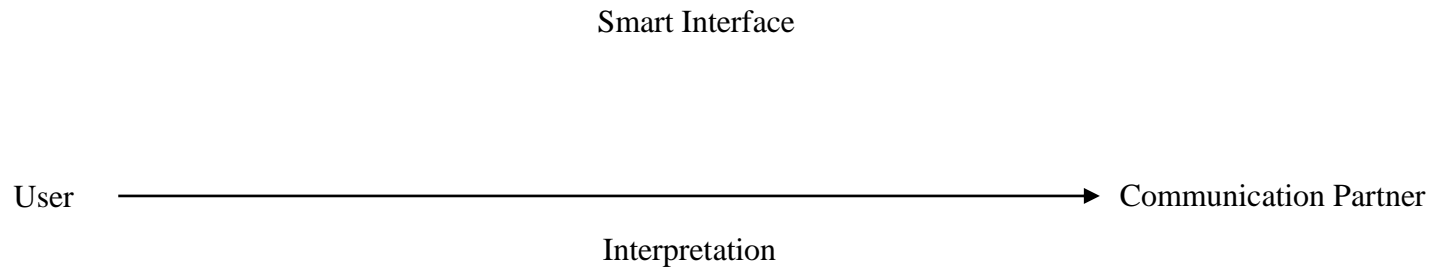
calendar? Go ahead, look any time you want. Just take a look at my calendar, see what works for you.'" He said this approach helps him avoid seeming "pretentious" by assuming that others can meet on his terms. User Noah also explained the benefits of using the tool to a communication partner by writing "if you choose one of these, it will magically go into our diaries (calendars)." These practices allowed users to protect their own identities.

Time Wizards: Diplomacy and Staging

Time Wizards users also engaged in interpretation to help manage how others interpreted their use of the tool and, by extension, their identities. For example, user Matt said that others found his use of an assistant to schedule with them was "weird" and "pretentious" until he explained that it was an AI and that "I'm not sending you this to be like, "I don't want to deal with you. I'm giving you a more intuitive way to interact with my calendar." But users' identity work extended beyond symbolic management. Instead, they also managed the relationship between the AI tool and their communication partner via *diplomacy* and managed how others saw their relationship with their AI agent via *staging*.

Time Wizards users engaged in identity work through diplomacy*,* which entailed managing the relationship between their communication partners and the AI tool in order to manage their own identity. Most often, this work involved apologizing on behalf of Liz and Leo. For example, one user, Richard, was trying to schedule with someone he did not know, someone who could be a potentially useful new connection. The person with whom Richard was trying to schedule received multiple emails from Liz, never received a meeting time confirmation, and never realized that Liz was a bot. Richard said, "I had to call him and apologize and say, 'Look, I'm really, really sorry. Liz is not a real person, she's a bot, and I really apologize for the frustration." Apologies like this helped users attempt to construct identities as polite or

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competent, despite the fact that the bot's actions offended others. For example, Marie, an organizational consultant and Time Wizards user, said that one time Leo sent multiple emails to a meeting guest. She said, "Things like that happen and then I'm having to communicate with the person directly and apologize on behalf of Leo." She explained that it's important for her to make "a good first impression," so that when she apologizes on Leo's behalf "I'm really apologizing on behalf of myself."

Users also mentioned that it was important to describe the extent of Liz and Leo's abilities to their communication partners to avoid errors. Matt said he wants to avoid being "the type of person who throws the AI on there and says, 'My assistant will handle it from here.'" Instead, he says that he helps users understand that Liz and Leo are scheduling bots so that they do not assume that he is trying to trick them. He explained, "I've gotten into the habit of doing a disclosure and saying, 'This is the system I use to book meetings, just a head's up. This isn't a real person, so they'll ask you some questions, but be mindful if it goes off the rails, shoot me a note and we'll schedule it ourselves.'" Many users shared Matt's belief that telling people that Liz and Leo were bots so that they could adjust their expectations was a best practice. Like Matt, Time Wizards user Ethan said: "I might just do a preface, I'll just say, 'Okay, this is a bot. Why don't we try this bot?' or 'Full disclosure, Liz is a bot, so she's just going to help us find a time to meet.'" User Bradley explained that helping people know that Liz and Leo are bots helped protect his own identity. He said, "When the tools are designed to be too much like a human and try and trick people into thinking they're human…it's just like a weird experience for everyone involved. I don't like the impression that it gives off of having an assistant."

The last way that users engaged in identity work is through *staging*, which consisted of communicating with the AI agent in ways that would be seen as polite by their communication

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partners. Because the natural language of users' communication with Liz or Leo was visible to their communication partners, users said that they were careful to make sure that they communicated with Liz or Leo in ways that would be seen as polite by others. As Ethan explained, "I've definitely changed the way I interact with Liz to make sure my request is clear, because my client is getting copied in and I want to make sure that they don't see something that's weird." Users' awareness of their communication partners' observation of their communication with Liz and Leo led some users to monitor how they conversed with Liz and Leo. For example, Karen said that she had to communicate with Leo in ways that the bot would understand but that would not be as perceived as inappropriate by her communication partners. She said,

> When I first started, I had to learn how to communicate with it and get what I needed across so that I could send it to the person I wanted to schedule with but make it sound, make- it was like they could read it and not think I was treating my assistant like garbage. Like, people would think, 'Why are you so cold to them? You just tell them what to do.'

Another user, Joe, explained, "I always say 'please' to Leo. That 'please' is something I'm communicating as much to the other human on the thread as it is to mollify my own sense of not abusing robots." Joe said that even though Liz and Leo aren't human, he doesn't want to be "perceived as being a jerk to my assistant." By changing how they communicated in natural language, users helped manage how their communication with an autonomous agent was perceived by their communication partners.

Discussion

This study investigated how users' identity is continually constructed when their interactions are mediated by two different AI technologies, one in which artificial intelligence is foregrounded in an autonomous agent that makes decisions on behalf of users and their communication partners, and one in which artificial intelligence is modular and makes decisions

on behalf of the user prior to engaging their communication partners. Because identity

construction involves people's attempts to craft their own identities and how these attempts are

interpreted by others to shape ongoing interaction, I considered both the impressions that

communication partners formed about users' identities and how users engaged in identity work

to manage others' impressions of their identities. I found that the relationship between Smart

Hours (the tool that modulated its AI capabilities) and identity construction was largely

symbolic, in that the tool symbolized important aspects of users' identities to others. The

communication partners of Smart Hours users interpreted use as a symbol that confirmed

important parts of users' identities, such as their willingness to experiment with new

technologies. To ensure that their communication partners were assigning meaning to their use of

the tool in ways that aligned with their identities, users engaged in *interpretation*, a practice

through which they framed the meaning of their tool for their identity to others.

By contrast, the use of Time Wizards played more than a symbolic role in identity

construction. Communication partners formed impressions of users' identities based on the

decisions made by the tool's AI agent. Some communication partners transferred their

perceptions of the AI agent's decisions to reflect on users' identities; for example, by assuming

that users themselves were incompetent or impolite when the tool did not work as it was

designed to work. However, when communication partners had a strong relationship with users,

they compartmentalized their impressions to the AI agent rather than transferring them to users

themselves. Users engaged in diplomacy and staging to manage how others related to the AI tool

and how they perceived their communication with the AI tool which, by extension, helped them

to manage their identities. The theoretical and practical implications of these findings for identity

construction around AI agents are discussed below.

The first theoretical contribution of the study is showing how the technological design of AI technologies shapes how identity construction unfolds in interaction. The study's comparative design of two AI-enabled technologies made it possible to observe what difference anthropomorphizing artificial intelligence as an autonomous agent to communicate on users' behalf made for their identity construction. This study showed that communication partners' impressions of decisions made by artificial intelligence – not just what the use of an artificially intelligent tool symbolized – shaped how they perceived users' identities when the artificially intelligent capabilities of the tool were foregrounded. Time Wizards' choice to anthropomorphize their AI agent seemed to encourage comparisons between the tool and a human, which is perhaps why communication partners treated the agent's decisions as a reflection on users themselves, similar to mechanisms through which people evaluate a focal actor by their relationships with others (Insko, 1967; Osgood & Tannenbaum, 1955).

Though previous studies of AI tools have shown how anthropomorphizing AI agents can encourage trust in the agent (Blut et al., 2021; Oistad et al., 2016; Pak et al., 2012; Qiu & Benbasat, 2009), this study suggests an unintended consequence of doing so for users who deploy these tools: the actions of the tool are tied more closely to their own identities. This finding counters discussions that uniformly praise or decry AI's intervention in people's interactions by showing that decisions made by AI come to bear on identity construction when decisions are visible to both the user and their communication partners. It shows that artificially intelligent capabilities alone do not make the decisions of technologies relevant for individuals' identity construction. It is only when those decisions are foregrounded as an agent that AI technologies are enrolled as actors in individuals' identity construction *from the perspective of communication partners*, because of the possibility that their communication partners treat the

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user as responsible for the humanlike AI agent that they employ. Future experimental research could validate this relationship by investigating how variance in how AI agents are anthropomorphized shapes how *users* of these tools are perceived by others and what variables might moderate this relationship, such as the strength of the communication partner's relationship with the user.

The second theoretical contribution is its provision of new avenues for scholarship on identity work in the age of intelligent machines. This study, to the author's knowledge, is the first to consider how individuals engage in identity work when artificially intelligent tools are communicating on users' behalf. By investigating identity work around artificially intelligent technologies, this study was able to show two communicative practices that are unique to identity construction in this context: diplomacy and staging. While most scholarship on identity work considers the communicative strategies through which people frame their own experience and qualities to others (e.g., Beyer & Hannah, 2002; Ibarra, 1999; Wieland, 2010), the empirical context of this study shows that individuals' communication with machines and their attempts to shape others' relationships with machines are part of their efforts to construct desirable identities. The importance of these practices for users' identity work is tied to the behavioral visibility that artificially intelligent technologies afford (Leonardi & Treem, 2020). Because AI tools make users' and communication partners' interactions with the machine visible to one another, the language that they use to interact with the tool is not only instrumental (in that in allows tasks to happen) but also presentational (in that it showcases their identities to one another). Future research might consider how the behavioral visibility afforded by AI tools shapes identity construction over time, such as how users form impressions of their communication partners when observing how they interact with AI tools.

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This study also raises issues for practical considerations for users and developers of AI communication technologies. When using tools in which decisions about interactions themselves are being made by artificial intelligence, one helpful practice that emerged from data was electing to first implement artificially intelligent communication technologies to mediate interactions with people whom the user knew well. The strength of the relationship and the communication partner's multiplex understanding of the user's identity were helpful in buffering negative impressions of the AI tool from affecting the partner's perceptions of the user. Using the AI tool with these trusted communication partners first may be helpful in ensuring that users can address glitches or better understand possible limitations of tool itself before jeopardizing how new communication partners perceive their identity. And because users' communication with the AI agent itself is visible when using tools reliant on natural language processing users must consider this behavioral visibility and, most likely, monitor how they interact with the tool such that it aligns with the identity they want to construct (Leonardi & Treem, 2020).

Chapter Five:

How AI Technologies Enable and Constrain the Enactment of Multiple Identities

Studies of technologies at work have demonstrated that technologies not only help people accomplish what they want to do; they also help people enact who they want to be. For example, on the individual level, people can adopt new technologies to signal their status as innovators (Rogers, 1962; Smith et al., 2019). At the organizational level, scholars have shown how the incorporation of new technologies serves as an occasion for organizational identities to be transformed (Jian, 2007; Tripsas, 2009). At the occupational or professional level, research has shown how people reformulate their occupational identities in light of the implementation of new technologies (Garcia & Barbour, 2018, Lamb & Davidson, 2005; Stein et al., 2013) and also how new technologies offer opportunities for workers to gain increased status and influence in their professions (Barley, 1986; Prasad, 1993).

Together, these studies rely on two assumptions. The first is that technology use is shaped by only one identity at a time. They examine how people use technology to enact their personal, organizational, or professional identities, but only explicitly focus on one focal identity rather than considering that people enact multiple identities as they go about their work. For example, these studies focus only on how people's actions with technology allow them to enact their professional identity without considering how doing so shapes how they enact their organizational or personal identities. The second assumption is that people maintain control over the technology, allowing them the freedom to manipulate the tools to enact a particular identity at a given time should they need to. Because the technologies that have been studied are brought into action by people themselves and do not act on their own,

it has been safe to assume that should someone want to enact multiple identities using a particular technology, they could easily continue, alter, or abandon their use to do so.

The problem with examining technology use in relationship to a given identity, whether it be professional, organizational, or individual, is that people do not have only one identity. Instead, people can draw on multiple identities and these identities can complement or compete with one another (Grice, Paulsen, & Jones, 2002). For instance, a worker's enthusiastic use of a particular technology may be consistent with an organizational identity centered around innovation but may contradict her professional identity that guides her to trust her own tacit knowledge. How multiple identities are arranged – whether they overlap or diverge – likely shape how individuals choose to use technology and such a view would be obscured if only one identity is taken into consideration at a time.

Considering how people enact multiple identities is especially important when studying how people use artificially intelligent technologies. Complexities in the process of enacting multiple identities is further compounded by the use of AI technologies, which are designed to make decisions in patterned and reliable ways over time without users' active involvement. The ways that tools are designed to make decisions may align with one identity but not with another. Consequently, the content of the multiple identities on which people can draw must be taken into account to understand how they make choices to deploy AI tools and with what consequences.

In this chapter, I examine how use of artificially intelligent technologies enabled and constrained how users enacted multiple identities and, in some cases, exacerbated tensions among their identities. To do so, I draw on Scott, Corman, and Cheney's (1998) structurational model of identification to theorize identities as structures that enable and

constrain ongoing action and examine the content of identities that individuals enact when using AI tools. Drawing on interviews with users of two different AI tools, I show how users of the tool that allowed users more control over its decisions enabled their enactment of multiple identities. However, users of a tool that acted autonomously to make decisions on users' behalf constrained their ability to enact multiple identities by bringing identities into conflict with one another. I discuss the implications for scholarship on identities and studies of technology in use.

Enacting Identities with Technology

Identities, most broadly, refer to the meaning that people assign to themselves (Ashforth, 2001) that shape how they choose to act in the world (Blumer, 1969; Mead, 1934). The concept of identity has received enduring interest from scholars of work, organizations, and professions because work does not only provide roles and social contexts for individuals to enact their identities, but also because how individuals enact their identities make a difference to how work unfolds. Individuals enact identities by making choices about how they carry out their work (Ashcraft, 2007; Kuhn, 2006; Leonardi, Jackson, & Diwan, 2009). Because all work involves the use of technology, the tools which individuals use to carry out their work are inextricably linked to their identities (Pinch, 2010).

While many studies acknowledge a mutually constitutive relationship between technology and identity (i.e., Alvarez, 2008; Stein et al., 2013), I focus here on how people attempt to enact their identities using technologies, rather than on how technologies shape the content of identities over time, to center individuals' processes of identity construction. Scholars have theorized technologies as resources that can indirectly or directly enable people to enact important parts of their identities. As Stein et al. (2013) point out, most

research has focused on how new technologies indirectly shape identity enactment by making new work practices and role relations possible. For example, Barley (1986) found that the implementation of new imaging technologies in hospitals occasioned an opportunity for technicians to enact identities as experts, restructuring their occupational identity. Other findings in the vein have showed how people use new technologies to enact their professional (Aydin & Rice, 1992; Boudreau, Serrano, & Larson, 2014; Korica & Molloy, 2010; Lamb & Davidson, 2005; Prasad, 1993) and organizational identities (Alvarez, 2008; Jian, 2007). Technologies can also play a more direct role in identity construction by serving as referents, for example, when people see particular technologies as psychological extensions of their professional identity (Barki, Paré, & Sicotte, 2008) or as constitutive of their organizational identity (Ravasi & Canato, 2010).

Though the studies discussed above explicitly focused only on technology use in relation to one type of identity (most commonly, a professional or organizational identity), these studies themselves offer glimpses that people use new technologies to enact more than one type of identity. For example, the surgeons in Korica and Molloy's (2010) study discussed the importance of technology in showing their affiliation to various groups in their organization, for example, by signaling their affiliation with a smaller workgroup of technology-forward coworkers. In Lamb and Davidson's (2005) study, scientists discussed how their embrace of new technology enabled them to express their personal preferences for new technologies as well as communicate their membership in a group of technology-forward professionals in their workplace. And in Prasad's (1993) study, nurses seized on the opportunity to use new technologies to enact their professional identity because doing so

allowed them to align themselves with the organization's changing identity as a computerized workplace.

The evidence provided by these studies suggests that examining technology in relation to the enactment of only one type of identity – such as a professional identity or organizational identity – is not sufficient to understand how people use technology to enact their identities, because individuals do not have only one type of identity. Instead, individuals can use technology to enact multiple identities. Attending to how people use technology to enact multiple identities, rather than just one, is important to understanding the relationship between technology and identity.

Multiple Identities at Work

The structurational model of identification developed by Scott et al. (1998) helps to theorize how people enact different types of identities as they go about their work. Drawing on structuration theory (Giddens, 1984), Scott et al. (1998) proposed that identification is enacted communicatively and that links to social collectives are "forged, maintained, and dissolved" as people draw on the rules and resources of particular identities. From this perspective, identities are conceptualized as bundles of rules and resources – values, beliefs, attitudes, norms, etc. – on which individuals can draw to facilitate meaningful action. To the extent that they use a certain identity to act, they strengthen their identification with its corresponding target (e.g., as people draw on the rules and resources of a professional identity, they identify with the target of their profession).

A key component of Scott et al.'s (1998) argument is that multiple identities are available for individuals to enact at any one time; on which identity individuals will choose to draw depends on the situated activity in which they are engaging. From this perspective,

identification is not static or trait-like, but rather enacted depending on the particular time and space. This means that people can improvise, identifying with their organization in one moment and their team in the next, or draw on both at the same time. The nature of the situated activities in which individuals engage will make some identities more available than others – for example, a person is more likely to draw on an organizational identity while in the course of her daily work, as opposed to in her private life. But, at any given moment, an array of identities is available to her to shape action.

Just as identities are comprised of rules and resources on which individuals can draw to act, technologies can also be theorized as presenting rules and resources which can be enacted. Consistent with the structurational perspective used to conceptualize identities, DeSanctis and Poole (1994) developed Adaptive Structuration Theory to conceptualize technologies as tools that present an array of rules and resources. DeSanctis and Poole (1994) call people's selection and use of the structural features of technologies in their ongoing practice *appropriation.* From an AST perspective, advanced technologies provide rules and resources that individuals appropriate to act. In applying AST to the study of identity and identification, people may draw on these rules and resources to enact identities. Individuals may draw on some structures but not others, depending on the extent to which the structures afforded by the technology are shared with their important identities.

The agency with which people can appropriate technologies to enact multiple identities is important because the multiple identities on which individuals can draw are not always harmonious. Instead, identities can offer rules and resources that contradict one another. For example, a professor whose daughter is enrolled in her course would find it difficult to enact both her identity as an instructor (via norms of fairness, for example) and as

a parent (via norms of offering extra support). The potentially antagonistic demands of multiple identities present what Putnam, Fairhurst, and Banghart (2016) called dualisms, or polar opposites that often work against one another and that represent oppositional pulls that vary in degrees (p. 69). As people encounter opposition among their identities, tensions can be generated, or the stress, discomfort, or tightness that arises in making choices (Putnam, Fairhurst, & Banghart, 2016). For example, identity-related tensions could include tensions between being seen as an eager-to-learn novice and as a competent employee (Woo, Putnam, & Riforgiate, 2017) or between being seen as a volunteer or as a professional (McAllum, 2018). The oppositional pulls of enacting identities with conflicting rules and resources can cause significant strain as people decide which identity to enact. Existing work has explored the possibilities for managing these tensions, such as discursively reframing them (Gibbs, 2009), enacting different poles of the dualism in different settings or at different times (Meisenbach, 2008; Putnam, Myers, & Gaillaird, 2014; Woo et al., 2017), expressing tensions in talk or meta-talk (Larson & Pepper, 2003; Williams & Connaughton, 2012), enacting different sorts of identifications over time (Pratt, 2000) and source splitting, that is, dividing the tensions and assigning them to different situations or times (Putnam et al., 2016).

To enact multiple identities by using technologies, individuals can implement similar strategies because they retain control over how they use the technology. Because it is people who make decisions about how to use technologies and not the technologies themselves, individuals can elect to improvise in their appropriations, drawing on some rules and resources in some interactions and other rules and resources in other interactions. They may make choices about which of the rules and resources that a technology offers that they will

appropriate in action. Though one technology cannot provide all the rules and resources of all the multiple identities individuals may want to enact, people can appropriate features that offer them the rules and resources they need to enact a particular identity as they see fit, with a relatively high degree of agency over how they incorporate technology into situated action within the constraints of their organization or profession.

Multiple Identities and Artificially Intelligent Technologies

Unlike previously existing advanced technologies, emerging technologies equipped with artificial intelligence can make decisions without active selection and involvement from users themselves. Artificial intelligence refers to the processes through which machines learn to make decisions in ways that mimic human intelligence, namely, by learning from patterns in training data and incorporating feedback they receive over time (Faraj et al., 2018; Nilson, 2010). Unlike the technologies that preceded them, tools outfitted with artificial intelligence are designed to eventually be capable of acting without close human monitoring. These tools present new challenges for people as they draw on multiple identities in their work.

Though a variety of artificially intelligent tools exist, the category that most directly relates to people's identities are those that facilitate their communication with other people and communicate with other people on their behalf. The social constructionist view of identity on which I draw assumes that identities and identification are formed, maintained, and altered in interaction. Thus, the use of these types of artificially intelligent tools, which make decisions about the nature of people's interactions, is directly involved in how people enact their identities. These tools include, for example, services that provide tailored automatic responses to incoming emails, AI-generated messages embedded in a customer

relationship management program, or AI-powered tools for scheduling meetings among individual users (the focus of this study).

The problem of possible conflicts among multiple identities is compounded by the use of AI technologies that interact with others on users' behalf. These AI technologies are designed to learn from patterns from aggregated data to become optimized for a finite outcome or set of outcomes, and so are limited in the identities that they can help users enact. While a human can decide to enact different identities based on the situated action in which they are participating (Scott et al., 1998), for example, based on who their communication partner is (Scott & Stephens, 2009), an artificially intelligent tool cannot exert the same flexibility. Even though AI tools can learn over time, the patterned ways they make decisions are set at given parameters, limiting the amounts of rules and resources on which they can draw at any one time. For example, a person might know to draw on a professional identity when interacting with clients, for example, by using polite language, but draw on an organizational identity that values candor and humor when interacting with her supervisor. Learning these nuances would require enormous training data sets, ongoing manual classification of variations in interactions, and careful manual feedback from users themselves. For these reasons, the AI tools on the market today are not designed to accommodate the variations in communication through which human beings enact different identities in interaction. Whereas people can draw on different facets of their identity in ongoing action (Tracy & Trethewey, 2005), AI tools are limited in the rules of enacting identities that they can learn.

Not only are AI tools optimized for a limited set of outcomes, but many AI tools require aggregated data from a large pool of users, which mean that the decisions they make

are based on how the aggregated userbase enacts identities. Even when AI tools are able to learn from patterns at the individual level (for example, the customization of a Spotify playlist or recommended purchases), all user actions are combined into one aggregated identity, rather than an array of differentiated identities on which someone could draw at different times. For example, an Amazon recommended products tool cannot distinguish between the different identities of a person who is, at times, buying products to enact her identity as a mother and other times doing so to enact her occupational identity. In the context of AI technologies that make decisions about interactions on users' behalf, these technologies are not able to distinguish among the different identities on which people could draw when making decisions about their time for themselves. Instead, a host of behavioral patterns are often aggregated into one identity.

Since AI tools are limited in the rules and resources on which they can draw to guide interaction, differences in content among the identities which people desire to enact present a unique challenge for responding to dualisms among identities. While individuals may resolve oppositions by choosing to enact different identities at different times (Meisenbach, 2008) or express different sorts of identifications with different communication partners (Scott & Stephens, 2009), an AI tool that learns from patterns in aggregated data cannot accomplish this same degree of improvisation when making decisions about how users will interact. Without the likelihood of enacting both poles of the dichotomy, individuals may encounter significant tensions in relying on AI tools for their identity enactment.

Because individuals can draw on multiple identities to act in relation to technology, this study examines how people's use of artificially intelligent tools to mediate their interactions enable and constrain how they enact multiple identities. To explore these

dynamics, this study focuses on how people's use of AI tools that facilitate their

communication and communicate with others on their behalf shape how they enact multiple

identities and with what consequences.

Method

Research Design

To understand how people's use of AI tools shape how they enact multiple identities,

I drew on interviews with developers and users of Time Wizards and Smart Hours. Time

Wizards' scheduling assistant mimicked a human assistant by automatically following up

with guests, telling them about the user's availability, and asking them for their preferred

meeting times. Not only was the use of AI in this tool showcased by anthropomorphizing a

piece of artificially intelligent software, but the degree to which users' scheduling decisions

were made using artificial intelligence was high. When working correctly, the AI tool could

converse with communication partners and add meetings to their and users' calendars

without any active involvement from the user. The tool relied on aggregated data across users

to learn how to interpret and respond to requests in natural language. In contrast, Smart

Hours' smart calendaring interface used artificial intelligence to help make predictions about

the user's interactions with the tool, but not about scheduling decisions themselves.

Both tools enabled users to entrust scheduling decisions to AI through capabilities of

machine learning and autonomous decision-making. However, Time Wizards' tool attempted

a more ambitious application of AI by engaging users and their communication partners in

conversation to schedule meetings. Rather than relying as heavily on users' inputted

preferences, Time Wizards' bot worked to make decisions about meetings more

autonomously. When they did so, these decisions were immediately visible to both users and

their communication partners. Smart Hours users retained more control over how decisions were made using AI prior to engaging their communication partners. The differences between these two companies' tools – one which used AI to autonomously mediate users' interactions and one which used AI to supplement users' actions –allowed me to see how variation in the extent and types of decisions made by artificial intelligence shaped how users enacted multiple identities.

Data Collection

To understand how AI technologies were designed to help people enact identities and how people were enabled and constrained in their enactment of multiple identities when using the tools, I drew on interviews with developers and users at both companies. I interviewed developers (n = 14) about the choices they made in designing AI tools and how they imagined their choices would impact users' identities. In these interviews, I asked developers about their roles in the company, how AI is suited for helping people manage their schedules, and the identities their tool afforded people the opportunities to enact. I also asked about the choices they made in designing an AI tool (i.e., how the tool learns from individual versus aggregated data). Last, I asked what they have observed as consequences of using the technology for users.

I also drew on interviews with users of both tools. In the first interview I did with users (n = 30), I asked them how they needed to present themselves via their calendar; how their use of technology relates to their work identities; and the important values, norms, and beliefs on which they need to draw to engage in their ongoing work practices, especially related to scheduling. I also asked about the work practices in which they engaged to use their respective technology (Spradley, 1979). In doing so, I could trace how their use of their

respective tool over time and what the choices they made in using the tool could indicate about the relationship between technology use and their multiple identities. If users consented, I interviewed them again nine months to one year after the first interview (n = 22). In these interviews, I asked if and how they experienced shifts in how they were enabled or constrained in their enactment of multiple identities so I could understand how these changes unfolded over time.

Almost all users of both the Time Wizards and Smart Hours technologies were independent contractors who had a high degree of freedom to implement new technologies because they did not need to gain organizational approval for doing so. Studying workers who had such flexibility and freedom in their technology decisions is a useful extreme case to study how individuals enacted their valued identities while using AI technologies to mediate their interactions (Yin, 2014). Considering the nature of their work, organizational identities were not important targets of identification for users in this sample, consistent with previous research on independent contractors (Endacott & Leonardi, 2020). Accordingly, this study focuses on individuals' personal and professional identities (Scott et al., 1998) rather than on collective identities such as identities associated with organizations or workgroups.

Data Analysis

Developers: Understanding Technological Design

I began my analysis by using interviews with developers to understand how tools were designed to help users enact identities. I used open codes such as "helping users schedule multiple meetings a day" as I coded interviews with Time Wizards developers. In my analysis of interviews with developers at Smart Hours, I used open codes such as "helping users schedule within their desired preferences." Moving up a level of abstraction, I

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was able to group these open codes into axial codes. Based on my codes of the Time Wizards data, I developed the axial code of "designing technology to help people make connections" and at Smart Hours, I developed the axial code of "designing technology to help people spend their time how they want."

Users: Understanding Identities and AI Technology Use

I turned next to analyzing interviews with users, who could speak to the identities that they wanted to enact and how their use of their respective AI technology enabled and constrained them in doing so.

Mapping Identities and Dualisms. My approach to data analysis was informed by Scott et al.'s (1998) structurational model of identification. Using this theory, I conceptualized identities as collections of rules and resources that serve as coherent anchors for action (Giddens, 1984). Unlike in previous studies of identification, I did not assess participants' identification with targets that I had selected *a priori*. That is, I did not assume that typical targets of identification, such as one's profession, or organization, were meaningful to participants in this given context (Endacott & Leonardi, 2020; Kuhn & Nelson, 2002). Instead, I wanted to examine the multiple identities that were important for participants to enact from an emic perspective, that is, the perspective of users themselves. Such an approach allowed me to examine the content of identities, rather than their categories, and to understand the rules and resources that individuals found important to enacting their identities at work.

To capture the full variety of rules and resources on which users could draw to construct their work identities, I took an inductive approach to coding. First, I selectively coded any instance where users talked about rules and resources (i.e., values, norms,

behaviors, attitudes, knowledge) that shaped their scheduling practice, their use of their respective tool, or their ongoing work practices more broadly (Corbin & Strauss, 2007). I assigned open codes at a low level of abstraction to these rules and resources based on the content of the data segment. For example, I assigned codes like "needs to get meeting information to others quickly" and "needs time to get writing done." I assigned open codes to all the data I had flagged, first, to all the Time Wizards user interviews, and second, to all the Smart Hours user interviews. Next, I created axial codes at a higher level of abstraction to describe rules and resources, creating codes such as "get independent work done" and "make sure meetings happen."

In the next step of coding, I switched from a more emic approach to coding (in which actions and categories are described from the perspective of the participants) to a more etic one (in which actions and categories are described from the perspective of the researcher). This allowed me to look for similarities and differences among identities that participants themselves may not have been able to describe because of their taken-for-granted nature (Giddens, 1984). I looked for similarities among rules and resources and developed one more set of axial codes that described these rules and resources at a higher level of abstraction. Through this analysis, I found that the rules and resources coalesced into identities that could be described as dualisms, or as opposites that often work against one another and represent oppositional pulls (Putnam et al., 2016). Users described the importance of *fostering connection* while also *disconnecting* to ensure they could complete independent work. They also described the importance of *controlling* their calendar to ensure their schedule took precedence but also of *acting deferentially* to acquiesce to others' schedules. This suggested to me that users found it important to enact two dualisms in their

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identities: *connection-disconnection* and *yielding control-exerting control.* I coined terms to describe the identities that sat at either end of these dualisms: the identity of a *networker* (someone who needed to frequently connect with other people in their work) versus a *maker* (someone who needed to connect less frequently with people to carry out their independent work) and the identity of a *controller* (someone who exerted control) versus an *obliger* (someone who yielded control) Representative data of these dualisms are shown in Table 5.

Analyzing How Technology Use Shaped Enactment of Multiple Identities. After mapping out the rules and resources important to users' ongoing work and their use of technologies and coalescing them into identities, I then revisited the data to look for patterns in how users' technology use shaped if and how they enacted these four identities. My previous analyses and comparative research design allowed me to see how the affordances of the tool (differences in how the tool provided them with rules and resources to enact identities) shaped users' enactment of multiple identities. I drew on users' descriptions of their actions and their vocabularies of motive (Mills, 1940) to look for patterns in how individuals discussed their attempts to enact multiple identities. I found that Time Wizards users frequently cited concern over how the AI-enabled capabilities of the tool made it difficult to enact their identities as makers and obligers, even though it helped them enact their identities as networkers and controllers, because the tool was more autonomous in the decisions it made on their behalf. In contrast, Smart Hours users were enabled to enact multiple identities by the flexible nature of the tool and the modulation of its artificially intelligent capabilities, which allowed them to maintain control over their scheduling decisions. These findings are described in detail below.

Table 5. Exemplar data of the dualisms of connection and control for Time Wizards and Smart Hours users.

Company	Dualism of Connection		Dualism of Control	
	Makers (Low Connection)	**Networkers (High Connection)**	**Obligers (Yielding Control)**	**Controllers (Exerting Control)**
Time Wizards	"What I am really getting paid to do, talk to people on the phone, that's part of it."-Benjamin "I need to schedule my own free time so I can get other things done." -Ron	"I also have to take actions with this stuff, I have to get my work done." -Benjamin "Someone who should use Liz is someone who has lots of individual meetings, which defines me." -Ron	"Sometimes I need to say, 'I'd like to get together with you, and my AI is going to help <u>us</u>, and we're <u>both</u> going to do work to get this meeting.'" -Bob "Sometimes, I'll want to have a meeting on my calendar that I know that I can let run long. But Time Wizards will just adhere to whatever my set preferences are. I can't add that extra time for someone." -Joe	"So when I'm doing someone else the favor, I can use Liz all day long and no problem, right?" -Bob "When I'm scheduling down, if it is a colleague or some rando, I'm way more likely to engage Liz and Leo." -Joe

Smart Hours	"It's about your work style. Unless you're in sales and you're trying to drive sales lead, you can't accept every meeting… I don't allow calendar items to automatically appear." -Gary "Smart Hours has definitely helped me stay focused on what I should be doing and what I should be prepared to do as well." -Martin	"This tool is for people like me who schedule lots of meetings and need a smart assistant to alleviate the need to constantly say 'I'm available at this time and unavailable at this time.'" -Gary "I try to schedule everything as much as possible…. I'm in like 20 hours of calls a week. I schedule meetings all the time." -Martin	"Sometimes my own time blocking has to get thrown out the window in order to accommodate talking a client in Beijing or a client in London. "-Jenny "I just send them the link, then they can grab whatever time on the next, this week or next week's Tuesday and Thursday, that work for them." -Michelle	"I actually really like being in control of my time. "-Jenny "I think, just being able to set what the parameters around when I do meetings and stuff, and be adamant about, 'No, this is when I'm available. Like look at my calendar,'" - Michelle

<center>**Findings**</center>

To demonstrate how the use of artificially intelligent technologies shaped users' enactment of multiple identities, the findings are organized into two parts. The first draws on interviews with *developers* to describe how each tool was designed to help users pursue a particular identity. The second part describes compares how *users* of these two tools were enabled and, in the case of Time Wizards, constrained in their attempts to enact two dualisms: low versus high connection and low versus high control.

Designing Tools in Service of a Particular Identity

Developers at Time Wizards and Smart Hours differed in their approaches to designing the artificial intelligent capabilities that powered their tools. Consequently, these tools presented users with different sets of rules and resources to enact their identities. At Time Wizards, developers talked about helping users enact professional identities as people who could secure as many meetings as possible as quickly as possible. Developers spoke about the choices they made to design an AI tool that helped users pursue this identity. In contrast, developers at Smart Hours talked about how they wanted to help users pursue identities as people that used their time in ways that were consistent with their own preferences. In turn, developers designed a tool with material affordances that reflected this identity. These views of users' identities and the corresponding design choices are explained in full below.

Time Wizards: Helping People Make Connections. Time Wizards' AI tool was designed to help users enact a professional identity centered on securing as many meetings as possible and, as such, made decisions based on the likelihood that actions lead to users booking more meetings. Mehmet, a product manager, explained how even though users are

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drawn to the tool because it might save them time, the real benefit is that it helps users to connect with more people than they would otherwise. He said,

> The real value we bring to customers' lives is about how we help them to succeed in their business. It's not just about 10 minutes that you save in scheduling meetings, it's about the 25-30% increase on calls you can now pursue … It's not about saving time anymore; it's about helping people doing more of what they love.

For Mehmet and other developers at Time Wizards, helping people do more of "what they love" meant helping them to schedule more meetings with more people. For example, Javier, the lead data scientist, discussed performance metrics for their AI tool. He said that the company assesses tool quality based on questions like, "How many email ping pongs did the meeting take? Was it actually scheduled or was it cancelled, or was it rescheduled? There's a set of sub-optimal scenarios and we try to minimize the amount of reschedules or cancels." Thus, the company assessed success on its ability to help users ensure the meetings they initiated were scheduled.

The material features of the technology itself were designed to help users make connections. In particular, the bots, Liz and Leo, were designed to be incredibly persistent in scheduling meetings and following up with unresponsive meeting guests. Mehmet explained that this persistence "differentiates us from a human." He said, "Liz and Leo are better with the persistence and following up to make sure that they actually get meetings on your calendar." They also were designed to select the first available slot on users' calendars to schedule meeting times. Time Wizards also planned for Liz and Leo to be programmed to suggest potential meetings for users. Founder Mikkel said that Liz and Leo would soon be programmed to recommend locations that are ideal for networking and to suggest people in the user's network with whom they should connect. The company's vision, the design of the tool, and future plans for development affirmed the notion that users were best served when

the AI technology helped them to be people who participated in as many meetings as possible.

        Smart Hours*: *Helping People Spend Their Time How They Want. In contrast, developers at Smart Hours saw their goal as helping users make scheduling decisions that aligned with what *users* saw as their own priorities. Nathan, the founder of Smart Hours, spoke about what he saw as the "big picture thesis and vision" of the company: "As you better understand how you're spending your time, you can make the better choices you can make about how you're going to spend your time." Bruce, the lead product designer, affirmed this goal. He said that as users navigate their calendar, the Smart Hours tool should help them to assess each time commitment in light of their own goals. He explained,

> This tool helps you say, when a meeting comes in, does it fit your priorities or not, and let you see that you've spent X amount of this month on that priority. It's helping you say, "What do I want to do?" Helping you reach that goal. And that combination of working around the reality and letting you think about the goal is super powerful.

In short, Smart Hours was developed with the assumption that users knew what type of people they wanted to be, but they needed smart technologies that could help them spend their time in ways that were consistent with their desired identities.

        The Smart Hours technology was designed to help users track and allocate their time. Like Time Wizards, the interface allowed users to request meeting times and identify overlapping free areas between others' calendars and their own. However, it used a calendar interface, not a named bot. Smart Hours' tool also featured templates that users could deploy to schedule a pre-programmed meeting type, such as a sales demo. Users could then use these templates to track the time they allocated to these tasks. Onat, VP of Engineering, discussed how he designed the Smart Hours interface to allow for flexible use. He said:

> What is 'best' means different things to different humans. So, instead of going for the best, we go for whatever you want, right? As the user, you're the king. You get to decide what you want and how you want to do it and we try to make the app flexible and intelligent and able to support you, but we don't try to impose best practices on you.

This flexibility was intended to help the Smart Hours tool make decisions that aligned with their desired identities.

How AI Tools Enabled and Constrained the Enactment of Multiple Identities

Both Time Wizards and Smart Hours discussed the importance of enacting identities at both ends of two dualisms: low and high connection and low and high control. For the dualism of connection, users of both tools said it was important to enact identities as networkers (high connection) and as makers (low connection). For the dualism of control, users said it was important to enact identities as controllers (exerting control) and as obligers (yielding control). As Time Wizards users deployed the scheduling bot, they found that they were constrained in their attempts to enact multiple identities, as the tool was optimized to make decisions for only one pole of the opposites. Smart Hours users, who retained more control over the interactional decisions made by the tool, were enabled in their enactment of multiple identities. Below, I compare how users of both tools enacted identities at both ends of these dichotomies using AI technologies.

Dualism of Connection

Time Wizards. Users of Time Wizards' AI technology had to enact identities of *both* networkers (which required a high volume and variety of connections with others) *and* makers (which required time to engage in independent work while disconnected from others). Users of Time Wizards' AI technology frequently discussed how the tool provided them with rules and resources to enact their identities as *networkers* – well-connected

professionals for whom scheduling a high volume of meetings was essential. For example, Benjamin worked in arranging sales as a chief technology officer. He said outsourcing the creation of meeting requests was helpful, because "being able to set these things up is good." Richard, who worked in sales for a technology start-up, found that deploying Liz to persist in scheduling meetings with potential leads was useful because, "following up and making sure meetings happen is really, really important to what I do." He said that, prior to deploying his AI assistant Liz to schedule his meetings he found himself "legitimately missing real opportunities because I couldn't keep up or be bothered to keep track of my meetings."

Users who needed to be prolific in arranging meetings with new contacts in their work described how the persistence of the tool allowed them to enact their desired professional identities as networkers. As Raymond, a financial advisor, said, "Her [Liz's] persistence has opened more doors to me. People can't blow me off as easily." Others talked about how working with Liz or Leo enabled them to hold the volume of meetings that they knew they needed to complete to enact their professional identities as networkers. For example, Matt, a marketing professional, said that delegating meetings to Liz forces him to commit to his schedule. He said that since he began using the Time Wizards tool, "I definitely have more meetings… at my core, I actually don't want to do meetings…but this just ends up being better for me as a forcing function for just getting it done and having the meeting scheduled."

Although Time Wizards users were enabled in their enactment of a particular kind of identity – that of a well-connected networker – they were constrained in enacting another important identity: that of a maker, which required disconnection. Time Wizards users discussed how it was not only important for them to meet with other people; it was also

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important for them to have unstructured, quiet time to produce work. Prior to using Liz and Leo, Time Wizards users still experienced tensions between these identities (as one user, Joe said, how he balances his time between scheduled time and unscheduled time is a "me problem, not a calendar problem"). Prior to using Liz and Leo, users could manage these tensions by enacting different identities at different times. However, because Liz and Leo were designed to aggressively and quickly place meetings on the calendar to optimize the number of meetings that uses had, users were constrained in their ability to draw on the rules and resources of their identities as makers, such as delaying meetings to ensure they had time to get work done. Instead, they found that Liz and Leo had scheduled meetings during the time that they needed to work. For example, Jenn, a college professor, said that Liz filled up her calendar with meetings during times where she needed to be writing research papers. She explained, "Liz just sees my calendar as presence and absence. So as long as there's an opening, there can be an event." Another user, Bob said, "I know that if there's an empty spot [on my calendar], it's going to get sucked up by the bot." As one user, Eric, put it, he was enabled in his ability to meet with people as he used Liz to schedule meetings, but constrained in his attempts to protect his own time to do independent work, which created a tension between his identities. He explained:

> Consequences happen… it's not uncommon that suddenly something will just show up on my calendar. I'm like, "Oh, look. I can get this done this afternoon," and then suddenly there's a meeting. And that causes trouble sometimes, because it just suddenly shows up there.

Because Liz and Leo made interactional decisions on the user's behalf, Eric and others encountered instances in which they had to participate in the meetings that Liz or Leo had promised other people instead of doing the work they had planned to complete. Users were left in a double bind: if they were scheduled for a meeting, they felt like they had to be

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present at it, but if they were unscheduled, Liz and Leo would fill those times in. Users could not be absent from their unscheduled meetings nor could they easily communicate contingencies to the tool in ways that gave them the time away from meetings that they needed to enact multiple identities.

Even though Time Wizards helped users to enact their identities as networkers, the patterned, autonomous ways it made decisions to optimize the number of meetings in which users participated constrained them in their attempts to do the creative, independent work central to their identities as makers.

Smart Hours. Like Time Wizards users, Smart Hours users said that it was important to enact identities as *both* networkers *and* makers. Many users' work depended on their ability to meet with many people in their course of a week. As Jenny, a marketing consultant, explained, "In my world, time is money, because you trade time for cash. It's kind of just the way it works." The Smart Hours user interface afforded users rules and resources that users could appropriate to enact their identities as networkers. For example, Smart Hours users could deploy the tool by sending scheduling links to people with whom they wanted to meet and distributing group polls to find available meeting times to expediate the process of finding times to meet. Smart Hours users drew on these resources to connect with people with whom they wanted to meet. For example, Asif explained that using Smart Hours is "way more efficient… whatever the people who schedule with me want to do – wherever it happens, whatever it happens to be, regardless of their technical ability – they can book the slot." And similarly, Jenny explained that because Smart Hours enables her to schedule quickly with a lot of people, she is better able to meet the demands of her work. She

explained, "For me, it's all about scheduling and utilizing my time as best as possible, and Smart Hours gives me all the tools in one place to do that."

Like Time Wizards users, Smart Hours users also had to enact identities as makers. Considering that users tended to be busy professionals, it was difficult in general, apart from any smart calendaring tools, to find time to get work done. As Colin said, "I met with a lot of entities, so I have a lot of scheduling challenges. One of my biggest challenges is finding time to actually get my work done." But using Smart Hours actually helped to enable users to enact their identities as networkers *and* makers by allowing them to protect the time they had set aside to do their independent work. For example, Owen said that he could set scheduling templates that ensured that he is never scheduled for meetings during the time that he has set aside for what he called "deep work," which included tasks like researching and writing. Similarly, Gary said that he created a "no call time block" on his calendar every morning, so that he can protect his writing time. He said that he knows Smart Hours will not display this time to others, so that he can avoid instances where "all of a sudden everybody is suddenly wanting to talk to me then and my stuff doesn't get done." And Sean explained that he has used Smart Hours to be more protective of his creative time since implementing the tool: "I use Smart Hours to block out sections of my day as 'no disturb time,' usually from 5:00am to 8:00am. I want to be productive. I want to focus on my creative time." He explained that "while people can use Smart Hours to actually get meetings or to secure meetings, I can also use it to get away from meetings." As these examples show, users could deploy Smart Hours to enact their identities as both networkers and makers without incurring additional conflicts between these identities.

Dualism of Control

Time Wizards. Time Wizards users were constrained in their enactment of identities related to control: identities as controllers, who exerted high control over how they spent their time, and as obligers, who accommodated others' schedules or yielded control. In some ways, the tool enabled users to act as controllers of their time (even if users often had to attend meetings that interrupted their work). Though many users did experience the scheduling of meetings during times that they had planned to work, the tool was still adhering to their preferences. This allowed users to, if they had the proper time and forethought to codify their work, to assert some control over how they used Liz and Leo to schedule. For example, when people asked for an in-person meeting with him that required travel during heavy traffic times, Matt said that he would agree and then tell Liz to schedule the meeting as a call, which Liz obeyed. He said, "Then I can kind of let the AI worry about that, and then it seems so strict that the person really doesn't get the chance to say, 'No let's do it in person instead.' So the AI becomes the scapegoat." Another user, Karen, also used the ability to have Liz make decisions on her behalf to reschedule meetings if she was running late. She said, "The beauty of Time Wizards is that rescheduling is a lot easier because Liz can apologize on your behalf and it's automatically working on the reschedule right there." While users did not always consent to when meetings were scheduled, they could use the tool's adherence to its interpretation of the fixed constraints of their requests to assert influence over how meetings happened.

Because of the outsourced decision making that the tool provided, many users said that could easily use Liz and Leo to schedule with people over whom they wanted to assert control (in relation to scheduling). For example, user Jenn, a researcher professor, explained that she often used Liz and Leo to schedule with students who worked in her lab because she

knew that she was higher in the "pecking order." She said, "If I'm meeting with a student, my schedule takes priority." Similarly, another user, Benjamin, explained that he can easily use Leo to schedule meetings with the "glut of people" who want to meet with him so that he can connect them with international investors. He said, "I'm saturated with those people that I help make connections and grow the business in the market…they are the ones I really want to use the extra AI for… they need me as much, if not more, than I need them."

Where users encountered problems was in enacting identities as obligers who wanted to yield control to the people with whom they wanted to meet. The same mechanism that led to users being scheduled into meetings during times they had planned on working, Liz and Leo's reliance on the detection of presence and absence in users' calendars, also created issues when users wanted to try to accommodate those with more power than them. The tool did not offer users the opportunity to change their schedules to make sure they could meet with someone important. Jenn explained,

> Let's say I put in my calendar that I'm going to go to the gym, but someone who I really want to meet with can only meet at that time. I would be like, "Okay, I'll go to the gym a different time' but Liz can't be like, 'Hey Jenn, are you flexible with your gym schedule so that I can get this on the books?'

Similarly, Ron explained that it can be difficult to enact the appropriate posture of availability when using Time Wizards because the AI tool could not interpret which meetings he ought to move to accommodate meetings with higher-status people. He said, "When my boss's boss wants to schedule time with me, I have to think, 'Can I move this around?' And when it's my boss's boss, the answer is almost always yes…so there needs to be some way to designate that when it's (the meeting) for this person, everything has to move." Because the tool was designed to schedule meetings into free time on users' calendars, users had

difficulty enacting the type of flexibility that they needed to in order to enact identities as obligers.

Smart Hours. Smart Hours users also encountered a dualism of control in enacting multiple identities. They needed to enact identities as both controllers whose schedules were the most important and as obligers who were deferential to others when making scheduling decisions. Smart Hours users were enabled to enact both of these identities in their use of the tool. Smart Hours users valued their ability to control the terms of their schedule, helping them to enact identities as controllers. Unlike Time Wizards users, Smart Hours users retained control over the interactional portion of their scheduling decisions. Even though they used AI to set up their scheduling links and templates, the tool relied on their inputted information to make decisions about if and when meetings were scheduled. They often attributed their decision to use a tool like Smart Hours, rather than a tool with an AI agent like Time Wizards, to their desire to retain close control over their calendar and prioritize their own availability. As Mario said,

> The people who should use this tool based off my personal experience are people who want to have more control over their schedules and be able to quickly set things up without a constant back and forth…The control for myself is being able to say when I'm available, and then share a link that shows that.

The affordances of the tool allowed users to efficiently share their availability using processes designed to set their availability as the ultimate terms of the scheduling negotiation.

Smart Hours users did not experience difficulty in enacting their identities as controllers alongside their identities as obligers as they utilized the tool. Instead, the tool enabled them to creatively enact both-and approaches to managing the tensions among their identities, or approaches that allow people to treat opposites as inseparable and

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interdependent (Putnam et al., 2016). For example, Michelle explained that using Smart

Hours helped making her more available to her clients (obliger identity) but also held her to

her preferred working patterns (controller identity): "It's making me more accessible but also

allowing me to keep my own boundaries." Another user, Jenny, said that using Smart Hours

has "made it even easier for me to available to meet people who want to solicit help but while

being protective of my time."

And as one user, Owen said,

When I give people my availability, I've predetermined what times they're able to
see. The story they're seeing is, 'Owen's really generous with his time.' And the story
I'm actually telling is, 'This is the time you get. Deal with it." So that's really helpful,
because it allows me to have agency over my time but also to be a people-pleaser.

As Owen's comment shows, Smart Hours users could deploy the tool symbolically to signal

their availability to others and their willingness to defer to their needs without ceding the

power to have meetings added to their calendars without their consent.

Because users ultimately retained control over scheduling decisions (even if it

appeared that they had given others free reign to their calendars), they were enabled to enact

identities as both controllers and obligers which helped them to manage the tensions between

the poles of the dualism of control. For example, Owen explained, "There's a real power in

being able to send a link and have the person on the other end go, 'Wow, that's great that

they're giving me so much control over their time.'" As Owen's comment shows, he was

able to allow the people with whom he met to experience a degree of control over his

schedule, but on his own terms (a condition which Owen notably describes using the word

'power'). In allowing users to both exert control and yield it, the Smart Hours interface

helped users manage tensions among their identities by segmenting and balancing them using

their set preferences.

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Discussion

This study asked how people's use of AI technologies enabled and constrained their enactment of multiple identities. To do so, it compared users of two different AI scheduling technologies and how their use of the tool shaped how they enacted multiple identities. The findings showed that users of Time Wizards' technology, which was an AI agent that autonomously made decisions about their schedules, were afforded opportunities to enact identities as networkers and obligers. However, the ways that the tool was designed to make decisions across interactions constrained their enactment of their identities as makers and as controllers of their time. In contrast, users of Smart Hours maintained more control over the interactional decisions that the tool made. The tool did use AI to make decisions, but the users could access these decisions before they were communicated to the users' communication partners. Users found it easier to manage the tensions their identities as networkers and makers and as controllers and obligers while using the tool; noting that the tool helped them to better enact identities that existed in opposition to one another.

The study's major contribution is theorizing and providing empirical evidence for the ways that adopting and using artificially intelligent technologies can exacerbate tensions among multiple identities and make them difficult to enact. Both groups of AI users described the need to enact multiple identities in their work, including identities that existed in opposition to one another. In the course of their work, users experienced tensions among these identities, but could exert flexibility to enact different identities at different times when interacting without the use of AI tools. However, in the case of Time Wizards users, interacting with others using an AI tool constrained this flexibility, pushing users to one pole of the dualisms of connection and control. As users relied on an artificially intelligent agent

to interpret and generate messages and select meeting times, they were enabled to enact their identities as networkers because the tool made decisions in ways that helped users efficiently secure a high volume of meetings. However, the tool made it difficult to schedule in ways that allowed them to enact their identities as makers who needed quiet, solitary time to get work done (Perlow, 1999). Because these tools were interactional – they were used with other people – the interactions in which the tool were used were concurrently sites where users' identities were implicated. The freedom that people might normally exhibit in drawing on different identities in situated action was constrained by the use of a tool designed to make decisions in patterned ways. Smart Hours users utilized a tool that was much less ambitious in the automation of users' scheduling decisions. It did offer users the opportunity to automate actions that helped them to enact their aspirational identities. But these users retained their control over scheduling decisions before there were sent to their communication partners, allowing them to enact their identities with more finesse and granularity between interactions.

Relatedly, these findings show how existing tactics for managing tensions among multiple identities are difficult to implement in the context of interactions mediated by artificial intelligence. The literature on tensions has centered on strategies for managing tensions that exist between the poles of opposites without succumbing to one pole, especially through the discursive reframing of tensions (i.e., Gibbs, 2009) and through improvising one's actions to enact different poles at different times (Meisenbach, 2008; Putnam, Myers, & Gaillard, 2014; Woo et al., 2017). The findings of this study suggest that these strategies for managing tensions are unlikely to work in the context of use of an autonomous AI scheduling tool. The material decisions of Time Wizards' tool did not allow for the interplay

of different identities because it made material decisions that advanced only one pole of the dualisms that people faced. This made it difficult for users to enact "crystallized selves" that displayed different facets of their identities at different times (Tracy & Trethewey, 2005). The material constraints presented by the tool made it difficult for users to enact approaches that embraced both poles of their oppositional identities (Putnam et al., 2016). The potential for AI technologies to make it much more difficult for people to manage oppositional pulls among identities suggests that people may need to find creative ways to materially manage tensions– for example, by overriding material decisions made by the AI tool through customized preferences, correcting decisions made by AI tools, or removing AI tools from the interactions altogether. Or, people may enact more unidimensional identities over time, if they repeatedly fail to embrace both poles of the dichotomies for which AI technologies are not optimized.

A second contribution is in showing how regions of people's identities and the relationship among them shape the relationship between technology and identity. While previous studies have shown how people's personal identities (Burt, 1999) or their identification with organizations (Tripsas, 2009) or professions (Barley, 1986; Lamb & David, 2005; Prasad, 1993) enable and constrain their patterns of technology use, this study examined how the multiple identities that people want to enact shape patterns of use. As expected, individuals adopted technologies that aligned with their identities as networkers and as controllers (Lamb & Davidson, 2005). Both Time Wizards and Smart Hours users adopted technologies based on the need to enact identities that depended on successfully meeting with many different people and controlling how they spent their time. However, appealing to these identities was not sufficient to ensure that users could enact other

important identities, such as their identities as makers and obligers. For Time Wizards users, the same capabilities that enabled them to enact their identities as networkers and controllers constrained their enactment of identities as makers and obligers. This suggests that individuals' technology choices are concurrently choices about which identities they want to enact.

Though this study did not assess the subjective importance of identities to users, it presents preliminary evidence that doing so would make a difference in the relationship between identity and technology. For example, Time Wizards users for whom enacting a networker identity was more important than enacting a maker identity were willing to use the tool with a wider range of communication partners. These users are likely willing to be constrained in their enactment of multiple identities because the identity that the tool enables them to enact is more important and relevant in the situated action of their work. Studying how subjective importance of identities in addition to how salient they are to the situated action at hand (Ashforth, 2001) is an important future direction for work in this area.

On a practical level, this study has implications for people who implement or plan to implement artificially intelligent technologies in their work. The findings suggest that entrusting AI tools to manage one's interactions can be extremely helpful if one wants to enact an identity that is optimized with the same end goals as the tools. However, it is worth considering what identities are in tension with the identity for which the tool is optimized, because AI tools cannot be optimized for infinite outcomes, at least in their current forms. People whose multiple work identities share more common rules and resources or whose work roles are more unidimensional (in that they are expected to act in similar ways across interactions) may find it easier to sustain the use of a tool like Time Wizards that makes

autonomous decisions on their behalf. People for whom enacting multiple distinct identities is crucial to their work may find it helpful to rely on a tool like Smart Hours, that attempts less automation but allows for more oversight from the user over its decisions, considering the challenges that AI interactional technologies pose for enacting a crystallized self with multiple facets (Tracy & Trethewey, 2005).

Chapter Six:

Implications

The proliferation of artificially intelligent technologies that learn and make decisions on behalf of users has required a fundamental reconceptualization of the processes through which people construct their identities with and around technology. This dissertation advances a joint action perspective of identity construction, which acknowledges that actions taken by intelligent machines shape identity construction alongside people's own actions to form, alter, or reinforce their identities. To explore the mechanisms through this occurs, this dissertation developed several empirical studies that focused on how processes of identity construction are shaped when people use AI tools that facilitate their communication or communicate on their behalf.

The findings of this dissertation help to develop a joint action perspective of identity construction and technology. As these findings demonstrated, intelligent machines can both aid and frustrate users' attempts to construct desirable identities – not only because of what the tools symbolized or the human actions they enabled, but because the technologies themselves also took action. Below, I summarize the key findings of this dissertation and discuss their implications for the development of a joint action perspective of identity construction and technology as well as for practice and broader conversations about artificial intelligence and the future of work.

Summary of Findings

The first research question in this study asked about how practices implemented by AI technologies shape users' identity construction. I found that both Time Wizards and Smart Hours used aggregated data to train machine learning algorithms to select work practices on

behalf of users. Time Wizards programmed their tool to carry out these work practices without users' permission, while Smart Hours programmed their tool to offer these work practices to users as suggestions. Time Wizards users often noticed that the AI tool was making different decisions about their work than they would make themselves. When these decisions helped them to enact identities to which they had aspired, they accepted the work practices the AI tool had introduced. When Time Wizards users noticed work practices that violated the boundaries of their identities, for example the temporal boundaries between work and non-work identities, they resisted the work practices introduced by the tool. Smart Hours users rarely noticed that the tool was making decisions about their work practices based on aggregated data and usually accepted its default suggestions. These findings show that AI technologies do affect how users construct their identities by shaping the work practices through which they enact their identities and that designing AI tools to autonomously implement these practices contrived an occasion for users to notice them.

The second research question asked how communication partners' responses to AI tools shape the identity construction of the people that use them. I found that the communication partners of Smart Hours formed impressions about users' identities based on what the tool symbolized. Communication partners said that users' choice to deploy the tool symbolized users' comfort with emerging technologies and reinforced their (communication partners') existing understanding of users' identities. In this sense, Smart Hours was like any other communication technology in that it played a symbolic role in users' identity construction (Markus, 1994; Trevino et al., 1987). To ensure that their communication partners interpreted their use of the tool in ways that would support how they wanted to be seen, Smart Hours users worked to manage how the tool symbolized their identities by

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interpreting its meaning for their communication partners. In contrast, the communication partners of Time Wizards users formed impressions of the anthropomorphized AI tool that sometimes transferred over to their impressions of users, who they often held responsible for the mistakes of the tool. This effect was buffered when communication partners had strong relationships with users. Time Wizards users put in work to communicate with the AI agent and to help manage the relationship between the AI agent and their communication partner, for example, by apologizing and repairing relational damage on its behalf, in order to construct desirable identities.

The third research question asked how AI technologies shapes users' enactment of multiple identities. I found that both Time Wizards and Smart Hours users described the importance of enacting multiple identities that sat at opposing ends of two dualisms: the dualism of connection and dualism of control. Smart Hours users were enabled to enact identities, even when they existed in opposition to one another, because they had control over decisions made by AI before they were sent to their communication partners. Time Wizards users, who had less control over how the AI tool made decisions on their behalf, were constrained in their enactment of multiple identities, because the tool was optimized to make decisions in pursuit of only one side of the dualisms. Time Wizards users received more support for enacting one set of desirable identities through the autonomous actions of the tool than Smart Hours users. But rather than being able to hold identities in tension with one another by enacting different identities at different times, Time Wizards users were forced towards enacting only certain identities as their AI tool made decisions in pursuit of those identities. The findings of this dissertation are summarized in Table 6.

Table 6. Summary of findings

Research Question	Data Used	Primary Finding 1	Primary Finding 2
How will the implementation of practices by AI technologies shape individuals' identity construction?	Interviews with developers and users	Both AI Tools were designed to select work practices on users' behalf based on aggregated data, but Time Wizards implemented these practices as actions and Smart Hours offered them as suggestions	Time Wizards users could accept or resist work practices implemented by AI depending on how they helped them to enact aspirational identities but Smart Hours users did not question the work practices suggested by the tool
How do communication partners' responses to AI technologies shape the identity construction of the people who use them?	Interviews with communication partners and users	Communication partners of Smart Hours users saw the tool as a symbol of users' identities, but communication partners of Time Wizards users formed impressions about the AI agents' actions which could be transferred to impressions about users or compartmentalized	Smart Hours users helped their communication partners interpret their use of the tool, but Time Wizards users also monitored their communication with the AI agent and engaged in relational work to construct desirable identities
How do the ways that AI technologies are optimized to learn and make decisions shape how users enact multiple identities?	Interviews with developers and users	Time Wizards' technology was optimized to make users enact some identities but not others, while Smart Hours' technology afforded users flexibility over their scheduling decisions	Time Wizards users had difficulty enacting multiple conflicting identities while Smart Hours users did not

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Theoretical Implications

The findings of this dissertation offer several implications for theorizing identity construction and its relationship with technology in the age of intelligent machines. First, these findings provide empirical support for a joint action perspective by demonstrating that the practices through which people enact their identities, the interactions they have with others to construct their identities, and their enactment of multiple identities are all shaped when interacting with others with AI tools that facilitate communication or communicate on their behalf. Existing perspectives on technology and identity construction that focus only on human action – for example, symbolic technology use, work practices, or mediated communication – would not be able to account for the ways AI technologies act as actors for identity construction by proxy for the people that use them, whether those efforts frustrate or support users' desired identities.

Implications for Identity Construction and Technology

This dissertation showed that the work of "forming, repairing, maintaining, strengthening or revising constructions" of identities is not only carried out by people (Alvesson & Wilmott, 2002, p. 626). Instead, because intelligent machines can now act on people's behalf, this work can also be carried out by machines, whether the users of these machines want them to or not. The ways that AI technologies construct identities are not self-reflexive in the ways that people's actions are, but they make a difference to people's identities because they shape the work of people that use them and how those people are seen by, and interact with, those around them.

The finding that machines jointly work with people to construct those people's identities also challenges what is meant when we discuss identity. Existing theories of

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identity assumes at least some knowledge of self – that people have ideas about who they are, who they want to be, or how they should act to be that person that motivate their action (Cerulo, 1997; McCall & Simmons, 1978). From this perspective, even though identities are always constructed in ongoing practice, these practices are selected by people as knowledgeable actors for strategic self-presentation purposes. But people do not choose which specific actions that AI technologies take on their behalf (which is the whole point of automation – so that people do not have to exercise effort to complete a task or make a decision). The locus of decisions about action is moved an extrinsic source – the machine learning algorithms that power AI technologies. This challenges the assumption that identities are always enacted with knowledge and reflexivity. Instead, identity construction might be a process in which the reasons for enacting practices are opaque and the control over doing so is a matter of negotiation.

The involvement of AI technologies introduces a new constraint into how people communicate their identities to others, and how others perceive those identities. Theories of identity construction at different levels of abstraction (i.e., symbolic interactionism, identity work, membership negotiation) have assumed that identities are negotiated between the people to whom they belong (a focal actor) and those with whom they communicate (their communication partners). This means that individuals are constrained in their construction of desirable identities by how others interpret and respond to them, i.e., whether their attempts to act as experts are validated or ignored (Endacott & Myers, 2019). This constraint is one that is well-established in the identity literature: that people are not always successful in communicating in ways that make other people see them in the same ways that they see themselves.

The constraint that AI technologies introduce, however, is not primarily in between the person enacting an identity and the person interpreting it. Instead, the constraint occurs because there is more than one entity enacting an identity – a person enacts her own identity, but the AI technology is also acting out that person's identity on her behalf. This arrangement presents entirely different sets of negotiations than those that help people gain recognition for their identities from others. A person constructing her identity will not only attempt to *influence* others' perceptions, but she is also *coordinating* her identity enactment with AI technologies over which she will not always have full control. The joint action perspective on identity construction and technology problematizes the relationship between people and the technology they use as one that could be adversarial or cooperative, because it does not assume that technologies are always susceptible to human control. Because identity construction is shared between people and machines, people will be constrained by the extent to which machines cooperate or conflict with their desired identities, including their dual or conflicting ones. It may be especially difficult to share identity constructions with intelligent machines, considering that AI technologies are more likely to draw on aggregated human behavior data rather than being tailored for a user's specific context, including the particular organizational and occupational cultures into which they are embedded or the nature of their relationships with others.

The involvement of AI technologies in identity construction also changes how we ought to think about tensions in and among identities. These technologies show that dealing with tensions involves material concerns as well as discursive ones. As shown in chapter five, AI technologies that are optimized for limited outcomes constrain people's enactment of multiple identities, bringing identities that could previously co-exist into greater tension.

Without the freedom to enact different identities at different times, people may struggle to move beyond tensions that exist among their identities when using AI technologies. This prompts questions about what the material equivalent of reframing tensions could be – for example, are there ways to change material decisions of AI technologies to allow or enact multiple identities? Or how might people need to discursively reframe the actions of AI technologies to themselves *and* their communication partners to transcend tensions among identities? When the flexibility to enact multiple identities with technology is no longer a given, these questions are brought to the forefront.

Implications for Theories of Technology and Change

A second area of contribution is in theories of technology and organizational change. Existing work has focused on how the implementation of new technologies shapes organizing. In this dissertation, I showed that one way that shifts in organizing happen is through the actions that AI technologies take on people's behalf that both shape people's work (chapter three) and how others view them (chapter four). In this context, changes in work practices occurred because AI tools introduced new practices that were informed not by local norms but by aggregated norms that are *distanciated* from the settings in which they originated.

The exogenous introduction of work practices by technologies themselves differs from previous theorizing about technologies and organizing. Most currently, studies of technology and change have assumed that change happens as people use technologies in particular ways in practice (Leonardi, 2009c; Orlikowski, 2000; Vaast & Walsham, 2005). From this perspective, any change that arises is endogenous in that it was formed in the interactions people had with one another (i.e., Barley, 1990) or with the technologies

(Leonardi, 2009c). However, the mechanisms through which change happened in this study could be considered *exogenous*, because new work practices from other social settings were introduced into local streams of action not through human action but through machine action. Unlike other types of exogenous technological changes (such as the rise of assembly lines), change was nested within the individual's patterns of action. This sort of outside-inside change represents a new way for changes in action to occur. This finding also suggests that scholars utilizing a practice-based perspective on technology and organizing may need to be increasingly agnostic as to whether it is people or machines doing the acting and instead focus only on what new actions technologies make possible to understand change.

Practical Implications

The findings presented here also can offer some areas of consideration for users who want to implement AI technologies in their own work as well as for developers looking to design AI technologies for particular types of impact. These findings should prompt users to consider how they present themselves to others with intelligent machines and to what extent they want to be transformed by the actions of AI technologies. For developers of AI technologies, these findings help to predict likely intended and unintended consequences of design choices. These implications are described in detail below.

Identity Issues and Intelligent Machines

First, these findings provide several insights for users who have already implemented or are considering implementing AI technologies that facilitate their communication or communicate on their behalf. The first is that implementing these tools is not just an instrumental decision but an identity-laden one, because use of AI technologies can indeed shape how others will perceive users' identities. Users then need to know from the moment

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that they begin to use these tools that these tools affect their self-presentation, so that they can consider how others in their networks are likely to respond.

Second, users should consider the costs and benefits of different types of tools. Tools like Time Wizards anthropomorphize AI processes as agents and make decisions on users' behalf have the potential to present great rewards – in terms of the amount of work that is potentially automated and the extent to which communication partners are impressed. But they also present greater risks, because AI agents can make mistakes that reflect on the user and can inhibit their enactment of multiple conflicting identities. In contrast, tools like Smart Hours that modulate AI processes attempt to automate less work, but also allow users greater control over enacting their identities as they see fit. Users should consider the level of risk tolerance and additional effort they are willing to take on, depending on their own personal identities and the nature of their work.

And third, this study showed that there are ways that users can work to help their communication partners form positive impressions of their AI technologies and, by extension, users themselves. Users can monitor how they speak to AI agents, knowing that their behavior may be made visible to their communication partners (Leonardi & Treem, 2020). They can also put in extra work to manage communication partners' feelings toward AI agents by apologizing on AI agents' behalf and helping their communication partners understand what the tool is and how it works. And users can also begin to deploy AI tools with people whom they know well first, as these people are unlikely to develop negative impressions of users even when the tool makes unfavorable decisions. First experimenting with how the tool works with a close circle of friends may help users learn how to better implement it for a wider circle of more diffuse contacts.

Artificial Control and Mechanisms of Transformation

Second, these findings offer people understanding about the mechanisms through which AI technologies can help them to enact aspirational identities. As AI technologies implemented work practices drawn from aggregated data, some users noticed that they were enacting identities that finally aligned with who they had hoped to be. They were prolific in the number of meetings they secured and outsourcing meeting scheduling to AI tools helped them avoid embarrassing incidents of forgetting to follow up. The use of AI to help enact aspirational identities fits with what Pine and Gilmore predicted in 1999: that the economy, which evolved from being driven by commodities to goods to services to experiences, would eventually focus on transformation. In fact, users' desire for transformation may be a key reason that they choose to use AI tools, because in some cases doing so helps them to act more like the people that they wanted to be.

Though AI tools can help bring about transformation to turn people's actual identities into their aspirational ones, this transformation warrants caution. Because AI tools learn by making probabilistic decisions based on a given outcome, understanding the outcome on which they are trained is extremely important to understanding how they will take action on users' behalf. Users who hope to optimize their identity along the same outcome – for example, users who value having a lot of meetings and use a tool designed to help them schedule a lot of meetings – are likely to benefit from using that AI tool, because they share the common values to guide their action. At the same time, users who want to enact identities with different values – that are optimized for different outcomes – may find that their work is transformed in ways that they did not anticipate or desire. Because AI tools help (and hinder) users to enact identities, knowing to what end(s) they are designed to make decisions is

extremely important. Helping users understand optimization processes requires interrogating the opacity of artificial intelligence, which I discuss next.

Opacity Issues in Designing Artificially Intelligent Tools

In light of the mechanisms through which AI technologies can shape users' identity construction described in this dissertation, developers should consider how to make the learning and decision-making processes of AI technologies less opaque for users. The findings suggest one way to make the decisions made by AI more visible: by foregrounding them in AI agents that make decisions on users' behalf. In the case of Time Wizards, this design choice helped users to notice more quickly how the tool was designed to make decisions and where their work was being shaped. Though Smart Hours had designed their tool to offer AI-enabled decisions as suggestions, doing so actually made it difficult for users to notice that those decisions were made by machine learning algorithms. This suggests that Time Wizards' choice to foreground AI as an agent rather than modulating it to other parts of an interface may help call users' attention to the decisions that AI is making, even though it was more difficult for Time Wizards users to control how the tool acted on their behalf.

By designing AI agents to make decisions without users' oversight, developers may actually help users to gain understanding of the premises through which the tools make decisions. The increased transparency that this would provide would be useful in helping users assess whether the decisions made by AI tools align with the identities that they already or want to enact. Another solution is for companies to directly share the outcomes for which the tool is optimized with users as part of their onboarding process for the tool, so that users can decide if they want to evince that outcome in their work or not.

Limitations

This study was limited in several ways. First, it relied heavily on interviews with users of AI tools in which users were asked to describe their own patterns of technology use and scheduling practices. Because practices are enacted as taken-for-granted routines, it may have been difficult for users of AI technologies to discuss the practices through which they carry out their work. The use of embedded observations, in which users narrated the actions taken by themselves and AI tools for specific interactions by reviewing digital message threads, helped to alleviate some of the heavy reliance on self-reported perceptions by helping users recall more about their work. Ideally, however, observing users or asking them to record daily work habits in a diary would be used as methods in order to gain a more naturalistic understanding of how work unfolds (Leonardi, 2015).

This study was also limited by its sample of users and their communication partners, for whom participation was non-random and highly voluntary. Users most often self-selected to be interviewed or were recommended by technology developers as power users. Empirically, users most often attributed their interest in this project to their enthusiasm about AI technologies in general or to their enthusiasm about sharing how and why their respective tool needed to be improved. This meant that users often sat at one end of two extremes: they were either especially enthusiastic about their respective tool or they were especially frustrated. Relying on this non-random sample likely produced findings that are generalizable to highly engaged users of AI tools, but that are less generalizable to the userbase as a whole. Similarly, the communication partners who users recommended for interviews also comprised a non-random sample. Users often recommended communication partners who they knew well, because users felt comfortable enough asking these communication partners

to acquiesce to an interview. Relying on communication partners who knew users well likely means that communication partners' perceptions of users' identities were more fixed and resistant to change, even when interacting with users via AI tools, as discussed in chapter four. Obtaining a randomized sample of users' communication partners would help in understanding how the actions of AI tools shape users' identity constructions in contexts where communication partners do not know much about users' identities.

Directions for Future Research

Future research in this area should address several theoretical and methodological directions. To develop a joint action perspective of identity construction, research should more fully explore how the extent to which people's actions and machines' actions work converge towards a common identity or diverge from one another shapes how identities get constructed. Future research should consider questions like: in what instances do machines have more influence over identity construction than others? What are other ways that people attempt to amend or ignore the actions taken by machines on their behalf? And to what extent do people revise their own identities as machines act on their behalf? Answering these questions would move beyond showing that actions taken by both people and intelligent machines matter for identity construction by helping to explain how the power to do so is negotiated.

To understand AI agents as joint actors, it would behoove identity researchers to explore how the ways that *both* people and machines communicate on behalf of individuals shape identity construction. Most identity research has focused on the communicative strategies through which individuals construct identities *for themselves,* such as discursively positioning themselves in conversations (Davies & Harré, 1990; Jorgenson, 2002) or

experimenting with identity performances (Ibarra, 1999; Wieland, 2010). But enacting identities is not done alone in practice. In reality, people are in close relationship with others who can represent them to others – for example, people may evaluate mentors' identities by the actions of their mentees – thus shaping their identity construction. In other words, having to work with other actors to present one's identities to others is not unique to the context of intelligent machines; in fact, it's a very human process. But the mechanisms through which the actions of a person to whom an individual is related shape that individual's identity construction are not fully understood, apart from the judgments made about individuals based on their group memberships (Tajfel & Turner, 1986) or how people cognitively balance their liking of people and objects (Osgood & Tannenbaum, 1955).

A study comparing how identity construction is shaped by a focal individual's relationship with other people and what other people say on their behalf would provide a comparison point for understanding how these processes differ between human actors and intelligent machines. For example, a study could assess how communication partners evaluate errors made by an AI agent versus those made by an employee and how these attitudes shape how they act toward a user of AI technology versus the employee's manager. Without understanding to what extent what other people do and say on one's behalf shapes how others see that individual, it is difficult to know if and how scripts for human-to-human interaction are replicated when people are interacting with machines (Edwards et al., 2016). Put another way, it is difficult to know how AI technologies in particular shape identity construction as joint actors without understanding how their human counterparts do so. Future research on joint action in identity construction by both humans and machines would

contribute to theories of identity as well as to theorizing about interactions with intelligent machines.

Another area for future research is how people's actions with AI technologies will shape technologies themselves. This dissertation has focused heavily on how the actions taken by AI technologies intervene in identity construction. However, this focus has excluded another important reality of AI technologies: that people's actions shape the AI tool because they constitute the patterns from which it learns. How people use AI tools change the very tools themselves, because the machine learning algorithms that power them learn from the data they produce. Understanding not only how AI technologies shape people's identity construction but also how people's identity construction shapes AI technologies is important for understanding how identities and AI technologies are mutually constituted and to what ends. In people's work to construct desirable identities with AI technologies, they may change the nature of these technologies themselves. For example, it would be useful to understand if and how the practices through which people amend the decisions made by machine learning algorithms aggregate to change how those algorithms operate. Developers of AI technologies may also be able to speak to if and how what they have noticed as patterns in user data and what they have received as user feedback has led to changes in the tool itself. In other words, patterns about users and their identities that are detected by both machine and human intelligence could shape the ongoing development of AI tools. Designing a longitudinal study of developers and users who could speak to how the AI technology has changed over time would help to address this. Exploring this issue would illuminate not only the consequences of identity construction for people, but also for the technologies that they use.

This dissertation yielded some conflicting findings that future research would help to disentangle. As shown in chapter three, Time Wizards users found it easier to notice work practices implemented on their behalf by artificial intelligence than did Smart Hours users, which helped them to resist these practices as needed. However, as shown in chapter five, the same autonomous actions taken by AI made it hard for Time Wizards users to recurrently enact their multiple identities, a problem that Smart Hours did not share. The fact that Time Wizards users could resist individual work practices but found it difficult to sustain the enactment of multiple identities suggests that it may be important to study the time scale of effects of using AI technologies on identity construction. Speculatively, one explanation for these different effects is that users of AI agents that are making decisions on their behalf amend the actions of these tools frequently at first, but either defer more to the decisions made by AI over time or abandon the use of these tools altogether rather than continue to exert effort, especially if the tools do not seem to be improving. Future research could explore how users' actions to work with AI tools continue, strengthen, or deteriorate over time, and at what point they may be likely to stop using them.

Methodologically, future research should draw on longitudinal and experimental methods to explore the mechanisms surfaced in this dissertation. For example, future research could explore if the work practices that AI technologies carry out on users' behalf do lead to more homogenization of identities over time, i.e., as technologies continue to act in ways that serve the aggregated crowd. Experimental work would also be useful in developing and testing theory how communication partners' impressions of AI technologies are transferred to people that use them or are compartmentalized to the technology itself. For example, experimental work could test how the strength of the relationship between a user

and their communication partner and the extent to which an AI technology seems humanlike moderates the strength of transference.

Broad Implications for the Future of Work

In addition to its theoretical and practical implications, this dissertation also contributes to broader public conversation about the future of work and workers in the age of artificial intelligence. The findings of this study offer some preliminary answers and provoke questions about artificial intelligence in relation to bias and big data.

Bias

As AI technologies become more prominent in the cultural landscape, many people have appropriately pointed out these tools can perpetuate biases related to race, class, and gender. For example, criminal recidivism algorithms were shown to predict a higher likelihood of recidivism for black defendants than white defendants (Rudin, Wang, & Coker, 2020). These biases are perpetuated because AI technologies rely on training data to learn, which contain existing patterns of social stratification or inequity (Manyika, Silberg, & Presten, 2019).

This study surfaces AI technologies' capacity for perpetuating biases related to how one's work identities should be enacted. In the case of Time Wizards, their AI tool was designed with particular assumptions about work and workers in mind, such as the assumption that people were best served when attending as many meetings as possible, but also assumptions related to how people took meetings (virtually, with no time needed for travel), people's default working hours (9am to 5pm each day), and how much unscheduled time they needed (none). Because the AI tool was optimized to make these decisions based on these assumptions, use of the tool privileged a certain approach to work over other

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possibilities. This bias was perpetuated because of how the tool was optimized to learn, not necessarily because of the data from which it learned (to the best of my knowledge).

The privileging of one work identity over another is not equivalent to widespread social inequities related to race and class. However, work identities are always connected to other identities. Some users noticed that using the tool made it difficult to enact identities as parents, for example, by scheduling meetings during the time they had hoped they could devote to attending their children's extracurricular activities. One user discussed how his disability (hearing loss) made having a quiet meeting location essential – but he could not articulate this to an AI tool that chose the first available time slot for meetings. Others found that the ways in which Liz and Leo scheduled reflected an appropriately high pace for a Silicon Valley start-up, but not for people with other personal concerns outside of work (for further discussion, see Wajcman, 2019b). The concerns of these users, who often described themselves as "edge cases," show that perpetuating certain ways of working over others can surface the assumptions that developers make about users' family life, ability, and priorities (all of which can be racialized, gendered, and classed). While no one tool can be everything to everyone, it is worth considering for what types of work AI technologies are being optimized and how these tools might be designed for greater inclusivity (i.e., designing tools that are accessible for disabled populations).

Predictive Analytics and Big Data

Second, this study offers some areas for further consideration for the future of big data and predictive analytics. It is clear from these findings that both companies had amassed large amounts of data and, assuming their machine learning algorithms continue to improve from variations in use, will one day be able to design tools that make decisions according to

the "best practices" of scheduling (as perceived by the respective company). These companies hoped to design tools that could, for example, offer the best scheduling slots to who were most often punctual, select meeting times that were the least likely to get cancelled by meeting guests, or schedule in ways that improved individual productivity. If and when these companies choose to implement these patterns, the findings in this study suggest that such patterns could profoundly shape users' identities by changing their work and holding them to one identity over others. For example, freelancers who might normally meet with any interested client may be guided by AI tools to prioritize only those clients who are the most likely to sign a contract. One can imagine that reliance on this pattern will reshape people's identities as their interactions are constrained for certain desirable outcomes. Adhering to these patterns could also have unintended consequences – for example, the clients who are the most difficult to land may actually be those who are the most desirable (for example, because those clients who meet with the most vendors may do so because they plan to have the longest relationship with them) and entrusting decisions to AI may limit a person's opportunity to meet with them.

Reliance on predictive analytics to facilitate communication offers some benefits and some costs. While data-driven patterns may help people and machines to jointly enact identities that are optimized for desirable results, it may limit the variety of interactions that people may encounter – variety that promotes creativity (Weick, 1979) and empathy (Tracy & Trethewey, 2005). A reliance on predictive analytics may inhibit us from noticing that which is attempting to get our attention (Stewart, 2007) – namely, people whose value is not captured in an algorithm. We should assume that predictive analytics comes at the cost of experiencing what could not have been predicted.

Conclusion

Overall, this dissertation advances our understanding of the processes through which identities are constructed when people deploy AI technologies that facilitate communication and communicate on their behalf. The joint action perspective of identity construction developed here sketches a reconceptualization of AI technologies as not only symbols or mediators in identity construction but as actors in their own right. The findings of this study showed that the actions of AI agents matter for how people construct their identities, because identities are always made and remade in practice. Attending to the joint actions that people and intelligent machines take to construct identities will continue to be important as AI technologies are implemented more widely. To ensure that the future of work is a future in which we want to live, we ought to pay close attention, not only to the work that AI technologies make possible but to the ways that they make us.

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