WORK ENVIRONMENT CHOICE AMONG KNOWLEDGE WORKERS: A MIXED METHODS INVESTIGATION

by

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ABSTRACT

APRIL JOY SPIVACK. Work environment choice among knowledge workers: a mixed method investigation. (Under direction of DR. BETH AVIVA RUBIN)

As a result of technological advances, workers have become increasingly mobile; people can perform work in a whole host of new locations. Teleworking arrangements challenge traditional managerial practices, however, and call attention to the tensions between attempting to control or surveil workers to extract maximum effort while also granting workers spatial autonomy. Through a synthesis of labor process and self determination theories, work environment choice is examined. Specifically, this dissertation 1) integrates these two theories to build propositions regarding the relationships between location autonomy, motivation, productivity, creativity, and well-being, 2) builds a model of influential factors impacting work environment choice among knowledge workers, and 3) tests the impact of perceived location autonomy and intrinsic motivation on worker productivity and well-being. Current studies of work environment-task fit assume that individuals are assigned to a space where they complete their work tasks. In contrast, this study, via a mixed methods approach using data from mobile knowledge workers in a university setting (i.e. undergraduate students, graduate students, and faculty), adds to the literature by examining situations in which workers can choose their work environments. Through this examination I identify how perceptions of location autonomy and intrinsic motivation affect the work environment choice process and the outcomes of worker productivity and well-being.

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INTRODUCTION

This dissertation is comprised of three manuscripts. In the first manuscript, I merge flexible accumulation, labor process, and self determination theories to consider the challenges posed by the incorporation of teleworking arrangements into modern day organizations. The aim of this theoretical paper is to develop propositions highlighting the role of location autonomy in aligning worker interests with organizational interests. Yet, the lens created by the merger of these theories also emphasizes the difficulties faced by managers as they incorporate a work practice that requires relinquishing traditional strategies—strategies that involve control and surveillance of workers.

Through these theoretical lenses, I will be approaching the research questions using an interdisciplinary perspective—a perspective that has been called for in the literature on human-environment interaction (e.g., Stern, 2000). While psychology, as a discipline, is useful for exploring questions related to individual choice, motivation, attitudes, preferences, and outcomes, it is not as effective for looking at the elements of the context that may be constraining individual choices and behaviors. Similarly a context-based focus may overlook issues of agency and individual difference characteristics that play a role in issues related to telecommuting and the exercise of spatial autonomy. An interdisciplinary perspective, therefore, allows for the integration of a wide variety of disjointed and partially overlapping studies and theoretical lenses originating from many disciplines, such as sociology, environmental psychology, management, and architecture to get a more complete picture of the person situated in a context as well as the person in shaping context. The major contributions of this work to the existing literature include an expansion labor process theory to the new world of work

and an incorporation of autonomy and spatial choice of workers into the literature on worker-task-environment interactions.

Drawing upon this theoretical integration, the research questions addressed in manuscripts two and three include:

RQ1: *What environments are workers choosing?*

RQ2: *Why are they choosing these environments; what are the influential characteristics?*

RQ3: *How are workers sensing restrictions to location autonomy? From where do these constraints originate?*

RQ4: *How do the choices made support LPT and SDT in terms of motivation, productivity, and worker well-being?*

I address these research questions through the use of a mixed methods study design across the two remaining manuscripts. Specifically, I used a triangulation mixed methods design, a type of design in which different but complementary data are collected on the same topic (Creswell & Plano Clark, 2007). I am collecting both qualitative and quantitative data to bring together the strengths of both forms of research to compare and contrast results, using each to support the other form's weaknesses and to provide a broader understanding of the phenomenon of work environment choice by mobile teleworkers (Creswell & Plano Clark, 2007).

In the second manuscript, I present the exploratory qualitative examination of the influential factors impacting the work location choices made by academic knowledge workers. This group of knowledge workers is reputed for their significant job autonomy and enables a focus on the decision process that largely eliminates organizational or

industry-related considerations. I used an interactive interview guide to collect qualitative data examining work environment choice among undergraduate and graduate students as well as faculty, to address Research Question 1, 2 and 3. Specific topics I address in this portion of the study include 1) the factors that are most important in selecting an environment, 2) if and how task types influence environment choices, 3) whether or not others' opinions or expectations play a role in influencing choice, and 4) the motivations that influence work environment choices. Through 30 interviews with faculty members, graduate students, and undergraduate students, I found five influential factors influencing work environment choice. This paper forms the foundation for a longer stream of studies examining the way these factors are weighed in the process of making work environment decisions. One of the factors that emerged from this study draws attention to constraints to perceived location autonomy that originate with the social context and the paradigm-shifting nature of telework.

Then, in the third manuscript, I feature a quantitative survey study that addresses Research Question 4. This study tested if the combination of labor process and self determination theories help to explain work environment choices. I tested whether individuals' motivations were affected by the *embrace* and the *gaze* (i.e., test if workers that perceive greater location autonomy are more likely to internalize external demands and seek out environments to help them be productive). The effectiveness of individuals in seeking high levels of productivity was tested directly, by asking workers to identify why (motivations) they made work location choices and comparing that to their self-reported productivity. The third manuscript explores the factor of perceived location autonomy, identified in the second manuscript, by examining how it relates to outcomes

of choosing work environments that enhance productivity and well-being, specifically through increases to intrinsic motivation of workers. Using the same sample, an academic knowledge worker population, survey data is used to empirically test for the mediating influence of intrinsic motivation on the relationship between perceived location autonomy and both worker productivity and well-being. This manuscript provides support for both labor process and self determination theories. First, congruent with the propositions developed in the first manuscript related to labor process theory, intrinsic motivation strongly mediates the relationship between perceived location autonomy and productivity. In other words, most of the influence perceived location autonomy has on productivity operates through intrinsic motivation. This finding suggests that location autonomy functions as a form of worker empowerment and aligns worker and organizational interests. Second, congruent with propositions developed in the first manuscript related to self determination theory, perceived location autonomy leads to positive effects on worker well-being both directly and through intrinsic motivation.

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Overview

The literature examining U.S. workers and their relationships to work environments over most of the past century has been largely based on the assumption and norm that workers were assigned to one space within an organization's campus that the worker "owned" and was expected to use in the production of the desired work outputs for the duration of the work contract (Becker, 2004; Duffy, 2000; Fleming, 2004; Gorawara-Bhat, 2000; Kaya, 2004). Barring promotions and other types of office relocations, that assigned space became, to a certain degree, the property of the worker. The worker was responsible for maintaining and using that space in accordance with the organization's rules and norms in the production of the desired work outputs. To a large extent, it was the responsibility of the employee to cope with and conform to the offerings of that space in the performance of their work duties, and also willingly subject themselves to surveillance. Managers and supervisors used the assigned workspaces to monitor employee presenteeism and productivity. Organization leaders were interested in creating relatively standardized office spaces to keep costs down and offer a certain degree of equality for workers of a job type, following bureaucratization. In support of these efforts, researchers worked to identify characteristics of the workspaces that were required for the performance of work duties and most frequently led to the desired organizational outcomes (e.g., Banberry & Berry, 2005; Brill, 1985; Chigot, 2005; Dinc, 2009; Lee & Brand, 2005; Mayer & Frantz, 2008; McCoy & Evans, 2002; Stone, 2001; 2003; Stone & English, 1998; Sundstrom, 1986; Tennesen & Cimprich, 1995; Wells, 2000). As a result of the importance in practical application, these researchers sought to

identify environmental features that offered the greatest benefits across individuals rather than paying much attention to individual worker needs and outcomes. Some environmental features explored by these researchers included noise conditions (Banberry & Berry, 2005; Chigot, 2005), opportunities to personalize space (Dinc, 2009; Lee & Brand, 2005; Wells, 2000), color (Knez, 2001; Stone, 2001; 2003; Stone & English, 1998), windows Tennesen & Cimprich, 1995), plants (Han, 2008), and lighting (Hygge & Knez, 2001; Veitch, 1997).

With the technological advances of the early 21st century that have led to the separation of work from a fixed schedule or location (e.g., Gibson & Luck, 2006), many of the theoretical models, constructs, and assumptions produced as part of this previous stream of work environment-behavior research may no longer be valid. In an effort to reduce costs to maintain competitive in the turbulent economic landscape, organizational leaders have been facing mounting pressure to consider the opportunities technology affords in reducing real estate expenses. Starting around the mid 1990's, there has been a slow, but growing trend of organizational leaders using technological advances to reduce their real estate costs by implementing various forms of flexible work arrangements: desk sharing between employees working different days or hours, telecommuting, hoteling, hot-desking, or shifting the work environments workers have available in-house (GSA, 2002). As a result, employees are increasingly called upon and technologically enabled to perform their work tasks anytime and from anywhere.

Previous assumptions about how workers work in their assigned spaces and the impact of those spaces on the worker seem to be less relevant—workers may be working in various spaces on-site, off-site, or even a mixture of both. In addition, new forms of

workplaces are emerging (i.e., cooperative worksites, jellies) and existing traditionally non-work places are being repurposed to allow work to take place in those spaces (i.e., cafes, coffee shops, doctor's office lobbies, etc.).

The increasing flexibility in potential work arrangements within an organization mirrors the increasing organizational flexibility required by current economic conditions and the changing nature of work. Today's economy is characterized by rapid technological change, high levels of uncertainty, and global competition. With high degrees of volatility and uncertainty, organizations must be quick to respond to changes to ensure ongoing viability. The nature of work has shifted as there has been a recent growth in service industries, especially among those described as "knowledge intensive" (Collinson, 2006). Knowledge intensive firms include those that rely on a professional labor force to perform work that is creative, difficult to quantify, loosely defined, knowledge-based, and cannot be fully planned in advance (Albert & Bradley, 1997; Collinson, 2006; Perlow, 1998). Examples of knowledge intensive firms include software development, research and development, consultancy, banks, and other similar organizations (Collinson, 2006).

Since this new form of work involves gathering, using, manipulating, disseminating, and creating knowledge, it is a very social process but also largely intangible and unobservable (Albert & Bradley, 1997). To maintain competitive advantage, organizations must be quick to become aware of, incorporate, disseminate, and take action based on new knowledge. In other words, knowledge products are derived from complex communication strategies involving access to both strong internal and external networks and intellectual capital (Collinson, 2006). Making new connections

with knowledge is an act of creativity, so to stay competitive, organizations must find ways to spur creativity in workers and continuously innovate in response to environmental changes.

Part of the way organizations may be helping achieve access to knowledge and attract expert professional talent is to offer workers spatially and temporally flexible work arrangements (Albert & Bradley, 1997). As organizations incorporate temporally and spatially flexible work arrangements it is important to understand how these shifts are impacting the ability of workers to generate the necessary creative knowledge outputs. Therefore, one goal of this research is to examine creativity as a key output of workers in these new "work" environments.

The new assortment in work arrangements is simultaneously creating new opportunities and new threats for both managers and workers in today's economy. For example, workers are faced with greater autonomy, not just related to task, but also to temporal and spatial work choices, in ways that haven't been studied before. In contrast, managerial practices that have long focused on the visibility of workers in assigned spaces are no longer viable options for ensuring worker productivity. Instead, managers have turned to the same advances in technology that have enabled workers to become mobile and allowed for greater location flexibility as tools for instituting new forms of surveillance of workers (Donnelly, 2006; Duffy, 2000; Wilson, 1995). So, temporal and spatial autonomy may be limited by various forms of control, such as concertive, normative, and panopticonical (see Spivack & Rubin, 2011, for a more thorough consideration). In addition, boundaries between work and non-work domains are becoming even more blurred now that work can take place in traditionally non-work

environments, expanding the domain of work beyond supervisory control and its previously distinct location.

Recent literature has been examining the impact of technology on temporal boundaries between work and non-work domains, especially with respect to work-family conflict (e.g., Boswell & Olson-Buchanan, 2007), stress (e.g., Schieman, Milkie, & Glavin, 2009), and well-being (e.g., Kossek, Lautsch, & Eaton, 2009). This study will expand the focus to consider the impact of technology on the *spatial* boundaries of "the new economy worker"—the impact to well-being and productivity of workers who exercise spatial autonomy and choose non-traditional work sites for the performance of their work tasks.

I will present the contemporary changes that have created the need for this study in the section on mobile working trends. Next, I will integrate flexible accumulation, labor process, and self-determination theories, with some of the literature on high performance/high commitment organizations and job values to discuss issues of spatial autonomy and develop propositions applying the integrated theories to the mobile working context. Third, I present a call to researchers to empirically test the propositions developed here. Finally, I provide a discussion of the insights gained from this research and conclude with implications for practice.

Mobile Working Trends

The U.S. economy has transitioned from an industrial and manufacturing-based economy to a knowledge-based economy, increasingly comprised of workers, often referred to as knowledge workers or the "creative class," whose jobs entail production of intangible creative or knowledge goods and services (e.g., Alvesson, 2001; Florida, 2002; Frenkel et al., 1995; Hislop, 2008). Alongside mobile technology development and adoption, knowledge workers are potentially able to work from wherever they are physically located (Bailey & Kurland, 2002; Baruch, 2001; Feldman & Gainey, 1997). Many organizations offer at least one of an assortment of work arrangements (i.e., desk sharing, telecommuting, hoteling, hot-desking, or offering a variety of work environments in-house; GSA, 2002) that may allow a knowledge worker to choose from a variety of settings to conduct their work. First, and most common, a knowledge worker may have a telecommuting relationship with the work organization. Telecommuting is defined as an arrangement where employees perform job tasks outside of a primary or central workplace for at least a portion of their work schedule using communication technologies to interact with people inside and outside the organization (Bailey & Kurland, 2002; Baruch, 2001; Feldman & Gainey, 1997). Although there was an initial lag in the adoption of telework despite having the technological capabilities for quite some time, this type of work arrangement has been on the rise—in 2008, about 33.7 million Americans telecommuted at least one day per month, up from 28.7 million in 2006. Recent projections by Forrester Research, Inc. expect 63 million Americans (43%) to telecommute by 2016 (Schadler, 2009). On a global scale, over 900 million workers telecommuted in 2008 with at least 1.18 billion workers expected to telecommute by

2013, or approximately 35% of the world's workforce (Ryan, S., Jaffe, J., Drake, S.D., & Boggs, R., 2009).

On-Site Work Environments

While telecommuting refers to the instance where employees work in environments off-site from the employing organization's location, there are also some arrangements that involve a worker being able to choose from work environments on-site. For instance, some organizations have designed a variety of work settings within their organization's campus or grounds that workers may make use of as needed (e.g. Google) (Baldry & Hallier, 2010; HR Magazine, 2002; Ottowa Citizen, 2006). The provision of a variety of work environments is generally premised upon the idea that employees may find environments that are suited to their activity-based needs—a social space for impromptu meetings, a quiet space to read, etc. in a "cave" and "commons" type of arrangement (Becker, 2004; Haynes & Price, 2004). The same technologies that have enabled telecommuting have enabled the practicality of designing organizational campuses offering a variety of work environment settings rather than assigned spaces that could be used by workers on an as-needed basis.

Off-site Work Environments

In addition to on-site work environments, workers may also make use of off-site work environments in the performance of their work duties. Home-based telecommuting arrangements are the most commonly studied, but with broadening availability of Wi-Fi internet access across a wider range of locations, home is no longer the only viable alternative site for work productivity. As mobile workers move beyond the home and work domains, it is important to understand the needs and preferences of this group, as

well as the outcomes of the location choices they make. With increased understanding of the mobile workforce's needs and patterns of behavior, employing organizations could better attract and retain talent and support workers to ensure productivity goals are met. Additionally, an understanding of the mobile workforce's needs and patterns of behavior could illuminate attractive business opportunities for organizations interested in serving the mobile workforce, a segment that is projected to constitute a large proportion of the population in the near future (est. 43% of the U.S. workforce in 2016; Schadler, 2009).

Telecommuters have already begun to use a variety of environments beyond the home to meet their work needs. Many of these selected work environments have also been referred to as "third places," in that they aren't private home (first place) or work (second place) locations, but constitute a third group of places in the public sphere and may include places like coffee shops, libraries, parks, airports, and hotel lobbies (Oldenburg, 1989).

Several third place environments, like McDonalds and Starbucks locations, are encouraging telecommuters to use their spaces by providing free internet access, a service that each company used to charge for until they recently partnered with AT&T (Strentz, 2010; Warren, 2010; Ziobro, 2009). McDonalds, which traditionally offered a fast food experience defined by quick customer turnover per transaction facilitated through the use of environmental strategies such as inclined chairs to limit comfort and length of customer stay, has been transitioning to a café protocol installing softer lighting and leather couches instead of plastic booths (Adamy, 2008). Now, McDonald's offers free Wi-Fi at 11,000 of the 14,000 domestic locations (Ziobro, 2009) and has added an increasing line of coffee products under the McCafe' label to compete with Starbucks

(Adamy, 2008). Similarly, Starbucks offers free Wi-Fi at its 6,800 locations in the U.S. and an additional 750 in Canada and has plans to expand to offering customers free access to other online content including access to the Wall Street Journal using their online network (Strentz, 2010).

The prevalence of work happening in traditionally public environments has led to research examining shifts in the use of third places and the broader social impact of these shifting patterns of use (e.g., Hampton & Gupta, 2008). While these trends in use of non-work environments for work purposes are garnering researcher attention, studies that explore why individuals choose specific "alternative" work environments or the impact of these choices on their work tasks or their psyche are lacking. This study aims to begin to fill this gap by developing propositions examining the relationships between autonomy, motivation, and work environment choice.

Theoretical Background

Theory of Flexible Accumulation

Several researchers have put forth the theory of flexible accumulation to explain the sharpening of the disparities between occupational groups (e.g., Rubin, 1995; Vallas, 1999). Flexible accumulation theory is useful for understanding the emergence of the new class of mobile knowledge workers, also referred to as the "creative class." As organizations flatten and debureacratize in response to pressures to become more flexible, less capital is amassed internally. Capital was formerly stockpiled for stability, but now in an effort to become more lean and responsive to changing environmental conditions, capital investment is being reduced.

As part of the flexibility-enhancing process, organizational leaders define which resources are core and which are peripheral, including human resources. The human resources that are deemed peripheral are externalized, outsourced, or contracted for shorter periods of time or only hired on a part-time basis (Broschak, Davis-Blake, & Block, 2008), while those highly skilled workers that are labeled core are given a more central and privileged position (Applebaum and Batt, 1994). The result is a flatter hierarchy with the core group of autonomous and functionally flexible workers (Rubin, 1995; Cappelli et al., 1997).

As organizations transition to leaner configurations, two simultaneously operating and opposing tendencies with respect to employees occur within the same organization, one that "enables" while the other "restricts." Core workers are granted more autonomy and latitude in how they complete their work and efforts are made to foster their commitment (Kalleberg, 2003), while the peripheral workers are brought under greater

control, even if through externalized work arrangements, and offered fewer rewards (Vallas, 1999). The disparities between the core and peripheral employees may be hidden by spatial and/or organizational dispersion (Pfeffer & Baron, 1988), as may be found with outsourcing of the peripheral workers or with mobility and off-site working options available only to professional salaried workers while hourly workers perform their duties on-site or come from outsourced employee groups (Broschak, et al., 2008).

While flexible accumulation theory is useful for understanding the emergence of the new class of knowledge workers and explains why they are granted the ability to use mobile technologies to work from locations outside of the core worksite, it does little to explain the tensions resulting from the transition away from traditional management practices. There has been a long-standing conflict in the management literature between scientific management and human resource practices (e.g., Peters & Waterman, 1982). The former philosophy assumes workers are shirkers and need to be watched and controlled in order to ensure productive activities, while the latter emphasizes empowerment to engage workers and motivate them to do what is in the organization's interest. With a population of workers that are geographically distributed beyond the core organizational location, how can organizational leaders be sure that these workers are maximally productive? To identify the tensions between employee empowerment and control with respect to mobile knowledge workers I integrate labor process theory with self determination theory.

Introduction to Labor process theory

Labor process theory (LPT) was originally conceived to understand the alienation of the industrial worker. In its original form, LPT posits that management's primary

concern has been to institute mechanisms of 'control' and surveillance over workers and the production process in an effort to extract maximal effort from workers (Braverman, 1974). This original conceptualization focused on deskilling of workers through commodification of labor, separating knowledge from the worker likening workers to interchangeable parts in the production machine.

Early forms of control over employees were personal and direct, with a manager able to exert direct influence over a worker. Then, with Taylorism and Scientific Management control shifted to the production process itself in the factory setting, as structural or technical control. Bureaucratic controls came through hierarchical organizational structures, the establishment of positions that segment and formalize work duties and separate the position from the employed individual. In these earlier work arrangements workers were fixed in space and output could be objectively measured, making the worker "a fully observable entity" (Mir & Mir, 2005, p.57). These top-down managerial principles of control, surveillance, and evaluation have been long-held traditions in management theory and practice.

The gaze and the embrace. Braverman's (1974) conceptualization of the labor process was criticized, however, for its lack of consideration of conflict or agency and resistance on the part of the worker, a contribution from scholars supportive of labor process theory (Burawoy, 1979; Edwards, 1986; Knights & Willmott, 1989). In other words, there was an emphasis on the *gaze*, or use of coercive power, and less of an understanding of the role that employees play in subjecting themselves to managerial control (Collinson, 2006; Deetz, 1994; Mir & Mir, 2005). Employees do this through taking on followership roles by submitting to leaders (Collinson, 2006) or taking on

consensual identities that reproduce the power relations (Deetz, 1994). Scholars contributed to the *gaze*, by introducing the concept of the *embrace*, which refers to efforts deployed to create worker cooperation and dependence (Mir & Mir, 2005). For example, Burawoy (1979) discusses management's use of "work games" to transform managerial conflict into coworker competition to accomplish organizational goals and obscure the *gaze* (Burawoy, 1979). Introduction of the *embrace* calls attention to the potential of employees to resist managerial efforts to control them and demonstrates recognition of the limitations of the *gaze* in aligning worker interests with that of the organization (Burawoy, 1979; Edwards, 1986; Scott, 1990).

One form of the *embrace* is employee empowerment. Contrary to authoritarian managerial strategies that exert control through rules and regulations, empowerment seeks control of workers and gain employee cooperation through psychological means (Burawoy, 1979; Mir & Mir, 2005). Empowerment offers employees rewards for functioning as partners to the organization through participation in decision making in the production process, allowing employees the opportunity to feel a sense of ownership and align their personal identity with the goals and outputs of the organization.

The *gaze* and the *embrace* constitute two poles representing the constant tension between power and resistance, control and consent, conformity and deviance, self-interest and organizational interest, and rebellion and compliance (Felstead, Jewson, & Walters, 2005; May, 1999; Mir & Mir, 2005). As the act of organizing requires the alignment of efforts of individuals with different situations and motivations toward a shared goal that cannot be assumed to coincide with each individual's goals, it is easy to see the necessity for a degree of control in bringing order and productivity to such a group. Yet,

simultaneously, it is understandable that to maintain willingness on behalf of individual workers to subject themselves to the control of that organization in the pursuit of its goals that cooperation from employees must also be engendered. Organizing requires the willingness of individuals to cooperate and organizations do not exist without this individual and collective willingness to cooperate (Barnard, 1938). If the balance shifts too far in either direction, it seems that social pressures mount, calling for increased accountability or resistance with behaviors changing accordingly, and as a result, the pendulum is pushed to the other pole. While the mechanistic organizations of the industrialization era emphasized the *gaze*, the shift in the 1990s to high performance human resource practices employed by high commitment organizations can be said to emphasize the *embrace*.

High Commitment/High Performance Organizations

The emphasis on the embrace. High performance human resources practices or high commitment organizations, exemplify the modern utility of the *embrace* in accomplishing organizational goals. There is a stream of literature that demonstrates how the increased empowerment of employees, through high performance human resource practices, leads to organizational and employee benefits. These practices afford employees more opportunities to participate in decision-making, to use their developed skills, to earn performance-based incentives, and to work on teams. As a result, organizations with high commitment systems have realized gains in productivity, quality, and financial performance (e.g., Applebaum, Bailey, Berg, & Kalleberg, 2000; Arthur, 1994; Delaney & Huselid, 1996; Huselid, 1995; Ichniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995; Wood & de Menezes, 1998; Youndt, Snell, Dean, & Lepak, 1996),

lower levels of employee absenteeism, lower turnover, and higher organizational citizenship behavior (Kehoe & Wright, 2010), while employees experience greater affective and organizational commitment and work-family balance (Berg, Kalleberg, Applebaum, 2003; Kehoe & Wright, 2010).

As the *embrace* has changed, allowing workers to make decisions about where and when they work, so too must the *gaze* change to ensure productive practices. Flexible work arrangements no longer support the old ways of managing that emphasized employee presence and visibility (Felstead et al., 2005). Instead, managers must find a new way to attempt to extract maximal production from workers; the struggle for control is more relevant than ever before. Technology has been used in some ways to function as management's tool for control and surveillance (Zuboff, 1988). For instance, technology has been used to monitor worker locations and availability and also to set expectations of constant communication availability (Ladner, 2008; Richardson, 2010).

Redefining the gaze. Complementing the use of technology to serve as an instrument of the *gaze*, the origin of the *gaze* is no longer limited to the manager. As high performance human resource practices have been incorporated, managerial control has often been pushed to the team. Rather than managers directly exercising authority and surveilling or controlling workers, the team members exert influence to regulate behavior and production activities (Barker, 1993; Colvin, Batt, & Katz, 2001). The new *gaze* comes from others or even from the worker himself/herself (Sakolsky, 1992; Sosteric, 1996).

Many new forms of control have emerged due to the blurring boundaries between work and non-work domains and the coalescence of individual's multiple identities

across social spheres. Drawing upon Simmel's (1908) discussion of secret societies and the power they have to expand across other social circles, Scott (2009) presents the parallels to the ways in which the high commitment organization can expand to draw in an individual even while the individual occupies a non-work domain. In addition, with the porosity of social spheres and networks that bridge individuals across them, workers sense, because of the increased social awareness of each person's activities, that they must always perform in ways consistent with their work identity, as one must always be prepared to be called in to the work role for the performance of "emergency" work duties (Goffman, 1971; Scott, 2009). Furthermore, social media technologies that facilitate networking also make visible the performances of one's identity across social spheres, integrating domains that formerly could be kept distinct and inaccessible to each other; it has become increasingly difficult to segregate work and non-work domain identities. Therefore, it is difficult for individuals to escape normative pressures to comply with behaviors expected by professional members of one's network, even when outside of the *gaze* of managers.

Workers with "choice" face paradoxes of participation, reflecting tensions related to: 1) behaving in ways that either challenge traditional organization structure or reproduce it, 2) managing multiple identities (i.e., individual vs. collective, work vs. non-work, etc.), and 3) demonstrating organizational commitment or self-interest (Stohl & Cheney, 2001). As workers behave in ways that visibly demonstrate new work arrangements are viable forms of working, they challenge long-standing practices and offer validation for "deviant" behaviors (Epstein, Seron, Oglensky, & Saute', 1999). If workers behave consistently with traditional arrangements, however, they reify those

structures and make it harder for other future workers to take advantage of new working arrangements (Giddens, 1984; Stohl & Cheney, 2001).

The *gaze,* defined again as the exertion of influence to regulate behavior and production activities, now originates with behavioral norms, professionalism, identity, connectedness to others, and the omnipresent knowledge that performance will be evaluated, together leading to self-discipline (Edwards, 1979; Goffman, 1971; Leonardi, Treem, & Jackson, 2010; Noble & Lupton, 1998; Sakolsky, 1992; Sosteric, 1996). Today's knowledge workers face more diverse forms of control including, but not limited to, concertive, normative, and/or panopticonical control, all of which may not even directly originate with management (Barker, 1993; Edwards, 1979; Long, Goodman, & Clow, 2010; Spivack & Rubin, 2011).

LPT & Worker Autonomy

Despite the new ways in which the *gaze* may operate, transitioning to flexible work arrangements presents an opportunity for employees to experience much greater temporal and spatial autonomy. Management has been relatively slow to make these arrangements available to workers, however, despite the fact that the technological tools have been available for almost two decades already. Consistent with labor process theory, it is likely that the slow transition is at least partially due to the difficulties faced by management in reconfiguring, or even ceding, mechanisms of control and creating order alongside the increased job process flexibility that could be offered through new work arrangements (Felstead, Jewson & Walters, 2003). Others have suggested that institutional forces have also been a cause of the slow rate by which flexible work practices have been implemented (Peters & Heusinkveld, 2010). Indeed, the relatively

slow transition runs counter to the expectations that some scholars and practitioners have expressed suggesting an organization survival in today's turbulent economy utterly depends upon their adoption of flexible work arrangements (Madden, 2011). Empirical evidence also has not supported such claims, at least not across all occupation types. Instead, what has been seen is a stronger divide between privileged positions and blue collar or hourly positions in organizations. Workers that engage in highly esteemed "knowledge work" are rewarded with much greater latitude in their job design and increasing autonomy in how they complete their work. In contrast, hourly employees are offered few of these benefits, sharpening the divide and subjecting this latter group to increased marginalization (Kleinman & Vallas, 2001).

LPT & Knowledge workers

For those individuals that are fortunate enough to occupy the privileged class of knowledge workers, autonomy with respect to location choice is more likely to be a feature of the work arrangement. The extent of autonomy as experienced by knowledge workers is likely to vary, however. For instance, Vallas (1988) discusses how there can be contradictory effects of technology across and within occupations—some aspects might offer greater autonomy while others increase surveillance or control (Orlikowski, 1991). A way in which this contradiction may become apparent in the context of new work environment arrangements may be the extent to which people feel free to choose from any location to work. A knowledge worker's sense of restricted options or constrained autonomy with respect to location choice may arise from a number of sources that may include directly expressed policies or rules, informal rules about expressed

policies (Kirby & Krone, 2002), their own internal control mechanisms, or even the desire to comply with others' expectations (Spivack & Rubin, 2011).

Proposition 1: Knowledge workers will perceive constraints to work location choice arising from a number of sources, including expressed policies or rules, informal rules, internal control mechanisms, and social expectations.

Vallas (2006) suggests that there is a significant role played by the worker in restructuring work—that the worker must navigate conflicting logics within the organization. In other words, a process of constant negotiation is involved during transitions when new managerial regimes are put into play; workers must navigate the multitude of meanings of the managerial initiatives, meanings that may depend on status hierarchies, group identification, and cultural practices—the interaction of all of which will mediate the effect of the change on the worker-environment system (Vallas, 2006).

Proposition 2: Knowledge workers will feel conflicted regarding work location choice as a result of navigating conflicting logics and meanings within the organization as related to spatial autonomy.

Together, the above studies (e.g., Kirby & Krone, 2002; Spivack & Rubin, 2011; Vallas, 2006) suggest that autonomy, even for the knowledge worker, is constrained by a number of forces, including managerial habits of exercising control and other institutional and cultural forces. In addition, researchers have demonstrated that it is somewhat the responsibility of professional workers to make choices that challenge traditional practices to the extent that they are able as these new work arrangements emerge to co-construct

new norms and legitimate autonomous structures of their jobs, a privilege unavailable to hourly workers (Vallas, 1999).

Proposition 3: Knowledge workers will need to make work environment choices that challenge traditional practices despite potential challenges raised by expectations of others to create legitimacy of their choices.

Benefits of Autonomy

Scholars across a broad array of social science disciplines have demonstrated that both workers and organizations benefit when workers perceive having high levels of work autonomy. Workers with high autonomy, especially those with high growth needs orientation or white collar workers, experience improved mood, well-being, and creativity (see, for example: Amabile, 1989; Andriopoulos, 2001; Daniels & Guppy, 1994; Madjar & Shalley, 2008; Spector, 1986). Organizations benefit from these worker outcomes in addition to higher worker motivation, job satisfaction (Arches, 1991; Loher, Noe, Moeller, & Fitzgerald, 1985; Trow, 1957), organizational commitment (Rubin & Brody, 2005; Cohen, 1992; Marsh & Mannari, 1977), job performance (Madjar & Shalley, 2008; Spector, 1986), and organizational citizenship behavior (Chien & Chiu, 2009; Peng, Hwang, & Wong, 2010).

Proposition 4: There is a positive association between perceived location autonomy by knowledge workers and levels of motivation, job satisfaction, and well-being.

Much of the creativity and innovation literature has recognized autonomy as being critical in the creative thinking and problem solving process (e.g., Amabile, 1989; Andriopoulos, 2001; Woodman, Sawyer, & Griffin, 1993). Therefore, as organizations

want to increase creative production, it is important to consider the likely negative impact of the *gaze* when developing flexible work policies and expectations. The *gaze*, which was effective in factory settings in mass production of standardized products, is directly in contrast to the type of structure Cummings (1965) recommends organizations use to increase creative output. For knowledge workers whose key output consists of ideas, thoughts, and other intangibles, pressures from the *gaze* may especially problematic. Cummings (1965) suggests that there should be a small degree of formalization, no over-specification of HR tasks, flexible power and authoritative influence structures, high degrees of autonomy for individuals within the organization, broadened span of control, management of results with a long-term orientation, focus on results instead of process, separation of idea generation from idea evaluation, and open communication channels (Cummings, 1965). Many of these qualities reflect an emphasis on the *embrace*. Supporting these ideas, in a recent review of the literature, Andriopoulos (2001) found that democratic, participative leadership style, freedom of expression, diversely skilled work groups, open lines of communication, high levels of trust, innovative and supportive organizational culture, norms of free information exchange, encouragement of self-initiated activity, low risks of criticism or punishment, and a flat organizational structure are all associated with improved creative performance of individuals within an organization. Furthermore, developing an organizational culture of open-mindedness has to be established in an organization before increased rates of exploration and exploitation of knowledge, known precursors to creativity, will occur (Cegarra-Navarro & Cepeda-Carrion; 2008). And, research has demonstrated that developmental rather than judgmental evaluation of outputs generated by workers is associated with better creative

production, as well as output rather than process evaluation (e.g., Andriopoulos, 2001; Shalley, 1991; Shalley & Oldham, 1985).

Proposition 5: There is a positive association between perceived location autonomy by knowledge workers and creative performance.

Self-determination theory

Self-determination theory (SDT) provides an attractive rationale for autonomy's link to these positive outcomes (Deci & Ryan, 1985, 1991; Ryan, 1995; Ryan & Deci, 2000). SDT postulates that there are three needs—competence, relatedness, and autonomy—required for people's self-motivation, well-being, and social functioning (Ryan & Deci, 2000). Competence refers to an individual's self-efficacy with performing an activity, relatedness refers to, at least a distal, connectedness to others through the performance of an activity, and autonomy refers to the individual's volition to choose whether or not to perform an activity.

The framework for SDT distinguishes two main types of motivation: intrinsic and extrinsic, with extrinsic motivation having four sub-categories. Intrinsic motivation refers to the engagement in an activity due to the inherent satisfaction associated with it, while extrinsic motivation refers to the engagement in an activity in order to attain a separate desirable outcome (Ryan & Deci, 2000). SDT proposes that intrinsic motivation is not the only type of self-determined motivation, but rather that extrinsic motivation can lead to self-determined behavior through processes of internalization and integration. Internalization refers to incorporating values or regulations into oneself while integration refers to the process of making external regulation a part of the internal regulation processes, such that it originates with an individual's sense of self (Ryan & Deci, 2000).

The four sub-types of extrinsic motivation reflect the degree to which one has internalized and integrated regulation related to an activity; they lie on a continuum related to the extent to which an individual experiences motivation resulting from an internal (self-determined) or external locus of control (nonself-determined), or even amotivation when there is no regulation (Deci & Ryan, 1985; Ryan & Deci, 2000). Presented on this continuum from external to internal perceived locus of control, also reflecting the degree to which the behaviors are autonomous, the four categories are external regulation, introjected regulation, identified regulation, and integrated regulation. Externally regulated behaviors are those that are least autonomous, and performed to satisfy an external demand or attain a contingent reward, experienced as compliance by the individual. Introjected regulation involves the process of taking in regulation to the point that the ego becomes involved and behavior is motivated by desires to avoid feelings of guilt and to maintain feelings of worth. Identification regulation is a more autonomous form of extrinsic motivation where an individual accepts or owns the behavior as personally valued and important. Integrated regulation is the most autonomous form of extrinsic motivation and occurs when a behavior is incorporated as congruent with self values and needs. Integrated regulation is the most similar to intrinsic motivation, only separated by the idea that these actions are performed to attain a desirable outcome separate from those inherent to the activity.

Researchers have found empirical support for the link between the basic needs presented in SDT (i.e., competence, relatedness, and autonomy) to internalization and integration of extrinsic motivation, with autonomy as the strongest predictor (Gagné & Deci, 2005). Similarly, more autonomous forms of motivation, including internalized

extrinsic motivation and intrinsic motivation, have been associated with job satisfaction, well-being, and more effective performance, especially for tasks that are complex, creative, and interesting, or less complex that require discipline to complete (Gagné & Deci, 2005). When employees are given autonomy-supportive work climates, such as when they are given greater choice, are encouraged to take initiative, and managers share employee perspectives, intrinsic motivation and autonomous extrinsic motivation are enhanced (Deci, 1975; Deci, Eghrari, Patrick, & Leone, 1994; Gagné & Deci, 2005; Zuckerman, Porac, Lathin, Smith, & Deci, 1978).

Proposition 6: Knowledge workers perceiving higher levels of work location autonomy will have higher levels of intrinsic motivation and autonomous extrinsic motivation.

Job Values and Rewards

Interestingly, support for SDT also may be, at least partially, a result of individual differences in job values. The job values literature suggests that individuals' career aspirations vary based on the types of rewards they seek, with some emphasizing external rewards and others emphasizing internal rewards. External rewards include higher earnings, promotion opportunities, convenience of the job, opportunities to forge relationships with coworkers, opportunities for recognition, prestige, and adequacy of resources for performance of the job (Johnson, 2001; Kalleberg, 1977;). In contrast, internal reward seekers look for jobs that offer rewards of stimulation, challenge, opportunities to develop and use one's abilities, opportunities to be creative, and the ability to be self-directive (Johnson, 2001; Kalleberg, 1977).

Individuals vary in their job values and hence the rewards they seek, somewhat due to life and work experiences. People have the ability to exercise agency, though it may be constrained by market opportunities, in setting their personal career trajectories; so, careers can be considered the product of the intersection of plans and aspirations with opportunity (Johnson & Monserud, 2010). Researchers have also found that values can change a bit through time—individuals are able to shift their values to match the rewards offered by current occupations to decrease inconsistency (Johnson, 2001). Job values literature adds to the discourse on autonomy and to SDT by considering that some individuals seek autonomy in their jobs and when afforded the opportunity to acquire those positions, are likely to highly value the rewards those jobs offer.

Integrating Job Values & SDT

When merging job values literature with SDT, it becomes clear why previous research suggests that as employees are granted more autonomy, even in extrinsic motivation contexts, such as work relationships, where they are asked to produce a desired output, workers will be more likely to become more autonomously extrinsically motivated. Similar to high performance human resource practices employed by high commitment organizations, by offering autonomy, the company gets employee buy-in and effectively converts external demands to internalized motivations, which also functions to decrease resistance (e.g., Whitener, 2001). Thereby, autonomous workers will be able to achieve numerous positive outcomes, most resembling those attained through intrinsically motivated behaviors, especially when tasked with challenging, creative, and interesting assignments. In essence, these jobs provide rewards that are in line with workers' job values.

Expanding and Integrating LPT with flexible accumulation, job values, and SDT

Expansion of LPT. Today's work is very different from the industrial work that LPT was developed to understand. First, the product is different; it is less frequently a manufactured output than an intangible output produced by creative thought. The intangibility of the desired output has led to questions regarding how to objectively measure and evaluate such outputs. Second, the production process is different. How can managers sufficiently manage employees engaging in a process that cannot be visibly overseen? No longer can managers assume that workers will be housed under one location of production where presence and production visibility can be used to indicate productivity and job performance levels. Third, the relationships between workers and management are different. As organizational structures have flattened and debureacratized, and new flexible work arrangements have been put into place, workers can now virtually work from anywhere at any time. While face-to-face interactions between co-workers and between workers and managers could previously occur on a more impromptu basis, now, they are likely to be infrequent and more carefully planned, which limits the ability of managers to instantaneously determine if workers are actively engaged in productive work behaviors. Geographic dispersion of knowledge workers has led to the need for managers to find new ways to effectively extract maximal effort from workers that are now more loosely connected. Researchers have seen the utility of LPT in explaining contemporary manager-employee relations and new forms of work, but they have not used it specifically to develop an understanding of creative knowledge workers that are spatially decoupled from the organization and that face new forms of control emerging from sources other than their manager, with increased organizational

permeability and the connectivity of social networks. This research aims to present this theoretical expansion.

Integrating the theories. In sum, labor process and flexible accumulation theories suggest that work location autonomy will only be granted to those employees that are seen as core to the mission of the organization, a "professional" knowledge worker class, while hourly laborers are much less likely to be extended these same privileges. The job values literature suggests that these individuals occupying the knowledge worker class will be mostly individuals that value intrinsic job rewards, such as autonomy and a chance to be creative. It is possible that some of these workers may also value extrinsic rewards that can be part of knowledge work, such as prestige, advancement, convenience, and resource access, especially if knowledge workers are granted higher degrees of decision-making (as an element of prestige) and allowed to seek out work environments that offer those benefits (e.g., a convenient location, comfortable work environments, etc.).

Thus, for both groups of intrinsic and extrinsic job value workers, SDT suggests that providing knowledge workers with opportunities to choose where to work should therefore enable workers to become more autonomously extrinsically motivated, by using the *embrace*. LPT, SDT, and the job values literature suggests that professional workers that are able to seize for themselves the greatest latitude in work location choice will be rewarded with improved work motivation, mood, well-being, job satisfaction, performance, organizational commitment and creativity—outcomes that would also benefit the organization and the individual workers. Along these lines, workers granted

location autonomy would be likely to pursue environments that are optimal for producing the desired work outputs.

Proposition 7: Knowledge workers perceiving higher levels of work location autonomy will be more likely to pursue environments that are optimal for work.

Although knowledge workers may be offered discretion in choosing where to work, through the *embrace*, the extension of LPT that I have presented here suggests that the workers will still be facing restrictions to the work location options they can pursue. It is likely that there will continue to be tensions between managers that sustain efforts to control and institute surveillance over flexible location workers, as both managers and employees learn to navigate flexible location work structures and processes. In addition, new initiators of the *gaze*, via new forms and sources of control (i.e., organizational, normative, cultural, concertive, etc.) may serve as sources of work environment restrictions. If management is unable to find a way to shift from efforts to control to efforts to facilitate knowledge workers, however, these theories along with the results in the creativity and innovation literature, suggest the result may be that workers are unable to produce the creative outputs the organization desires. The creative process benefits by granting workers autonomy (e.g., Amabile, 1989; Andriopoulos, 2001; Woodman, Sawyer, & Griffin, 1993). As employees perceive greater work autonomy, they also experience higher levels of alignment with organizational goals (e.g., Arches, 1991; Loher et al., 1985; Peng et al., 2010; Rubin & Brody, 2005; Spector, 1986). Furthermore, past studies of worker resistance suggest that as workers feel restrictions of organizational control or surveillance, or the *gaze*, a priority may become seeking work

environments that offer opportunities to resist management as well as avoid of the sensation of working and maximize comfort, rather than optimizing work output. Part of the seeking out of environments that reduce the sensation of working or opportunities for surveillance may be to resist increased demands for ongoing responsiveness and accessibility of workers through communication technologies. In this sense, the work environment continues as a "contested terrain" (Edwards, 1979), even as what is contested has shifted to where work is performed.

Proposition 8: Knowledge workers that perceive restrictions to work location autonomy or surveillance are more likely to seek environments offering an opportunity to resist management or the sensation of working, and maximize comfort rather than optimizing work output.

Proposition 9: Knowledge workers perceiving restrictions to work location autonomy or surveillance will suffer lower levels of productivity and creative performance.

Other Constraints to Work Location Autonomy

Although this paper has focused on issues of control, surveillance, and the social context as sources of constraints to autonomy, it is also likely that there are other environmental features or task requirements that constrain location choice. For example, workers may need to choose environments that provide certain technological resources including Wi-Fi access, computers, printing capabilities, etc. Additionally, issues such as proximity to other places the worker frequents, hours of operation of public locations, space availability, etc., may be important. Therefore, I present the following proposition:

Proposition 10: Constraints to work location autonomy may arise from non-social and non-managerial sources including environmental features, task requirements, technological or informational resource access, etc.

Discussion

Macro-micro Linkages

Scholars from a variety of disciplines have been calling for better links between micro and macro perspectives in the study of a variety of social phenomena for quite some time (e.g., DiPrete & Forristal, 1994; Entwisle, 2007; Giddens, 1984; Ryff, Magee, Kling, & Wing, 1999). As tools and theories have increased in sophistication it has become easier to make strides in understanding social phenomena by taking on a truly multi-level perspective and study (DiPrete & Forristal, 1994). It has become possible to test propositions that extend from "trickle-down" theories suggesting how social context influences the individual (DiPrete & Forristal, 1994; Entwisle, 2007). Here, I use flexible accumulation and labor process theories to offer macro-level insights, or a top-down perspective, into the emergence of the knowledge worker as a new "creative class" in today's economy. Flexible accumulation and labor process theories point to the disparity between knowledge workers and other workers in organizations and highlight the challenges faced by those tasked with supervising or managing the productivity of the "creative class," respectively. Similarly, this perspective highlights the role of the traditional management practices as an institutionalized structure that may constrain perceived location autonomy of workers. Managers may have difficulty adopting philosophies and strategies that support increasing perceived autonomy of workers, as it will require implementing new practices to ensure worker productivity. Merging self-determination theory with these theories, I call attention to micro-level processes within the broader context, with a bottom-up perspective. The micro-level perspective offered by self-determination theory focuses on the issues of autonomy and motivation within the

individual and the paradoxes of choice faced by workers that try to take advantage of new work arrangements. Together the theories point to and acknowledge the role of perceived autonomy with respect to location choice, yet also identify the constraints to autonomy given contextual factors. In the context of a mobile workforce comprised of knowledge workers, the multidisciplinary and multi-level perspective I offer here provides insight into how work location choice is constrained by contextual factors while also examining how individuals shape and co-construct the context and environment with others (Entwisle, 2007).

The concepts presented in this paper extend theoretical models examining the roles of autonomy, control, and motivation given the context of flexible work arrangements. First, I have expanded upon labor process theory by considering the new world of work and the new ways that the *gaze* and the *embrace* are enacted in changing work relationships. I have incorporated labor process theory with work values literature and self-determination theory to highlight how knowledge workers in the new economy are impacted by the *embrace* and the *gaze* and how autonomy can lead to beneficial outcomes for this group. I have called attention to spatial autonomy as a new form of the *embrace*, available for an elite group of workers. I go beyond the idea that workers are simply granted more autonomy with respect to work location choice and instead focus on where that autonomy may be constrained and how constraints imposed by traditional managerial practices and social norms may be counterproductive for organizational aims, calling attention to the tensions inherent in the *gaze* and *embrace* relationship between organizations and their employees.

By merging the theories of this section, I have taken on a perspective that examines the economic work context and the availability of flexible work arrangements in modern day organizations that grant spatial autonomy to knowledge workers while also recognizing the emergence of new forms of control experienced by workers. Furthermore, the perspective examines the way that the *embrace* and the *gaze* may influence the exercise of work environment choice by those workers, whether aligned with organizational goals, individual goals, both, or neither. And, finally, this perspective considers the alignment of individual with organizational goals and the effectiveness of the exercise of work environment choice in generating congruent outputs.

Next, I have developed overarching propositions relating these theories to the context of mobile work that suggests that workers that are intrinsically motivated (or have internalized or identified with external motivations) will seek out work environments that lead to performance improvements. A second overarching proposition suggests that workers that perceive greater autonomy than efforts to surveil or control them will seek out work environments that lead to productivity, creativity and wellbeing benefits.

The propositions I present in this manuscript offer several implications for organizations and the workers within them. The notion that it is ineffective for the organization to grant workers autonomy regarding work location choice because of the lack of control or increased difficulty employing surveillance over workers to ensure productivity is called into question. Instead, organizational leaders may want to be more generous with granting workers freedom to choose work sites, given attractive outcomes including boosts to motivation, job satisfaction, and organizational commitment. This

new form of autonomy, work location choice, may operate as the *embrace*, aligning worker and organizational interests. While a shift toward the *embrace* may raise concerns of a shift too far away from the *gaze*, Collinson (2006) has identified several new forms of the *gaze* that play a role beyond traditional authority-based forms, including "perceptual (Pfeffer, 1981), cultural (Alvesson, 1993), normative (Etzoni, 1961; Kunda, 1992), ideological (Czarniawska-Joeges, 1988), or disciplinary (Burrell, 1988; Deetz, 1992; Knights and Willmott, 1985, 1989)." The variety of new forms of control indicates that it is highly unlikely that a shift too far in the direction of the *embrace* would occur. Furthermore, the propositions indicate that even if organizational rules suggest that workers should feel autonomous to choose their work environments, other factors, such as social pressures or environmental affordances may be constraining worker choices. Therefore, it is important for organizational leaders to consider a unified culture supportive of the policies regarding work arrangements.

In addition to location autonomy operating as the *embrace*, more autonomous workers may experience boosts to creative performance, an important asset in today's turbulent economic environment. Research has suggested the importance of outcome rather than process evaluation and higher levels of autonomy for higher creative performance (Amabile, 1989; Andriopoulos, 2001; Cummings, 1965; Cummings & Oldham, 1997; Oldham & Cummings, 1996; Shalley, Zhao, & Oldham, 2004). Here, process evaluation may be found as constraints to location choice. Thus, increasing perceptions of location autonomy should lead to enhanced creative production.

In conclusion, researchers should give careful thought to the influences of individual perceptions of autonomy, type of work motivation, nature of the spatially

flexible work arrangements, and the social context when examining outcomes associated with mobile working. Researchers should test these propositions by examining the process of work environment choice. For example, a qualitative study would be effective for identifying feelings associated with location selection, priorities considered when making a location choice, perceived sources of constraints to the choice, and perceived social attitudes and expectations surrounding spatially flexible work arrangements.

MANUSCRIPT 2: FACTORS INFLUENCING WORK ENVIRONMENT CHOICE OF KNOWLEDGE WORKERS IN THE ACADEMIC CONTEXT

Overview

As a result of technological advances, workers have become increasingly mobile; people can perform work in a host of new locations. In fact, estimates of the U.S. teleworking population are expected to reach 43% of the workforce in 2013 (Schadler, 2009). Given the rapid growth of this segment, organizations need to understand the requirements and preferences of this group of workers for employee attraction and retention and to ensure productivity. This study, via interview data from 30 mobile knowledge workers in a university setting (i.e. undergraduate students, graduate students, and faculty), adds to the literature by examining key considerations that influence work environment selection. Through a qualitative pseudo-grounded theory approach, I build a static theory of work environment choice. Five principal determinant factors emerged: instrumental affordances, comfort, tasks, working style, and tensions.

Introduction

As a result of technological advances in computing and mobile technologies, knowledge workers of today have the ability to complete work tasks in a wide variety of locations. Organizations can adopt flexible working arrangements, like telecommuting, that enable workers to take advantage of working both on- and off-site. Telecommuting is defined as an arrangement where employees perform job tasks outside of a primary workplace for at least a portion of their work schedule using communication technologies to interact with people within and beyond the organization (Bailey & Kurland, 2002; Baruch, 2001; Feldman & Gainey, 1997). Despite an initial lag in adoption of telecommuting practices by organizations, this type of work arrangement has been on the

rise—in 2008, about 33.7 million Americans telecommuted at least one day per month, up from 28.7 million in 2006. Recent projections by Forrester Research, Inc. expect 63 million Americans (43%) to telecommute by 2016 (Schadler, 2009). On a global scale, over 900 million workers telecommuted in 2008 with at least 1.18 billion workers expected to telecommute by 2013, or approximately 35% of the world's workforce (Ryan, S., Jaffe, J., Drake, S.D., & Boggs, R., 2009).

Telecommuting has been linked to a wide variety of positive outcomes for both individuals and organizations: individuals experience higher levels of job and life satisfaction, psychological empowerment and positive affect, reduced burnout and stress (Redman, Snape, & Ashurst, 2009), and lower levels of work-family conflict (Fonner & Roloff, 2010; Redman et al., 2009). At the same time, organizations have benefited from greater organizational commitment (Hunton & Norman, 2010), positive image as a family-friendly employer (Redman, et al., 2009), and improved task performance of workers (Hunton & Norman, 2010). Even with all of these potential benefits to individuals and organizations, however, teleworking arrangements challenge long-standing beliefs about work and the social structures and institutions that have been built around the idea of workers reporting to a fixed location where they can be observed in the production of organizational outputs.

It is not just the worker or the manager, herself or himself, which must adjust to these changing arrangements, but it is also the worker and the manager embedded within the larger social and cultural context. For example, decisions about where to work including identifying which locations are available and appropriate are relatively new considerations for workers. Identifying the key factors influencing worker environment

choice is the key purpose of this study, as this information offers important insight to managers and workers alike, as well as offers information to places trying to attract mobile workers to their sites. Managers may use this information to attract and retain talent, workers can use the information to help guide their work environment choices, and entrepreneurs can use the information to understand the needs and preferences of a large and quickly growing segment of the population.

Through the following review of the telecommuting literature, I draw attention to some of the difficulties associated with incorporating these new work arrangements into existing work systems and social structures as well as situate this study within the telecommuting literature. I highlight the tensions faced by mobile workers who have access to telecommuting arrangements to complete their work and consider those tensions as one category of influential factors in the work environment decision that I expect to emerge in the study.

Resistance to Adoption of Teleworking Practices

First, Peters and Heusinkveld (2010) analyzed institutional reasons for the slow adoption of teleworking practices by examining CEO's beliefs compared to HR managers' beliefs regarding the advantages of these arrangements. Peters and Heusinkveld (2010) found that CEOs were more influenced by mimetic pressures, or the extent to which other organizations have adopted teleworking arrangements, while HR managers were more influenced by normative pressures from their occupational communities. Institutional pressures accounted for a considerable portion of the variance in managerial attitudes about teleworking, more so than other "fit" factors that may be considered in adopting new organizational practices. Managers were concerned with

both social aspects of work outcomes as well as productivity gains. CEOs were also affected by institutional pressures, but they were more concerned with issues of legitimacy, with their attitudes toward teleworking being shaped by the extent to which peer organizations adopted the practice. Adoption by other organizations was seen as an indicator of productivity gains rather than social work consequences.

Shifting of the Management Framework

Once teleworking arrangements are incorporated into an organization, there are a number of sites of potential tension: manager-teleworker, teleworker-other teleworkers, teleworker to non-teleworkers, manager-non-teleworkers, and teleworker to self. Many of these tensions are likely the result of the ambiguity associated with shifting away from a managerial framework that has been built on several assumptions that are inherently incompatible with telework, including: 1) the workforce is mostly comprised of an underclass in need of constant supervision, 2) work should be bureaucratized and organizations should be hierarchical, 3) status and role must be communicated symbolically through physical structures (office size, location, furniture), 4) changes in rank must be matched by visible changes in assigned workspace, 5) presenteeism is always better than absenteeism, and 6) work and home domains are completely incompatible; commuting is the natural state of affairs (Duffy, 2000).

Tensions between Managers and Teleworkers

Traditional managerial practices have emphasized surveillance and control in order to ensure productivity and maximal effort on the part of workers who were assumed to be shirkers. Teleworking arrangements provide a fundamental challenge to traditional managerial strategies because these arrangements remove the worker from opportunities

for direct surveillance. Although granting workers autonomy has been found to engender employee cooperation with organizational aims, managers may have difficulty transitioning away from surveillance and control strategies. In support of this tension, Richardson (2010) explored managers' experiences as teleworking becomes an increasingly common practice and found that managers were constantly struggling with balancing the tensions of "holding on" to and "letting go" of the teleworker. To keep teleworkers connected, managers intensified efforts to communicate with off-site workers and also created events to bring everyone together for "face time." However, managers expressed concern over being perceived as micromanagers, wanting to allow for autonomy and for employees to feel trusted, and avoiding intrusion upon teleworkers' personal circumstances (Richardson, 2010). Managers indicated that trust was more important in the relationship with teleworkers than in the relationship with in-house workers, reporting that employees with a greater sense of managerial trust performed better and were more eager to "return the favor of teleworking" (Richardson, 2010).

Employees also experience tensions in dealing with managers through teleworking arrangements. Researchers have found that workers may experience expectations of "hyper-responsivity" (Ladner, 2008) and intensification of communication attempts that may even present risks of losing the benefits of distributed work arrangements like the flexibility of balancing work and personal life and the ability to focus on work without distraction from others (Leonardi, Treem, & Jackson, 2010). In an effort to cope, some workers have found ways of resisting communication intensification by unplugging technologies, shutting applications, using features of

information and communication technologies to disguise actual work status (Leonardi et al., 2010).

Tensions between Teleworkers and Main Office Workers

Hylmo & Buzzanell (2002) conducted a study of telecommuting discourses. This study highlights the various tensions within an organization that result from diverse ways that telecommuting is "designed, perceived, discussed, and enacted on a daily basis" by employees (p. 345). For instance, different subcultures within the organization formed, dividing employees along work arrangement lines—lines that served to exclude employees that were different from their own subgroup and making it difficult to sustain relationships with individuals across those subgroup lines. There was expressed discomfort with crossing those spatial boundaries by in-house workers calling teleworkers at home, as an example. Likewise, teleworkers rarely made an effort to go into the office to socialize and meet with in-house workers. Third, there were strong emotional reactions to uncertainty and ambiguity surrounding promotion and socialization. Teleworkers hoped that evidence of productivity would be sufficient for earning promotion opportunities while in-house workers highlighted their ability to socialize with others in the office and have "face-time" to secure their promotional opportunities (Hylmo & Buzzanell, 2002), each conveying legitimacy of their own strategy and illegitimacy to the opposite. In all of these ways, employees in the organization studied didn't demonstrate any shifting enactments reflecting the ideas of a boundary-less organization that could allow telecommuting to become a viable innovative work form (Hylmo & Buzzanell, 2002).

Other evidence exists suggesting that main office workers are more likely to experience inclusion (Morganson, Major, Oborn, Verive, & Heelan, 2010). Some teleworkers that experience professional isolation also suffer decrements to job performance (Golden, Veiga, & Dino, 2008). This isolation may result from the lines drawn between subgroups as found in the Hylmo & Buzzanell (2002) study.

Sometimes the distance between teleworkers and other co-workers is a good thing, however, as Fonner and Roloff (2010) found that teleworkers were able to better manage the work-life boundary, experienced lower levels of stress due to meetings and other workplace interruptions, and had less awareness of organizational politics through less exposure to self-interested and unjust behaviors. Although the authors acknowledge that teleworking may inhibit connectedness, it may also enable workers to disconnect purposefully (Fonner & Roloff, 2010). Congruently, workers that disconnected their information and communication technologies or manipulated them in ways that camouflaged their real work status were better able to focus on work tasks. The increased focus on work tasks led to higher productivity, benefitting both the individual and the organization and resulted from these disconnections from the office and others despite the seeming conflict with efforts to control employees (Leonardi et al., 2010).

Internal Tensions

Teleworkers as they are performing work in ways that contradict traditional work arrangement models have expressed that they feel they are being granted a "favor" and thus feel the need to return the "favor" through hard work and productivity. This results in a joint expectation for employees to be hyper-responsive to attempts at communication (Ladner, 2008). Also, the ability to do work from any location can stimulate feelings of

guilt: when work has penetrated the non-work domain and signals that workers have the capability to work and should be working (Noble & Lupton, 1998). As teleworking has often been described as a workplace "benefit," it has led to a failure to consider potential negative outcomes to or intrusions upon other domains. For instance, information and communication technologies have made scheduling and location ineffective demarcation tools to define work and non-work time and space, yet, a consideration of the need for restrictions of access to the non-work domain is absent (Ladner, 2008).

Tensions with Other Users of Spaces

In a study of multi-site workers, Hislop and Axtell (2009) found that workers had to engage in practices of manipulating various sites to make them temporary worksites. This required an investment of time and energy and social practice amidst other users of the space. Other users of the space may become a source of conflict from the use of these spaces as workspaces by these multi-site workers (e.g., a worker in a train carriage using a shared table to perform work activities) (Hislop & Axtell, 2009). Through these social interactions that potentially put workspaces into the public sphere, it is possible that other users of the spaces will exert the *gaze*, defined as control or surveillance of workers, setting norms that act as controls for acceptable use of those spaces in work endeavors (Spivack, 2012a).

Benefits of Telecommuting

Regardless of the tensions and difficulty incorporating these paradigm-shifting work practices presented here, most studies indicate support for the positive benefits associated with their use. As previously mentioned, individuals experience higher levels of job and life satisfaction, psychological empowerment and positive affect, reduced

burnout and stress (Redman, Snape, & Ashurst, 2009), and lower levels of work-family conflict (Fonner & Roloff, 2010; Redman et al., 2009). Similarly, organizations enjoy greater organizational commitment (Hunton & Norman, 2010), positive image as a family-friendly employer (Redman, et al., 2009), and improved task performance (Hunton & Norman, 2010).

Distribution of these benefits can vary by individual, however, as some researchers have found level of work drive, need for sociability, need for autonomy, and need for achievement can impact the relationships between teleworking and various outcomes including job and life satisfaction (O'Neill, Hambley, Greidanus, MacDonnell, & Kline, 2009; Vrick, DaSilva, & Arrington, 2010). Based on previous research that makes propositions for work environment choice through merging labor process (LPT) and self determination theories (SDT; Spivack, 2012a), I suggest that some individual-level characteristics are linked to differing outcomes based on how they influence the work location choices made by telecommuters and the interaction of individual characteristics with environment characteristics. Therefore, a second goal of this study is highlight the influence of individual characteristics on work environment choice.

Method

The primary purpose of this study is to develop a static theory using a pseudo-grounded theory approach that details the types of considerations and factors that a mobile knowledge worker takes into account when choosing an environment for work, as demonstrated by the research question below:

RQ1: *What environments are workers choosing and why? What are the influential characteristics?*

A static theory will identify influential factors that impact work environment choice. This will be a first step to in understanding the process of making work environment choices and set the stage for a future study that will develop propositions about how the influential factors are interrelated and prioritized in the process of making work environment choices.

Participants. Participants were 30 members of the academic community at a southeastern university including undergraduate and graduate students as well as faculty. While student samples are often used and criticized as convenience samples in psychological or management research, here they represent individuals with the characteristics of particular interest for this study—they are granted a great deal of autonomy about where their work is completed and typically have access to information technologies affording mobile work. In addition, these workers may be less subject to organization-specific constraints that may be due to a variety of concerns (e.g., data security risks, organizational culture incompatibility, etc.). Faculty members also typically have a high degree of autonomy in completion of their job tasks and are of particular interest due to the nature of work they engage in—largely knowledge work.

Participants were recruited from a subsample of the university population through a campus email asking for participants for an interview study exploring how students and faculty perform their work. A total of four undergraduate students, twelve graduate students, and fourteen faculty members were interviewed for this study.

Procedure. I conducted in-person interviews at a location of the respondents' choosing, most frequently with faculty, these interviews occurred in his or her office, with one interview occurring off-campus at a coffee shop. Graduate students and undergraduate students were interviewed in my office or at a coffee shop on campus. The interviews were digitally audio recorded when consent was granted and then transcribed verbatim at their conclusion for analysis. For the two individuals that didn't agree to be recorded, hand-written transcription occurred at the time of the interview. The hand-written transcriptions were then typed at the conclusion of the interview for analysis.

Interview Guide. The purpose of the interviews was to discuss the factors that individuals consider when choosing where to work. Specifically, I aimed to identify the key environmental features of work environments that workers consider and the roles that task type, individual characteristics, perceived autonomy, and personal preference play in the relative importance of different work environment features. As the phenomenon of interest involves identification of a number of variables and a process potentially involving complex weighing of a wide variety of information and options, qualitative inquiry is a particularly effective methodological tool (Lindloff & Taylor, 2002). Interviews allow for experiential and in-depth examinations of process phenomena from the participant's perspective (e.g., Seamon, 2000).

I used a semi-structured interview guide (see Appendix A) to elicit discussion of the decision-making process. The format of a semi-structured interview allowed for some content consistency across interviews while still allowing for respondents to explore topics that they felt were important that were not directly addressed in the guide. As an exploratory study aimed at identifying a wide variety of factors that influence the decision regarding where to work, the qualitative format and a semi-structured interview guide allowed for the respondents to offer unexpected topics as relevant discussion points.

Through an inductive process, I used the information gained through these interviews to build a static theory comprised of the salient dimensions of environments and other factors that mobile workers consider when choosing where to work. Respondents were probed to get a full conceptualization of potential work environments as spaces combining physical, psychological, and social elements (Lefabvre, 1991; Wicker, 1979). I also tried to elicit descriptions of the process of co-constructing alternative work environments with other occupants of the spaces and the meanings assigned to those spaces, especially for those environments that have been shifting in use with the introduction of wireless technologies (i.e., cafes, lobbies). I tried to call attention to this process of co-construction of alternative work environments by examining motives, tasks, monitoring and behavior adjustments based on observations of others, and asking the respondent how the space came to be considered as part of the category of "work space" (Altman & Low, 1992; Auburn & Barnes, 2006; Gieryn, 2000; Genereux, Ward, & Russell, 1983 ; Stokols & Shumaker, 1981)

Analysis Strategy. I loaded the transcripts and my personal observation notes into NVivo for coding. The transcripts were analyzed using a pseudo-grounded theory approach with thematic analysis and constant comparison, but without negative case analysis (Corbin & Strauss, 1990; Glaser & Strauss, 1967; Lindloff & Taylor, 2002; Strauss & Corbin, 1994). Given that my aim is to understand a relatively new phenomenon—how people are incorporating alternative work environments as potential places to conduct their work and also considering moving between them as part of the work process—there are no existing theories to explain this phenomenon. Instead, pseudo-grounded theory will provide a framework for building a new static theory to identify the important considerations faced by people that are experiencing work environment decisions that potentially include alternative work environments (Creswell, 2007).

The first stage of analyzing qualitative data involved data reduction (Miles & Huberman, 1994). I accomplished this through open and axial coding and then through the formation of a unified theory. The first step in grounded theory analysis is open coding—the identification of key words and phrases within the text. I categorized the key words and phrases into categories, such as *environmental descriptors*, *resource needs*, *motivations*, *perceived location autonomy*, and others as needed until all key words and phrases are coded. In addition, I identified subcategories or properties of each of these categories (Creswell, 2007). Throughout the open coding process, I compared transcripts to highlight similarities and differences across individual transcripts (Corbin & Strauss, 1990).

Next, I used axial coding, a process of reorganization of the categories from the open coding phase to create hierarchical themes or constructs. Then, I examined each construct to identify subdimensions (Corbin & Strauss, 1990), and started to identify which categories can be classified as the central phenomenon (i.e., deciding where to go to work), causal conditions that influence the phenomenon, actions and interactions resulting from the phenomenon, intervening conditions, and consequences (Creswell, 2007). At this point, I used member checking, a strategy where participants are asked to provide input and verification of the suitability of the coding scheme to strengthen validity of the categories and themes identified during data analysis (Corbin & Strauss, 1990; Creswell & Miller, 2000; Lincoln & Guba, 1985). Finally, I merged the themes together into a static theory of influential factors and present it visually (Figure 1). Since the process involved constant comparison, participants were recruited until theoretical saturation was reached, defined as the point at which no new insight was gained from content from additional interviews (Glaser & Strauss, 1967); the sample size of 30 satisfied this goal.

Results

First I will present the variety of environments that are being chosen by mobile workers. Second, I will present a static model of factors that influence work environment choice and describe the dimensions of each factor.

Types of Environments for Work

The first objective of this study was to identify the sites mobile workers are choosing for the performance of their work tasks. A complete list of the variety of spaces workers interviewed in this study are using are presented in Table 1. The most commonly mentioned places chosen for work sites included traditional work environments including the campus offices or labs, if the participant had an assigned work space, home offices, and other sites within the home, and less traditional sites including bookstores, cafés and coffee shops, and outdoor spaces. Some of the less frequently mentioned spaces, that are "new" sites of work performance included vehicles, sites of children's events, hotels, an artist studio, doctor's offices, and the faculty/staff dining area.

Static Model of Influential Factors

While workers are choosing a variety of locations to perform their work tasks, there are several factors that influence their choices. These factors were compiled using a pseudo-grounded theory approach and are presented in Figure 1 as a visual model. Drawing from past research on telecommuting, I expected a factor to emerge that deals with navigating tensions faced by knowledge workers as they make work location choices, but I wanted to see what other factors emerged from the data, as this was a gap in the literature. From the data, there are five factors affecting work environment choice:

instrumental affordances, comfort, tasks, working style, and tensions associated with navigating the social context.

Instrumental Affordances. Instrumental affordances are the aspects of an environment that provide tools, objects, or resources for people to perform certain actions (Gibson, 1979). In other words, instrumental affordances are utilitarian qualities or an object in an environment that a person perceives offers them the opportunity to do something or perform a task or action. Within this category, academic mobile workers were concerned with choosing environments that presented computing resources such as computers, multiple monitors, software, and printers. For example, one graduate student talks about the computing resources available in the campus office:

> *"My office is where I have the most space and resources, because I can bring my laptop and essentially have 3 screens…I think I'm more effective with 3 screens, so I have the most resources and the most space there… " - 26554*

Another graduate student discusses the software requirements for work and the availability of software on campus labs as a key work location determinant:

> *"It depends, for example for the statistics homework you needed software that was only available in the School of Ed, basement computer lab, so that was a limited time, um and it was also at the library."-201501*

Faculty members also are driven by software requirements, especially with respect to statistical software packages. For example, as this faculty member states:

> *"I do have to do most of my data analysis [on campus] for a couple reasons, one because I don't have all of the software I need at home…" - 31988*

Informational resources, such as online library databases, printed articles, journals, books were also a key consideration. For example, a professor says access to

informational resources is one of the main reasons why the campus office is more attractive to him than his home office:

> *"And that's, that's what I like about this workspace, I mean, what I like about this office as opposed to my home office, if there's an article I need or some kind of resource like that I mean you can see I've got, I have dozens of books, so if I need a reference book, it'll be here. I don't have reference books at home, so that's something I like about my workspace, is that all of the resources I need are right there at hand. Or, if I should need a reference work that is in the library on campus, I can just walk over and get it, I don't have to wait a day or a couple of hours."-33091*

Similarly, another professor discusses the access to electronic resources and files at the campus office as making it much easier to work:

> *"I need to work on something it's 10 o'clock and I just get frustrated trying to do it at home and I end up having to come in, it's 10 o'clock and so I really want to be at home, but it's just little things like I can access certain things on my computer at home, I can access the library, but it just works so much easier doing it from here. I can access my files remotely but it just, everything is just so slow, so if I know I'm going to be looking through a lot of folders trying to find a bunch of pdfs that I've got randomly throughout my computer, that it's worth the 20 minute drive to come into work to just do it here, but and uh, and then I guess there have been a few times where I've had to go over to the library just to look at hard copies of journals that weren't available online, but that's, that's extremely rare…"-38000*

In this case, even though there is a capability to do the work elsewhere, the professor felt that it was more efficient to use the resources at the campus location, even despite the investment in driving time at inconvenient times of the day.

Internet and Wi-Fi access was a critical instrumental affordance as well, and often one of the primary considerations about where to work. One graduate student states the importance of wireless internet access when he's making choices about where to work:

> *"[I consider and work in] many other places, here in the office and after here, at my apartment, I can say, and sometimes I go to the library, and on the campus, anywhere that I find the wireless spots, hot spots, for example, under tree, I like to do work in the sunny days, but most of the part is here in the office, or in my apartment." -233801*

Comfort. The next category of influences on the work environment decision included aspects of the environment related to comfort. Comfort includes access to food and drink, aesthetic qualities of the environment, convenience of accessing the location in terms of driving time, parking, hours of operation, seating and other resource availability, safety, control over the environment, desirable levels of social interaction, and sensory experiences (i.e., scents, sounds, comfortable furniture, and temperature). For instance, one graduate student explains home is an attractive work site choice because having access to food and drink offers the ability to save money and home also offers the ability to make quick transitions between work and other activities:

> *"…Saving money, I drink a lot of tea and coffee and water and so I just go in my fridge. Um, comfortable clothes, um.. quick and easy transitions to and from, you know I say I want to go from doing work to working out, doing work to sleeping, doing work to eating." – 26554*

Another graduate student explains how comfort is an important consideration but that there is an ideal level of comfort when completing reading tasks:

> *"I also need to be comfortable, but not too comfortable, so I couldn't lay on my bed and read, that's too comfortable, but I also don't want to necessarily be standing up and reading my chapters." -26911*

Here, as an example, a faculty member also mentions having access to elements in the environment that offer comfort as important, including food and drink, but also blankets and heating pads:

> *"[I like it to be] cozy, you know, I like to have tea and stuff like that handy. And I always have, I mean, even in here, I've got, I've got like blankets and <laughs> all kinds of stuff so if I, if I'm working on something I can make myself a cup of tea and have some cookies, I can bundle up if I'm cold or just um, or in the summer time I'll usually bring a big thing of ice water, I like to just sort of, have coffee or whatever, I like to just sort of nest... maybe the more difficult the task, the more I will crutch it with you know candles and blankets, <laughs> but you know, I don't know, …I just um, like fundamentally I really enjoy what I do, and I like to you know have the atmosphere be as enjoyable as possible, so I*

> *really want to be comfortable, in fact, I even have a heating pad because I had a bad back for a while and I would work with a heating pad on my back, and so I still do it just to be comfortable, you know, I'll put the heating pad, I have a heating pad here and I have one upstairs in my study at home, I have one in my bed, you know, I'm just like my great grandmother <laughs>…"-30882*

Temperature of the environment was an important comfort consideration mentioned by almost all participants. When the environment failed to meet comfortable temperatures, which seemed to be ubiquitous across campus office environments—too cold in summer and too hot in winter—the workers made efforts to correct their discomfort either behaviorally, by making trips outside to cool off or warm up, or by altering their environment by bringing in blankets as mentioned in the case above or even space heaters, even though each participant expressed knowledge that space heaters are against university facilities policy. Here is an example of a faculty member emphasizing the comfort aspects of the environment, including access to food and drink as desired without prior meal planning and, specifically, the benefit of being able to control temperature in the home setting:

> *"I think, just like in physical plans, like 'Oh, well, this much more comfortable than this one,' I really prefer that, a chair that's more comfortable to sit at. Like, the desk is set up better. I can control the temperature. I can go to my kitchen and eat whenever I want to and whatever I want to without having to plan it ahead of time. -35650*

Accessibility of the work environment and effort required to get set up in a space was another dimension of comfort. A faculty member provides an in-depth discussion of influential elements with respect to accessibility in the decision-making process:

> *"Are there enough tables, because I prefer to work at a table, um, can I always find a table at the place, my writing partner and I usually determine the day before, the week before, where we are going to go, so it has to be somewhere that if we go a bunch of times that there's usually going to be a space for us to work,…[with respect to working on campus, there is the issue that] if the building is locked, you have to have a special*

> *key to get in the building and then go in the back door because the front door is locked and then, you know, parking in the deck and it's not as easily accessible, it doesn't feel as easily accessible, even though I could you know easily go to the library or get a special key, …parking is a big thing, um, so you know, with the library on campus, having to go in you know one of the [parking] decks, something that you can't really change, but that could definitely influence how I'm working now, being able to park and carry all of my things and, so, this access, I guess, to get in that space and the idea of coming in from the outside."-33616*

From this illustration, accessibility includes not only key access, but also parking, ability to transport necessary resources to and from the location, consideration of outside weather conditions, distance from parking to the desk, and likelihood of seating availability. Similarly, other workers brought up issues related to traffic both in terms of on the drive to or from various locations and on-site traffic or number of other people using a space at a given time of day, and driving distance as accessibility and convenience dimensions of the comfort factor.

Tasks. The third factor involves consideration of the types of work tasks that need to be completed when making work environment location decisions. As this faculty member states, task type is a very influential consideration:

> *"I would say the most important consideration is what I'm trying to do. You know, which task I'm trying to accomplish. And that really informs my choice of where to work. And it controls my choice of, well, what I have to get done in a certain day, will determine where I am, and for how long."-35650*

One of the general task qualities considered whether or not the task requires collaboration. If so, the worker determines if the collaboration requires physical proximity or was location independent. For example, the following quote from a faculty member illustrates how a need for proximity in the completion of a collaborative task can determine location choice:

> *"… I can tell you while working on that grant project a couple of weeks ago and I knew it was sliding out of control and I didn't have a sense for*

> *where it was going, the deadline was looming and so I basically called up my friend and said I'm coming to Albany so we can fix this. So I literally felt like I could not fix things from here. …the team got together and we sat in a room, and I, it was, it's a social network project and my friend Kim is the only one with that expertise, so we all have other strengths and none of us were able to see what we needed to do to finish the grant, and so we spent 2 days in that room and I just kept saying, 'I don't get it Kim, keep explaining it, you need to keep explaining it, I don't get it, you need to keep explaining it.' And, I need to be there to do that. I tried to do it from here and it didn't work,"--33222*

Beyond that assessment, the amount of time required to complete a task can be a factor in making a choice, as illustrated in this comment by an undergraduate student:

> *"It depends on the type of assignment really. Some assignments I know I'm going to have to stay in a place longer than others. So, I might pick a place that I know will be open longer versus a library that may close at a certain time, if I had a research paper, I might want to do it at a table where I have my free range of time where I can stay there as long as I need to, to get it finished. So…sometimes it's the requirements of the assignment itself." - 10204*

Similarly, a faculty member points out the need for certain environmental characteristics such as absence of noise or distractions when performing some tasks:

> *"[I think about] exactly what it is that I'm doing. Do I need very quiet; do I need uninterrupted time; do I need to [have] no distractions? Um,.. if I'm in the middle of a really important paper, that I'm researching or writing, I don't want to be distracted, I want to be able to not answer a phone or not even turn on the computer if I'm writing some notes by hand, or don't open email or something like that. I have to have undivided attention, so it's more about what the particular task is, as to how I make those kinds of decisions [about where to work]." -30031*

The above quote demonstrates how some tasks, here researching and writing, are perceived by workers as requiring particular environmental conditions to result in productive effort. As a result, task type will influence what types of environments are considered as potential venues for working. Furthermore, it's important to some individuals that the environments have fewer affordances during the completion of some types of tasks, such as prohibiting the use of distracting technologies. The above quote

discusses the distractions that extend from temptation to use a phone or a computer or open an email account—something that came up for several participants. Another example of how task type influences work environment choice is given by this quote by another faculty member when speaking about the types of tasks that can be completed in a non-traditional work environments, such as near the pool, in a car, at a doctor's office, etc.:

> *"I can do editing, I can do little things like that, I can do email, but I can't do, I can't do necessarily, I need a lot of quiet and um, uninterrupted time to do some of the more complex, analytical tasks." -30882*

This quote illustrates that "little" tasks, or tasks that don't involve complex, analytical thinking, allow for greater location choice flexibility, being less likely to be affected by qualities of the environment, and serve as candidates for tasks that can be done while on the go. Similarly, this faculty member explains the process of taking a grading task with her to a variety of environments and why this task type is flexible:

> *"maybe because it requires less creative… maybe it's just a task, it doesn't really require much thinking from me, you know what I mean, I've already got a, I've already got an answer key, you know that I'm comparing to. I've already got my rubric created and it's very portable. I can go anywhere and I don't have to have my best thinking, my undivided attention, you know, I can have some noise going on. And when I'm writing a paper, I can't have that. I couldn't write a paper in the coffee shop, or at my daughter's orchestra practice." --30031*

She points out that important task qualities affecting environment choice include portability (physical resource requirements), the depth and type of thinking, and sensitivity to environmental qualities (i.e., noise). Grading tasks were described as having fewer constraints because you do not need to take a lot of materials with you-everything can fit into a binder (i.e., tests and the grading rubric), but also only involves comparing tests to an answer key and grading rubric, a less difficult thinking task. Therefore, task

type has a significant influence on the types of environments knowledge workers are willing to consider.

Working style. The fourth factor that influences work environment choice is called working style. Working style refers to dimensions including how space relates to frame of mind and how scheduling based on personal needs and tasks to accomplish relate to work environment choice. First, with respect to frame of mind, several workers indicated an association between certain locations and a working mindset. For example, one graduate student comments on having a place on campus in the lab that helps her accomplish her tasks by putting her in the right mindset:

> *"I have my own place set up …and I have enjoyed having a workspace that gets me in the mindset so it's good."-22642*

A second illustration given by a faculty member demonstrates that the worker will create environmental conditions, via actions like closing an office door, to help facilitate entering the right mindset to engage in a type of task:

> *"I definitely don't like working with the television on or music playing. I like, quiet silence, I'm easily distracted, um, I don't like, um, I don't particularly like being uh, conversational with people when I have big projects that I'm focused on, you know I tend to like close the door so people who just want to chat, don't come by and just start talking, I tend to get a bit anti-social, I just want to focus you know I really get into a, a mindset where I'm just ready to work and you know I can't keep it up for 8 hours, but for 3 hours or so, I just really like to zone in on that task at hand."- 38000*

Some individuals even indicated the use of the environment to elicit a fresh perspective and could be tied to stages of a project, for example this faculty member discusses stages in the writing process as it relates to her work environment choices:

> *"When I'm writing a book at home, I get a chapter written, I change places in the house. For the initial proof, I'm in my home office working, then when I get a rough proof back with feedback from the first set of*

> *reviews, that I do in my office, because there are gaps I have to address and that's where my documents were. After I send it back to the publisher, then the galleys would come, and I have to give it a last look, so I print out a copy and move to different scenery. I might go to a coffee house or outside, depending on the weather. So, I guess I change locations if it's something with multiple drafts, if I need fresh eyes, or the perspective of a different person, that's even for drafts of other administrative documents as well. At least the fresh environment seemed to be important." - 30063*

As a fourth example, work environments could be chosen to overcome blocks in productivity. In the example given below, a faculty member discusses his experience using a change of scenery as a "shock to his system" that helped him become a productive writer again:

> *"My wife dragged me to the Grove Park Inn, uh, because I was having difficulty starting the second book and she said, 'look let's try what the standard thing, let's go somewhere totally different and we'll go to the spa, we'll pamper ourselves and then you can get down to work' and oddly enough, well I fought that, but oddly enough it worked, I ended up working in not a very nice room, but it was enough of a sort of shock to the system, that I took half a dozen books with me and I started piecing together from these key books how I wanted to start a crucial chapter, so I don't necessarily write in sequence, um and within two days, I'd started, and as soon, you know, you don't stay at the Grove Park Inn for very long, because it's expensive. And, so we came back and it was fine, I went back to the space that I wanted to be in and, you know, I'd started and it was fine… as soon as I got over that hump, I fled back to my preferred space and it was fine." –38422*

A second dimension of working style involves scheduling considerations as related to work location choice. For example, this graduate student discusses how whether or not she has to work her influences where or when she works alongside the type of tasks she has to accomplish:

> *"It's really, it just depends on the day and what needs done and just depends on what task I have and also what my work schedule is. Sometimes I just can't do anything because I have to work… At home I could read but sometimes the books, I just I have to go to the library, or I mean I knew I would get more done at the library than at the office. The library is first, then the office, and then possibly home. -201501*

In addition to breaking tasks and locations by day of the week, some respondents discussed how times of the day would be allocated to certain tasks and locations. Below, I present a quote from a faculty member that discusses how she finds certain times of day to be more conducive for working on different types of tasks:

> *"I used to be most productive between 4 and 6 in the afternoon and 9 and 12 in the evening, but then I had children, and that completely changed everything, so actually I, I do, I would still prefer to write at those times, but I don't really get that chance very much anymore. So, I don't like to write in the morning. I don't have any idea why. Because, I mean, I like to write, I just don't, if I sit down in the morning and think, 'Oh I have all day to write,' then I won't do it. So in the morning I like to do more focused tasks that have, like, smaller tasks, that have more checkmarks [laughs]. ...I think [building momentum is] part of it, and just, you know, morning has never been my best time. I have to be kind of forced to do things in the morning to get them done. And I'm really bad at forcing myself to do anything in the morning without some kind of external check." -35650*

While this particular respondent defines evening hours as the ideal writing time, it was more common for workers to express a preference for performing more mentally demanding tasks in the morning or earlier in the day, as the following quote illustrates:

> *"Well, I, I really am a morning writer, so I usually get up every morning fairly early, 6:30 or 7, and I like to write for several hours. Um, and then you know some days I have other obligations and so I'll have to go to campus and my classes are at night, so, but my best time is in the mornings and, and my favorite time to write is oddly Saturday or Sunday morning, <laughs> um, that's when I have the fewest amount of emails and interruptions and I can really focus on what I want to do and I can find that I can be, you know, 10x more productive in, an uninterrupted time period than I can be in an interrupted time period." – 31988*

Based on these preferences for performing certain types of tasks at certain times of day, individuals would choose locations that also facilitate task performance. For instance, this graduate student mentions how she likes to use the lab to complete her work in the morning because fewer people are present to create distractions:

> *"[I like to go into the lab] especially in the mornings because the other people near me don't come in until 12, normally cause [my immediate neighbor] works at the bank too, it's yeah… so I can have the morning to myself which is when I'm most productive anyway, which is really nice <whispers>…" - 22642*

Tensions. The factor, tensions, refers to the worker's perceptions of various social pressures constraining work environment choice. In the academic context, the origin of these social pressures seemed to be predominantly with coworkers, students, and family members. Knowledge workers are aware of these tensions and part of the decision about where to work depends on the social pressures that constrain work environment options. In the following passage, a graduate student confesses that the social pressures associated with participating in the family along with the pressures to be a good graduate student cause him to feel conflicted about where to work:

> *"I guess based on social pressure for going into work, not going into work. Heat for going to the home office or not going to the home office. …[I feel conflicted] frequently, yes… I guess being involved in the family is very important to me, but being a successful grad student is very important to me, too. So managing those things can be challenging." – 203201*

Similarly, another graduate student expresses how those pressures from different sources, including his advisor, his labmates, and his wife, also influence his choices of work location:

> *I guess the first criteria that I have to consider is to be accessible to my advisor, or to be accessible to my labmates, so because of that, the first place is the office, although I don't like this office because there is no window. So, I have to consider that. And, then after that, I have to consider that I'm married, so I have to be at home with my wife. So, because of that I'm, the next place is my apartment <laughs> then, uh, after that, come the others, the other places, whenever I have time and there is nobody to complain about why you are not here, so I can go to those places. –233801*

This graduate student shows the ranking of the importance of the influence of these various social groups and pressures to be accessible, prioritizing, in order, the advisor, labmates, spouse, and then anyone else that might complain about his choice. In this particular instance, the graduate student's work location choice was largely determined by navigating these expectations of others, with other factors becoming a secondary concern.

Faculty members also feel the pressure to work at a campus office location, even if it isn't the optimal environment for the completion of writing and research tasks. Here, a faculty member discusses her disbelief in the validity of and experience of conflict with a cultural norm emphasizing presenteeism as evidence of productivity, when she knows that she does her best work at home:

> *"Yes, I feel pressure to be here. I don't know if it's just the culture of being seen and people, I don't know why they think that I'm doing work when I'm here, because I do my best work when I'm at home, but I think that people do think 'oh she's working' when I just told you I take my work everywhere, <laughs> so, but there is something about needing, part of it is, being around people. So, being around these other people that I could just bounce ideas off of and just talk about research that's great. But it's not this physical however big this room is. That happens in the halls or in someone's doorway when I'm passing by or when I'm by the restroom. Those kinds of interactions can happen anywhere, it doesn't have to happen in this whatever 8 by 8 office."—30031*

Despite feeling conflicted with the assumption that being on campus equates actively working, the professor speaking in the above quote does concede that there are social benefits to reporting to the work location including the exchange of ideas with others and feedback opportunities. Yet, she expresses that the benefits offered by reporting to a centralized work location have little to do with the specific office that she is assigned to and instead has more to do with the exchanges that happen in the corridors

and spaces beyond the assigned office, still providing evidence that working in her office has little to do with productivity.

Summary. Work environment choice is a construct with five principal factors that seem to influence where knowledge workers choose to work. *Instrumental affordances* referred to the seeking of tools and resources that are tied to particular environments that facilitate workers' performance of their work duties. The resources comprise both tangible resources including hardware, books, journals, and furniture, and intangible assets such as software program access, electronic resources, and access to social resources including the opportunity for social knowledge exchange. Next, *comfort* included a wide variety of elements of the environment that make the experience of working more pleasant for the worker. Third, qualities associated with the task at hand, including whether it required collaboration, access to specific resources, time required, complexity, concentration required, and how sensitive the task was to environmental conditions, were contained within the influential factor called *tasks*. The fourth factor, working style, referenced those behavioral patterns and preferences of the worker that seemed to relate to individual differences including preference for performing certain tasks at specific times of day, and the links between environments and the worker's frame of mind. Finally, tensions highlighted the conflicts that knowledge workers navigate when they are making work environment choices. These tensions are related to the socially-situated nature of making these choices-the opinions of other influential individuals in the knowledge worker's life significantly impact the prioritization of locations a worker considers. In addition, since this type of autonomy is still relatively

new, norms for behavior are contested. The tensions factor highlights the contested nature of location autonomy.

Discussion

This study examined work location choice among knowledge workers in an academic context. The purpose was to build a static model of influential factors demonstrating the important considerations of this group. Based on 30 interviews with faculty members, graduate students and undergraduate students, I identified five influential factors. These factors span consideration of environmental characteristics, task characteristics, individual characteristics, the fit between these three levels of analysis, and the tension-laden social context.

First, the results highlighted the consideration of environmental qualities-facets related to the offerings of different spaces both in terms of instrumental qualities and qualities that impact comfort. Instrumental affordances as an influential factor, indicates that knowledge workers are weighing the tools and other assets that facilitate completion of work, emphasizing productivity aims. In fact, the majority of respondents referred to their preferred locations as those sites where they find they are the most productive, as evidenced by the following quotes:

> *"I really try to work at home as much as possible because I'm most productive there."* – 31988

> *"I wish I could be more productive at home, you know there'd be a lot of, I came in last night at um, 10 o'clock and worked til uh, about 1 in the morning, but it was you know a project that was going on in the lab so I really had to come in here to do it, so uh, you know there are lots of times I wish I could just stay at home since I'm more comfortable and just do it, but I know my productivity is just so much greater in the office." –38000*

These quotes demonstrate that these knowledge workers try to perform their work where they are most productive as often as possible. In the case of the faculty member in the second quote, these knowledge workers demonstrate a willingness to forgo comfort in order to achieve higher levels of productivity. *Comfort* was an influential factor,

however, and supports previous research demonstrating that comfort is a significant predictor of work environment satisfaction and job satisfaction, especially for professional workers (e.g., Brill, 1985). This factor was lower in priority but enhanced the desirability of different environments for conducting work. In many instances this was a quality that workers improved upon, by bringing in various items (e.g., food, drinks, blankets, space heaters, art, etc.) to make an environment more palatable for working. Comfort was a more important consideration when tasks would require occupying a specific environment for an extended period of time. For example, the environment with the most ergonomic chair might be a determining factor in selecting an environment if a worker knew they would be sitting for a long duration.

Second, environment choice was seen as largely dependent on qualities of the targeted task to accomplish. The *tasks* factor supports previous research that suggests that optimal environment qualities vary by task. For instance, Stone & English (1998) tested via an experimental design how task type (i.e., high vs. low demand) interacted with environment characteristics (i.e., red/blue color of cubicle partitions and presence/absence of a poster) to influence an assortment of outcomes (cubicle pleasantness, depression, anxiety, hostility, and task favorability). The results demonstrated that the interaction of high or low demand tasks with environmental qualities, such as color of cubicle partitions and presence of poster impacted mood, such as hostility, depression, and anxiety. The combination also impacted perceived level of demand of the task, perceptions of privacy, and desire to look around. Another similarly configured experimental study tested the interactions between task characteristics (i.e., high vs. low demand and whether the worker was given a break) and environment

characteristics (i.e., blue/red partition walls and the presence/absence of a poster) on task performance (i.e., number of errors), negative mood, positive mood, performance satisfaction, perceptions of task demand, feelings of isolation, and the desire to be viewed by or to view others (Stone, 2003). The results of this study found that the task itself was most related to mood and performance satisfaction, and that the interaction of task and the environment (i.e., color of cubicle partition walls, presence of scenic poster) impacted desire to see or be seen by others, feelings of isolation, number of errors, and perceptions of task demand. Together, the results of these studies suggest that performance and well-being are impacted by both the task directly as well as the interaction of level of demand of a task with qualities of the environment (related to arousal).

Analogously, task type also interacts with an environment's arousing qualities to impact performance and well-being. Stone (2001) examined task type (i.e., reading vs. math) for an interaction with environmental characteristics (i.e., red/blue color of cubicle partition walls) for influences on mood, and performance. The results demonstrated that environmental color had no impact on math performance but did have an impact on reading task performance; performance on the reading task was lowest when the environment was red. Interestingly, the reading task was rated as more difficult and less fun than the math task, suggesting that the reading task may have required more attention than the math task, and if the color red is more stimulating, then attention could be drawn from the task leading to lower performance levels. The results also tentatively suggested that the task affected negative affect while the environment affected positive affect (Stone, 2001).

The emergence of the *tasks* factor indicates workers not only have an awareness of the impact of different environmental characteristics on the ability to perform certain tasks, but that they also make work environment decisions to enhance performance. The willingness to use different environments based on task qualities or types provides support for the viability of calls to organizations to offer a variety of environments to workers rather than only one assigned work station to facilitate work completion. For example, Becker (2004), Duffy (2000), Fleming (2004), and Kaya (2004) discuss the attractiveness of a new way of designing workspaces. Instead of creating one assigned space for each individual that is only reasonably good at the wide variety of tasks that each individual will engage in, they suggest developing many workspaces, each of which is optimized for a type of work activity and instead of being assigned to one desk, the individual will migrate across spaces according to their current work task needs.

Third, the *working style* factor highlights individual differences in the way that work is completed and the attractiveness of different environments. As a dimension of working style, most individuals had associations between certain environments and certain tasks. By using the "appropriate" environment, the workers would indicate it would put them in the right "frame of mind" to perform a type of task. Beyond a relation to task type, "frame of mind" could be related to stages in a work task (i.e., different stages of writing or revision of a paper), or even refer to needing something to prompt a "fresh perspective" or overcome a "mental block" (i.e., difficulty starting to write a new book). Another dimension of working style referred to the scheduling of work tasks, which includes both the order in which tasks are tackled, the length of time per task in a session, the time of day or days each week in which a task is preferred, etc. Workers

would exercise both temporal and spatial autonomy to configure working sessions that best met their individual needs.

Fourth, the impact of the social context in driving work environment decisions is highlighted by the emergence of the fifth factor, *tensions*. In the literature review, I demonstrated a number of recognized sites of tension impacting teleworkers. These sites of tension included those between: manager-teleworker, teleworker-other teleworkers, teleworker to non-teleworkers, manager-non-teleworkers, and teleworker to self. Through this study, I examined whether or not, and how these tensions impact work environment choice made by knowledge workers. The results demonstrated that these tensions play a significant role in work environment choice by academic knowledge workers, manifesting as perceived constraints to work location autonomy.

Location autonomy was diminished by professional expectations, family expectations, cultural norms, and perceived legitimacy of work environments. Professional expectations influenced workers to make location choices based on accessibility to colleagues, advisors, lab mates, or students. At the same time, some individuals made choices in location to avoid surveillance by any of these groups, recognizing a negative impact on creative work or productivity in general. Family expectations constrained location by requiring the individual to be near children, spouses, or domestic partners, whether the location was a school, home, or other family-oriented location. Cultural norms of presenteeism influenced workers to work some portion of their schedule in a site traditionally recognized as a work location. For example, most faculty members would spend some proportion of their work time in their campus office, even if these locations inhibited productivity, just to meet the perceived requisite face-

time with other members of their department. And finally, perceived legitimacy of work environments affected location choices because workers expressed discomfort with the idea that others may think they aren't working. Additionally, many workers admitted that they would suffer from feelings of guilt if they were working in a location that brought them "too much" comfort or enjoyment of the work process, even if those locations significantly boosted their productivity or creativity. Locations that were perceived to be judged by others as legitimate were more likely to be chosen and used more frequently while those that weren't seen as legitimate were more limited in use. Some of these locations that weren't seen as legitimate included outside by the pool, outside on campus, in a backyard, at home, and outside at a park. Together, these constraints to perceived location autonomy influenced the prioritization and variety of locations knowledge workers would use for work.

In sum, the results suggest that work environment choice is influenced by five major factors: instrumental affordances, comfort, tasks, working style, and tensions. These five factors address issues relating specifically to environmental characteristics, individual characteristics, task characteristics, and navigating a changing social context related to the emergence of this new form of autonomy in the context of work. While individuals may not explicitly articulate their decision as emerging from these factors, they seemed to be more cognizant of the dimensions within each factor. Initial analysis suggests that tensions affect location choices through the degree to which each individual perceives location autonomy. Lower levels of perceived location autonomy tend to limit the variety of environments an individual will use and also limits environment choice to more traditionally accepted work environments. In contrast, individuals perceiving

greater location autonomy seemed more willing to experiment with and use non-traditional environments on a more regular basis.

Conclusions

As teleworking arrangements become an increasingly common feature of modern day work, with an estimated 43% of the U.S. workforce engaging in these practices by 2016 (Schadler, 2009), it is important to examine where this large and growing segment are conducting their work and why. Organizations interested in attracting and retaining talent will need to understand the requirements and preferences of this group. Additionally, entrepreneurially-minded individuals will find this growing segment of the population presents attractive business opportunities.

While researchers studying telecommuting have been paying attention to the work dynamics and tensions related to teleworking, most of this research has been looking specifically at the instance of working from home. Far less is known about the other types of places mobile knowledge workers are selecting and the factors that influence their decisions. I aimed to fill these gaps through an exploratory qualitative study that dives into the process and considerations of making work environment choices. Based on the interview data, I built a static model of the factors influencing work environment choice for a population of workers reputed for having extensive job autonomy. The rationale for selecting this group of highly autonomous workers is that there would be far fewer organization-specific or industry-specific variables to address, allowing the focus to remain on the conditions where workers perceive having choices. The tradeoff in focusing on this group, however, is that the results may not generalize to other groups of mobile knowledge workers, especially those embedded in restrictive organizational contexts or in more traditional industries.

This study represents a first step in understanding factors that influence work environment choice. For next steps, I plan to use a grounded practical theory approach to understand the prioritization of factors and how they interact to influence the process of work environment choice (Craig & Tracy, 1995). For example, such a perspective will define the underlying philosophical beliefs that guide patterns of behavior and tactics for making work environment choices (Craig & Tracy, 1995). The results of this future study will transform the static theory into a theory with testable propositions for relationships between factors influencing work environment choices. Another area would be to test the links of these influential factors to a variety of antecedents and outcomes of work environment choice. For example, some antecedents that could be examined may include worker training with respect to teleworking practices, social supportiveness of members of the organization or work group, and length of time teleworking arrangements have been used in an organization. Various outcomes to examine could include productivity, organizational identification, creativity, worker well-being, and turnover.

Table 1: Assortment of Work Environments Chosen by Mobile Workers

Campus office
Campus library
Regional library
Car/Plane/Other Vehicles
Cafés/Coffee Shops/Restaurants
Home Office
Parks/Beach/By the Pool/Other Outdoor locations
Faculty/Staff Dining Room
Sunroom
Dining Room
Kitchen
Living Room
Hotel
Art Studio
Dorm Room
Common Room of Dorm
Lab
Bookstores
On-site of Children's Events (Sporting/Music/Afterschool)
Lobbies of Doctor's Offices

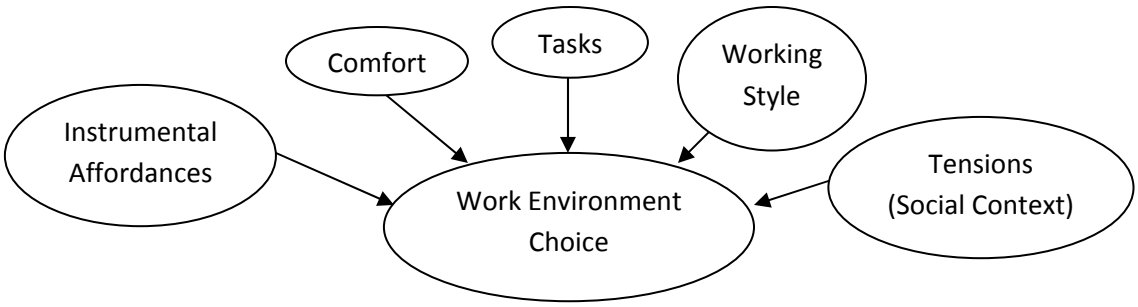

Figure 1. Static model of factors influencing work environment choices made by mobile workers.

MANUSCRIPT 3: THE MEDIATING INFLUENCE OF INTRINSIC MOTIVATION ON THE RELATIONSHIP BETWEEN PERCEIVED LOCATION AUTONOMY OF KNOWLEDGE WORKERS AND CHOICE OF ENVIRONMENTS FOR PRODUCTIVITY AND WELL-BEING

Overview

Technology has enabled knowledge workers to perform work tasks beyond the confines of a central work location. Because workers are producing intangible products and do so beyond the visual access of supervisors and managers, these arrangements challenge traditional management practices that emphasize surveillance and control of workers. Given the inability to apply traditional practices in ensuring productivity, managers need to rely on other strategies to align worker and organizational interests; employee empowerment offers one strategy and may be more critical for ensuring worker productivity in today's context. Drawing upon labor process theory and self determination theory, I consider perceived location autonomy as a form of empowerment influencing productivity and well-being of knowledge workers. To test the relationships between perceived location autonomy, productivity, and well-being, I consider the role of intrinsic motivation as a mediating variable. Results from a sample of academic knowledge workers consisting of faculty, undergraduate and graduate students at a southeastern university, offer support for location autonomy as a form of empowerment—location autonomy positively influenced employee well-being and boosted intrinsic motivation, consistent with self determination theory. Additionally, intrinsic motivation strongly mediated the relationship between perceived location autonomy and productivity. This is consistent with labor process theory in suggesting

empowerment, in the form of location autonomy, was effective in aligning worker and organizational goals to realize productivity gains.

Introduction

Contemporary work increasingly involves the exchange, use, and creation of knowledge, often termed knowledge work, involving intangible work products and an invisible production process (e.g., Alvesson, 2001; Frenkel et al., 1995; Hislop, 2008). Those individuals primarily responsible for performing these types of tasks have been referred to as the "creative class" or knowledge workers (e.g., Florida, 2002). As knowledge work is largely happening within the minds of individuals, mobile technologies have enabled knowledge workers to take their work with them, to locations extending beyond a traditional office or work site via teleworking arrangements (Bailey & Kurland, 2002; Baruch, 2001; Feldman & Gainey, 1997).

Despite the technological capability of working almost anywhere—a capability afforded by these new tools and work forms—the freedom of workers to choose where they work, or their *location autonomy*, may still be constrained by a number of factors. First, as direct visual surveillance has been a long-held managerial practice of ensuring worker compliance and productivity, workers may not receive support from managers reluctant to rescind this mechanism of control over worker processes (Richardson , 2010). Second, perceptions about what locations are appropriate for work performance are likely to vary across individuals, based on the degree to which each person clings to, or is willing to challenge, traditionally-held notions of what constitutes a work environment (Spivack, 2012b). Third, other individuals both within and beyond the work domain may exert influence over the worker's environment choices (Hylmo & Buzzanell, 2002; Spivack, 2012a; Spivack, 2012b). Fourth, even if formal organizational policy grants location autonomy to workers, the perception of the ability to exercise location autonomy

by a worker may significantly vary from the stated policy (Kirby & Krone, 2002). Still, contemporary workers are more likely to experience at least some degree of location autonomy as part of their work arrangements, as 43% of the U.S. population of workers is expected to telecommute by 2016 (Schadler, 2009).

Across several disciplines, social science scholars have demonstrated that both workers and organizations benefit when workers perceive having high levels of work autonomy. Those workers perceiving high levels of work autonomy, especially white collar workers or workers with high growth needs orientation, experience improved mood, well-being, and creativity (see, for example: Amabile, 1989; Andriopoulos, 2001; Daniels & Guppy, 1994; Madjar & Shalley, 2008; Spector, 1986). In addition to these worker outcomes, the organization gains through higher worker motivation, job satisfaction (Arches, 1991; Loher, Noe, Moeller, & Fitzgerald, 1985; Trow, 1957), organizational commitment (Rubin & Brody, 2005; Cohen, 1992; Marsh & Mannari, 1977), job performance (Madjar & Shalley, 2008; Spector, 1986), and organizational citizenship behaviors (Chien & Chiu, 2009; Peng, Hwang, & Wong, 2010). Researchers have found that location autonomy offers benefits similar to other forms of job autonomy for virtual workers required to be creative on the job, as it positively impacts worker attitudes and mental health (Rubin & Spivack, 2012). The purpose of this study is to test the impact of this new form of autonomy on worker choices of environments for productivity and well-being.

Theoretical Background

Labor process theory (LPT) was originally conceived to understand the alienation of the industrial worker. In its original form, LPT posits that management's primary concern has been to institute mechanisms of 'control' and surveillance over workers and the production process in an effort to extract maximal effort from workers (Braverman, 1974). This original conceptualization focused on deskilling of workers through commodification of labor, separating knowledge from the worker likening workers to interchangeable parts in the production machine.

Early forms of control over employees were personal and direct, with a manager able to exert direct influence over a worker. Then, with Taylorism and Scientific Management, control shifted to the production process itself in the factory setting, as structural or technical control. Bureaucratic controls came through hierarchical organizational structures, the establishment of positions that segment and formalize work duties and separate the position from the employed individual. In these earlier work arrangements workers were fixed in space and output could be objectively measured, making the worker "a fully observable entity" (Mir & Mir, 2005, p.57). These top-down managerial principles of control, surveillance, and evaluation have been long-held traditions in management theory and practice.

Braverman's (1974) original conceptualization of the labor process was criticized, however, for its lack of consideration of conflict or agency and resistance on the part of the worker, a contribution from scholars supportive of labor process theory (Burawoy, 1979; Edwards, 1986; Knights & Willmott, 1989). In other words, there was an emphasis on the use of coercive power and less of an understanding of the role that employees play

in subjecting themselves to managerial control (Mir & Mir, 2005). Scholars contributed to the labor process theory by introducing consideration of efforts deployed to create worker cooperation and dependence (Mir & Mir, 2005). For example, Burawoy (1979) discusses management's use of "work games" to transform managerial conflict into coworker competition to accomplish organizational goals and obscure mechanisms of control.

As the act of organizing requires the alignment of efforts of individuals with different situations and motivations toward a shared goal, it is easy to see the necessity for a degree of control in bringing order and productivity to such a group. Yet, simultaneously, it is understandable that to maintain willingness on behalf of individual workers to subject themselves to the control of that organization in the pursuit of its goals that cooperation from employees must also be engendered. One way to align worker and organizational interests is through employee empowerment. Contrary to authoritarian managerial strategies that exert control through rules and regulations, empowerment seeks control of workers and employee cooperation through psychological means (Burawoy, 1979; Mir & Mir, 2005). Empowerment offers employees rewards for functioning as partners to the organization through participation in decision making in the production process, allowing employees the opportunity to feel a sense of ownership and align their personal identity with the goals and outputs of the organization. The shift in the 1990s to high performance human resource practices employed by high commitment organizations emphasized employee empowerment.

Increased empowerment of employees, through high performance human resource practices, leads to organizational and employee benefits. These practices afford

employees more opportunities to participate in decision-making, to use their developed skills, to earn performance-based incentives, and to work on teams. As a result, organizations with high commitment systems have realized gains in productivity, quality, and financial performance (e.g., Applebaum, Bailey, Berg, & Kalleberg, 2000; Arthur, 1994; Delaney & Huselid, 1996; Huselid, 1995; Ichniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995; Wood & de Menezes, 1998; Youndt, Snell, Dean, & Lepak, 1996), lower levels of employee absenteeism, lower turnover, and higher organizational citizenship behavior (Kehoe & Wright, 2010). At the same time, employees experience greater affective and organizational commitment and work-family balance (Berg, Kalleberg, Applebaum, 2003; Kehoe & Wright, 2010).

Self-determination theory (SDT) provides an attractive rationale for autonomy's link to these positive outcomes (Deci & Ryan, 1985, 1991; Ryan, 1995; Ryan & Deci, 2000). SDT postulates that there are three needs—competence, relatedness, and autonomy—required for people's self-motivation, well-being, and social functioning (Ryan & Deci, 2000). Competence refers to an individual's self-efficacy with performing an activity; relatedness refers to, at least a distal, connectedness to others through the performance of an activity; and autonomy refers to the individual's volition to choose whether or not to perform an activity.

The framework for SDT distinguishes two main types of motivation: intrinsic and extrinsic, with extrinsic motivation having four sub-categories. Intrinsic motivation refers to the engagement in an activity due to the inherent satisfaction associated with it, while extrinsic motivation refers to the engagement in an activity in order to attain a separate desirable outcome (Ryan & Deci, 2000). SDT proposes that intrinsic motivation is not the

only type of self-determined motivation, but rather that extrinsic motivation can lead to self-determined behavior through processes of internalization and integration. Internalization refers to incorporating values or regulations into oneself while integration refers to the process of making external regulation a part of the internal regulation processes, such that it originates with an individual's sense of self (Ryan & Deci, 2000). The four sub-types of extrinsic motivation reflect the degree to which one has internalized and integrated regulation related to an activity; they lie on a continuum related to the extent to which an individual experiences motivation resulting from an internal (self-determined) or external locus of control (nonself-determined), or even amotivation when there is no regulation (Deci & Ryan, 1985; Ryan & Deci, 2000). Presented on this continuum from external to internal perceived locus of control, and reflecting the degree to which the behaviors are autonomous, the four categories are external regulation, introjected regulation, identified regulation, and integrated regulation. Externally regulated behaviors are those that are least autonomous, usually performed to satisfy an external demand or attain a contingent reward, and experienced as compliance by the individual. Introjected regulation involves the process of taking in regulation to the point that the ego becomes involved and behavior is motivated by desires to avoid feelings of guilt and to maintain feelings of worth. Identification regulation is a more autonomous form of extrinsic motivation where an individual accepts or owns the behavior as personally valued and important. Integrated regulation is the most autonomous form of extrinsic motivation and occurs when a behavior is incorporated as congruent with self values and needs. Integrated regulation is the most similar to intrinsic

motivation, with the only distinction being that actions are performed to attain a desirable outcome separate from those inherent to the activity.

Researchers have found empirical support for the link between the basic needs presented in SDT (i.e., competence, relatedness, and autonomy) to internalization and integration of extrinsic motivation, with autonomy as the strongest predictor (Gagné & Deci, 2005). Similarly, more autonomous forms of motivation, including internalized extrinsic motivation and intrinsic motivation, have been associated with job satisfaction, well-being, and more effective performance, especially for tasks that are complex, creative, and interesting, or less complex that require discipline to complete (Gagné & Deci, 2005). When employees are given autonomy-supportive work climates, such as when they are given greater choice, are encouraged to take initiative, and managers share employee perspectives, intrinsic motivation and autonomous extrinsic motivation are enhanced (Deci, 1975; Deci, Eghrari, Patrick, & Leone, 1994; Gagné & Deci, 2005; Zuckerman, Porac, Lathin, Smith, & Deci, 1978).

Thus, SDT suggests that providing knowledge workers with opportunities to choose where to work should therefore enable workers to become more autonomously extrinsically motivated, through empowerment's link to higher intrinsic motivation. LPT and SDT suggest that professional workers that are able to seize for themselves the greatest latitude in work location choice will be rewarded with improved work motivation, mood, well-being, job satisfaction, performance, organizational commitment and creativity—outcomes that would also benefit the organization and the individual workers. Along these lines, workers granted location autonomy would be likely to pursue environments that are optimal for producing the desired work outputs.

It is important to note, however, that even if location autonomy is granted through flexible working arrangements being offered by an organization, knowledge workers are embedded in a social system of work that has institutionalized managerial practices emphasizing employee presence and visibility (Felstead et al., 2005) consistent with labor process theory (Braverman, 1974). Therefore, the extent of autonomy actually experienced by knowledge workers is likely to vary, due to a number of restricting influences. For instance, Vallas (1988) discusses how there can be contradictory effects of technology across and within occupations—some aspects might offer greater autonomy while others increase surveillance or control (Orlikowski, 1991). A way in which this contradiction may become apparent in the context of new work environment arrangements may be the extent to which people feel free to choose from any location to work. A knowledge worker's sense of restricted options or constrained autonomy with respect to location choice may arise from a number of sources that may include managerial efforts of control and surveillance, directly expressed policies or rules, informal rules about expressed policies (Kirby & Krone, 2002), social attitudes and reactions, and their own internal control mechanisms, just to name a few.

Some managers, for example, have been using technology as a tool for control and surveillance (Zuboff, 1988); technology has been used to monitor worker locations and availability and also to set expectations of constant communication availability (Ladner, 2008; Richardson, 2010). Additionally, control and surveillance are no longer only originating from a manager. As high performance human resource practices have been incorporated, managerial control has often been pushed to the team. Rather than managers directly exercising authority and surveilling or controlling workers, the team

members exert influence to regulate behavior and production activities (Barker, 1993; Colvin, Batt, & Katz, 2001). Pressure to comply with organizational goals now comes from others or even from the worker himself/herself (Sakolsky, 1992; Sosteric, 1996). Many of these new forms and sources of control have emerged due to the blurring boundaries between work and non-work domains and the coalescence of individual's multiple identities across social spheres. For example, with the porosity of social spheres and networks that bridge individuals across them, there is an increased social awareness of each person's activities. Therefore, workers sense that they must always perform in ways consistent with their work identity, as one must always be prepared to be called in to the work role for the performance of "emergency" work duties (Goffman, 1971; Scott, 2009). Moreover, social networking technologies make visible the performances of one's identity across social spheres, resulting in the integration of domains that formerly could be kept distinct and inaccessible to each other. It has become increasingly difficult to segregate work and non-work domain identities. Therefore, it is difficult for individuals to escape normative pressures to comply with behaviors expected by professional members of one's network, even when outside of direct observation by managers.

In sum, the exertion of influence to regulate behavior and production activities, now extends beyond a specific manager and also originates from behavioral norms, professionalism, identity, connectedness to others, and the omnipresent knowledge that performance will be evaluated, all together leading to self-discipline (Edwards, 1979; Goffman, 1971; Leonardi, Treem, & Jackson, 2010; Noble & Lupton, 1998; Sakolsky, 1992; Sosteric, 1996). Today's knowledge workers face more diverse forms of control including, but not limited to, concertive, normative, and/or panopticonical control, all of

which may not even directly originate with management (Barker, 1993; Edwards, 1979; Long, Goodman, & Clow, 2010; Spivack & Rubin, 2011). All of these forms of control and surveillance potentially diminish the perceived spatial autonomy knowledge workers experiences as they make choices about where to work, and so research exploring the relationship between location autonomy and other outcomes should focus on perceived location autonomy.

Previous findings from studies on autonomy suggest that professional workers that are able to seize for themselves the greatest latitude in work location choice will also be rewarded with improved work motivation, mood, well-being, job satisfaction, performance, organizational commitment and creativity—outcomes that would also benefit the organization and the individual workers. Along these lines, workers perceiving location autonomy would be likely to pursue environments that are optimal for producing the desired work outputs. Therefore, I present the following hypotheses:

Hypothesis 1: Knowledge workers perceiving higher levels of work location autonomy will choose environments that enhance productivity.

Hypothesis 2: Knowledge workers perceiving higher levels of work location autonomy will choose environments that enhance well-being.

Synthesizing labor process theory and self determination theory, however, I suggest that providing knowledge workers with opportunities to choose where to work should serve as a form of employee empowerment that enables workers to become more autonomously extrinsically and thereby leads to work environment choices emphasizing improved productivity and well-being. Thus, I present the following mediation hypotheses calling attention to the role of intrinsic motivation in realizing the benefits of

perceived location autonomy, namely selecting environments that offer boosts to well-being and productivity:

Hypothesis 3: Intrinsic motivation will mediate the relationship between perceived location autonomy and choices of environments that enhance productivity, such that individuals with greater perceived location autonomy will have higher levels of intrinsic motivation and choose environments that collectively enhance productivity.

Hypothesis 4: Intrinsic motivation will mediate the relationship between perceived location autonomy and choices of environments that enhance well-being, such that individuals with greater perceived location autonomy will have higher levels of intrinsic motivation and choose environments that collectively enhance well-being.

Methods

Sample

Participants were members of the academic community at a southeastern university including undergraduate and graduate students as well as faculty. While student samples are often used and criticized as convenience samples in psychological or management research, here they represent individuals with the characteristics of particular interest for this study—they are granted a great deal of autonomy about where their work is completed and typically have access to information technologies affording mobile work. In addition, these workers may be less subject to organization-specific constraints that may due to a variety of concerns (e.g., data security risks, organizational culture incompatibility, etc.). Faculty members also typically have a high degree of autonomy in completion of their job tasks and are of particular interest due to the nature of work they engage in—largely knowledge work.

Measures

Perceived location autonomy. I measured perceived location autonomy using 7 items derived from Scheiman & Glavin's (2008) measure of job autonomy to reflect feeling free to decide where to work. Respondents were asked to rate items on a 5-point Likert scale, indicating the extent to which they agree with the following statements: "I have the freedom to decide where to complete my work." "It is basically my own responsibility to find or create an environment that allows me to get my work done." "I feel free to find an optimal working environment in which to do my work." "I feel free to work off-site." "I feel pressure to work on-site." "I feel pressure to work where others can find me." "I feel others will evaluate where I choose to work." The last three items

were reverse-scored and an average score was computed to create a summary measure of perceived location autonomy.

Intrinsic motivation. I measured intrinsic motivation using the Work Extrinsic and Intrinsic Motivation Scale (Tremblay et al., 2009), including three items for each of six subscales: intrinsic motivation , integrated regulation , identified regulation , introjected regulation, external regulation , and amotivation . Respondents were asked to rate the degree to which each item corresponds with the reason why they are presently involved in their work using a 7-point scale. Sample items included: "Because I chose this type of work to attain my career goals," "Because it allows me to earn money." Responses given by each respondent were averaged for each subscale. Then each subscale score was used to create an overall index of intrinsic motivation following the procedure similar to the one used by Grolnick & Ryan (1989) to create a relative autonomy index. The subscales were multiplied by weight factors. The controlled subscales, referring to external motivation, are weighted negatively, and the autonomous subscales, referring to internal motivation, are weighted positively. The more controlled the regulatory style represented by a subscale, the larger its negative weight; and the more autonomous the regulatory style represented by a subscale, the larger its positive weight. Here, the overall intrinsic motivation score was computed using the following formula: (3*intrinsic motivation + 2*integrated motivation + identified regulation) -(introjected regulation + 2*external regulation + 3*amotivation).

Environments Enhancing Well-being. I measured well-being with three items using a 5-point Likert scale. The items asked the respondent to indicate the extent to which they agreed with the following statements: "Together, the environments I work

in:" "contribute positively to my work-life satisfaction;" "make me feel mentally healthy;" and "contribute positively to my work-life balance." I averaged the scores on these items to get an overall well-being score.

Environments Enhancing Productivity. I measured productivity with three items using a 5-point Likert scale that asked the respondent to indicate the extent to which "Together, the environments I work in:" "are optimal for doing my work;" "meet my work needs;" and "help me accomplish my work goals." I averaged the scores on these items to get an overall productivity score.

Procedure

I sent a link to the online survey, hosted by QuestionPro, to a random subsample (n=1500) of the faculty, undergraduate, and graduate student population at a southeastern university. There, respondents had the opportunity to agree to participate after reading an informed consent statement.

Results

Of the 1500 individuals solicited through an email invitation to participate in the survey, 450 started the survey (30% response rate) by clicking on the link in the email. After beginning the survey, many participants dropped out of the study, leading to a final subset of 275 usable responses. I didn't offer participants the ability to return to the survey in multiple sessions, to protect anonymity, which may be responsible for a large proportion of the drop outs. Internal consistency for each scale and subscale was calculated: location autonomy (α=.824); intrinsic motivation: intrinsic motivation (α =.86), integrated regulation (α =.85), identified regulation (α =.70), introjected regulation (α =.75), external regulation (α =.78), and amotivation (α =.83); environments enhancing well-being (α =.89); and environments enhancing productivity (α =.90).

Descriptive Statistics and Correlations

Table 1 lists the means, standard deviations, and intercorrelations among variables. The pattern of correlations was as anticipated. All variables were significantly positively correlated at the $p < .01$ significance level. Well-being and productivity were highly correlated; rationale for this high correlation is presented in the discussion.

Test of the Hypothesized Model

To test whether degree of intrinsic motivation mediates both relationships between location autonomy and environments enhancing well-being and location autonomy and environments enhancing productivity, I used hierarchical regression in SPSS 17.0, following the steps outlined by Baron and Kenny (1986) and Kenny, Kashy, and Bolger (1998). To test for mediation, I used a 4-step approach (see Table 2; Baron &

Kenny, 1986). Step 1 tested Path *c* by regressing well-being onto location autonomy, and productivity onto location autonomy; results indicate that location autonomy is correlated with both environments enhancing well-being and environments enhancing productivity and that there is an effect to be mediated, supporting Hypothesis 1 and 2. In step 2 I tested Path *a* by regressing intrinsic motivation onto location autonomy; results indicate that location autonomy is correlated with the mediator variable, intrinsic motivation. Step 3 tested Path *b* by regressing environments enhancing well-being onto intrinsic motivation and environments enhancing productivity onto intrinsic motivation while controlling for location autonomy; results indicate that intrinsic motivation does affect environments enhancing well-being controlling for location autonomy and intrinsic motivation does affect environments enhancing productivity controlling for location autonomy. The confirmation of Steps 1 through 3 (i.e., all paths were significant) suggests that a mediator is present, as all prerequisites have been met, thus supporting Hypotheses 3 and 4. Determining full or partial mediation requires an additional step.

The final step in the Kenny et al. (1998) mediation process involves the calculation of the indirect relationship of the independent variable with the outcome variable through the mediator. The Sobel test is commonly used to show the statistical significance of indirect effects. MacKinnon, Lockwood, Hoffman, West, and Sheets (2002)[1] demonstrated that because the estimate of the indirect effect is not normally

[1] MacKinnon et al. (2002) demonstrated that the Sobel method for calculating indirect effects suggested by Kenny, Kashy, and Bolger (1998) has low statistical power, and that the z-prime method provides more power and a lesser Type 1 error rate than the Kenny et al. approach. The z-prime method and Sobel procedure reported in Kenny et al. (1998) are the same in terms of the steps required for mediation. Both use an identical formula to calculate an indirect (i.e., mediated) effect of the independent variable on the outcome variable through the mediator. They differ only in the statistical distribution used to

distributed, the use of the z distribution to determine statistical significance, based on the Sobel test, leads to an increased Type 1 error rate. To provide greater statistical power, MacKinnon's et al. provided the *z'* statistic, which corrects the critical value of statistical significance from 1.96 to .97. First, to compute the indirect effect of the mediation model, the unstandardized regression coefficient between location autonomy and intrinsic motivation in Step 2 ($a = 4.14$) is multiplied by the unstandardized regression coefficient between intrinsic motivation and environments enhancing well-being controlling for location autonomy in Step 3 ($b = .04$) and then repeated for the coefficient between intrinsic motivation and environments enhancing productivity controlling for location autonomy in Step 3 ($b = .03$). For the model with environments for well-being, the product of these two terms is .17, while the product is .12 for the model with environments for productivity. Consistent with this procedure, the Sobel test indicated that intrinsic motivation ($ab = .17$, $z' = 4.84$, $p < .05$) significantly mediated the relationship between location autonomy and well-being and ($ab = .12$, $z' = 5.13$, $p < .05$) and significantly mediated the relationship between location autonomy and productivity.

Now that the indirect effect sizes have been calculated and shown to be significant, the test for partial or full mediation involves calculating *c',* testing whether the paths from location autonomy to environments enhancing well-being and from location autonomy to environments enhancing productivity are reduced in absolute size and significance when intrinsic motivation is controlled for (i.e., the beta for *c'* shrinks

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determine whether the indirect effect is significant. Because the estimate of the indirect effect is not normally distributed, Mackinnon et al.'s z-prime method uses a modified critical value for the test of significance, such that the critical value is .97, as opposed to 1.96, for the Z.

from Step 1 to Step 3; see Figure 3). A partial mediation exists in both cases, because the paths from location autonomy to environments for well-being and from location autonomy to environments for productivity are reduced in absolute size and in significance, but both path coefficients are still different from zero when the mediator, intrinsic motivation, is controlled for (i.e., the beta for *c'* shrinks for both models from Step 1 to Step 3 and for the path between location autonomy and environments for productivity it loses significance at the $p<.05$ level, $p=.078$; see Figure 3).

Discussion

Today's work is very different from the industrial work that LPT was developed to understand. First, the product is different; it is less frequently a manufactured output than an intangible output produced by creative thought. The intangibility of the desired output has led to questions regarding how to objectively measure and evaluate such outputs. Second, the production process is different. How can managers sufficiently manage employees engaging in a process that cannot be visibly overseen? No longer can managers assume that workers will be housed under one location of production where presence and production visibility can be used to indicate productivity and job performance levels. Third, the relationships between workers and management are different. As organizational structures have flattened and debureacratized, and new flexible work arrangements have been put into place, workers can now virtually work from anywhere at any time. Geographic dispersion of knowledge workers has led to the need for managers to find new ways to effectively extract maximal effort from workers that are now more loosely connected. Researchers have seen the utility of LPT in explaining contemporary manager-employee relations and new forms of work, but they have not used it specifically to develop an understanding of creative knowledge workers that are spatially decoupled from the organization and that face new forms of control emerging from sources other than their manager, with increased organizational permeability and the connectivity of social networks.

The findings of this study support the role of location autonomy in aligning worker interests with organizational interests in that it led to choosing environments that enhanced productivity. This suggests that location autonomy does seem to operate as

another form of employee empowerment serving as a mechanism through which organizations can foster employee commitment. As such, the findings support labor process theory by demonstrating the importance of location autonomy in leading to higher levels of intrinsic motivation for workers, which then leads to increased productivity. Similarly for self determination theory, location autonomy seems to function akin to other forms of autonomy in that workers perceiving greater levels of location autonomy enjoyed benefits of choosing environments that enhance both well-being and productivity directly and indirectly through the alignment of personal and professional goals.

Although the findings could suggest support for location autonomy as a new form of employee empowerment that aligns worker and organizational interests, as presented above, the discussion of the findings would be incomplete without also considering an alternative interpretation. For example, it may be that the workers may be given some location autonomy, but that they are still not using it in ways that challenge managerial practices of control and surveillance. Workers may be selecting environments so that managers can still observe their performance, at least for some of the time that they could "choose" otherwise. Workers might engage in this behavior—choosing traditional work environments on-site—in an effort to demonstrate organizational commitment and avoid perceptions of shirking. Instead of the increased location autonomy creating new opportunities for employees to try new work environments and find environments that support their individual needs and preferences, it is likely that this decision is fraught with the potential for other consequences. Some of these consequences may include impact to employee reputation, perceptions of commitment, perceptions of legitimacy,

perceptions of being a "team-player," perceptions of availability, and even access to promotion opportunities—unintended consequences have been tied to workers using other alternative work arrangements, such as part-time work (i.e., Epstein, et al., 1999). Similarly, a variety of other control mechanisms may be dictating decisions of workers, including, but not limited to, normative pressures stemming from the organization's culture and connections to colleagues and others in the profession (e.g., Kunda, 1992; Spivack & Rubin, 2011).

Limitations

Although it appears from the analysis that intrinsic motivation is partially mediating the relationship between location autonomy and environments enhancing well-being and the relationship between location autonomy and environments enhancing productivity, I cannot demonstrate causal relationships between variables using this data set. The directionality of the relationships has been hypothesized based on theory rather than on experimental design.

A second issue is the generalizability of the findings. The sample I used in this study only drew from academic knowledge workers in a university setting (i.e., faculty members, undergraduate and graduate students). Therefore, readers should use extreme caution when applying these findings to other organizational contexts and other populations of knowledge workers.

Another cause for concern in the findings of this study is the high correlation between the outcomes of environments enhancing well-being and environments enhancing productivity. When I conducted exploratory factor analysis on those six items (3 each for environments for well-being and environments for productivity), one factor

emerged, instead of the two as predicted and used for the rest of the analyses. While the one outcome factor result could be attributable to common method variance, I would like to present an alternative argument. If the reader considers the particular population and research question examined in this study, this result is not surprising, especially taking into account the job values literature and the role of intrinsic motivation. For example, the job values literature suggests that individuals' career aspirations vary based on the types of rewards they seek, with some emphasizing external rewards and others emphasizing internal rewards. External rewards include higher earnings, promotion opportunities, convenience of the job, opportunities to forge relationships with coworkers, opportunities for recognition, prestige, and adequacy of resources for performance of the job (Johnson, 2001; Kalleberg, 1977). In contrast, internal reward seekers look for jobs that offer rewards of stimulation, challenge, opportunities to develop and use one's abilities, opportunities to be creative, and the ability to be self-directive (Johnson, 2001; Kalleberg, 1977). Thus, when those individuals have those positions congruent with their job values, these individuals are more likely to enjoy both greater productivity and well-being. Here, job values literature would suggest that individuals that seek positions in academia are likely to also be seeking the rewards associated with engaging in challenging, creative work and having substantial job autonomy. Thus, it is likely that when these individuals do in fact perceive higher location autonomy in the performance of their work tasks, that they also enjoy selecting environments that boost both productivity and well-being in a mutually reinforcing way. Similarly, self determination theory suggests that individuals who feel more autonomy experience greater well-being in general, and with respect to the job, these individuals are able to convert extrinsic

forms of motivation into more intrinsic forms. Consequently, the individual becomes motivated to be more productive as those productivity goals are brought closer in line with the person's identity and internal rewards. Taking these dynamics into account, it would make sense that I found high correlations between selecting productivity-enhancing and well-being-enhancing environments in this sample.

Implications

The results of this study counter the notion that it is ineffective for the organization to grant workers autonomy regarding work location choice because of the lack of control or increased difficulty employing surveillance over workers to ensure productivity. Instead, organizational leaders may want to be more generous with granting workers freedom to choose work sites, given attractive outcomes including boosts to motivation, choices of environments that enhance productivity, and choices of environments that enhance well-being. Second, this research focused on perceived location autonomy; it is important for organizational leaders to consider where constraints to perceived location autonomy may originate, even if organizational policies suggest that workers should feel autonomous to choose their work environments. For instance, it is important for organizational leaders to foster a unified culture supportive of the policies regarding work arrangements.

Future Research

While this research showed support for offering academic knowledge workers location autonomy in order to realize gains in productivity and well-being through the choice of environments that enhance these outcomes, these findings should be tested for applicability to other populations. Second, other outcome variables could be tested,

including organizational commitment, job satisfaction, and creativity. Third, researchers could incorporate other moderating and mediating variables, such as job values, social support, and availability of diverse work environments.

Table 1: Means, Standard Deviations, and Inter-correlations among Study Variables

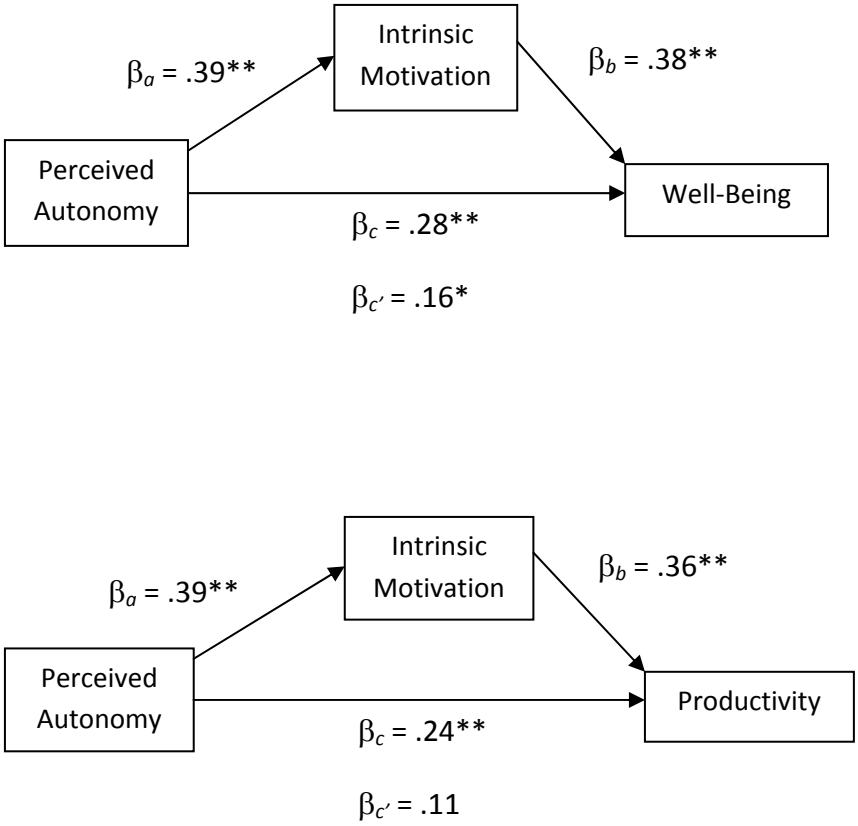
Variables	*M*	*SD*	1	2	3	4
1. Location Autonomy	3.52	0.76				
2. Intrinsic Motivation	12.06	8.45	.40*			
3. Well-being	4.00	0.84	.28*	.36*		
4. Productivity	4.22	0.73	.25*	.38*	.81*	

Note. $N = 275$. * $p < .01$ (2-tailed).

Table 2: Results for the mediation analyses with continuous variables

Model	*b*	*S.E.*	*β*	R^2	ΔR^2
Step 1: Well-being onto Location Autonomy					
				.08	.08**
(Intercept)	2.93**	.23			
Location Autonomy	.30**	.06	.28**		
Step 2: Intrinsic Motivation onto Location Autonomy					
				.16	.16**
(Intercept)	-2.42	1.82			
Location Autonomy	4.14**	.51	.39**		
Step 3: Well-being onto Location Autonomy and Intrinsic Motivation					
				.15	.08**
(Intercept)	3.03**	.22			
Location Autonomy	.17**	.07	.16**		
Intrinsic Motivation	.03**	.01	.30**		
Step 1: Productivity onto Location Autonomy					
				.06	.06**
(Intercept)	3.40**	.20			
Location Autonomy	.23**	.06	.24**		
Step 2: Intrinsic Motivation onto Location Autonomy					
				.16	.16**
(Intercept)	-2.42	1.82			
Location Autonomy	4.14**	.51	.39**		
Step 3: Productivity onto Location Autonomy and Intrinsic Motivation					
				.16	.10**
(Intercept)	3.50**	.20			
Location Autonomy	.10**	.06	.11*		
Intrinsic Motivation	.03**	.01	.34**		

Note. $N = 275$. ** indicates $p \leq .01$, * $p<.10$. *b* = unstandardized beta, β = standardized beta. Control variables entered first in each step.



*Note. ** indicates $p \leq .01$, * $p < .05$*

Figure 1: Standardized beta coefficients of the mediation models.

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APPENDIX A: SEMI-STRUCTURED INTERVIEW PROTOCOL

1. Informed consent statement
2. Can you start by telling me a little bit about the typical kinds of work tasks you have to complete each week (as a student/faculty member)? (Generate list of tasks, Task A, Task B, etc. for future reference in conversation.)
    a. Where do your tasks come from? (i.e., are they self-generated or are they dictated by someone else?)
    b. How much control do you have over how the task is performed?
    c. How much control do you have over the end product of the task? (how much is this specified versus left up to your discretion?)
    d. Which tasks are evaluated? How are they evaluated? What are the consequences of evaluation? What would happen if you didn't perform the task?
    e. To what extent are these tasks collaborative (involve working with others) or solo (completed independently)?
3. About how much time do you spend engaging in each type of activity?
4. Which do you feel is the most demanding? Least demanding? How is it demanding or not demanding?
5. Which requires the most creativity? (Have respondent define creativity) Rate each task on how much creative thinking required.
6. Which requires the most concentration?
7. Which requires the most discipline?
8. Do you prefer to work on one task at a time from start to completion, or do you like to switch between tasks? Can you think of any situations where this wouldn't be the case? Describe your preferred task focus/switching style.
9. How distractable are you? Can you give me an example?
10. How much control do you have in deciding where you do your work? What people or requirements influence your choice?
11. Where do you typically go to complete your work? Why? What factors influence this decision?
12. Does your choice of work environment depend on what task you need to complete? For example, where do you choose to go to complete Task A? (repeat for each type of task mentioned in #2) What kinds of things about you or your task lead you to want to work in different spaces/the same space?
    a. Why do you choose this location? (why did you consider it an option? Have you seen/heard other people use it for this type of purpose?)
    b. How does it make you feel to use this location?
    c. How would you describe the environment?
    d. What are some of the key qualities of the environment that stick out in your mind?
        i. What are some of the good qualities? (quiet, view, noise, etc.)
        ii. What are some of the bad qualities? (quiet, noise, odor, etc.)
    e. Describe your most recent experience completing that task in that environment.

    f. How successful were your efforts in meeting your goals for completing that task?
    g. What was the frequency of interruptions as you worked on that task? What kind of interruptions were they? How problematic were they? Were they work or task-related?
    h. Take a minute to think about your ideal work environment for this task. Think about the size, shape, material of the work surface. Think about the colors, materials, and qualities of the floors, walls, and ceilings. Think about the lighting, temperature, ambient noise, presence or absence of others, customizability or standardization of the space. Now, describe what this space looks like to you.
13. Do you have a home office or a work office that you are allowed to customize to some extent?
    a. Can you describe that office to me?
    b. How have you "made that space yours"?
    c. What do you use that space for?
    d. How does it make you feel to use that space?
    e. How likely are you to use that space for your work? Why?
    f. What are the best/worst things about that space?
14. Is there anything else I should know to help me understand the factors that influence your decision about where to work or what environments are most attractive to you for completing your work tasks?
15. Thank for participation

APPENDIX B: SURVEY MEASURES

Perceived location autonomy:
Q2.10 "I have the freedom to decide where to complete my work."
Q2.11 "It is basically my own responsibility to find or create an environment that allows me to get my work done."
Q2.12 "I feel free to find an optimal working environment in which to do my work."
Q2.13 "I feel free to work off-site."
Q2.14r "I feel pressure to work on-site."
Q2.15r "I feel pressure to work where others can find me."
Q2.16r "I feel others will evaluate where I choose to work."

Work Extrinsic and Intrinsic Motivation Scale (Tremblay et al., 2009)
Why Do You Do Your Work?
Using the scale below, please indicate to what extent each of the following items corresponds to the reasons why you are presently involved in your work
Does not correspond at all Corresponds moderately Corresponds exactly
1 2 3 4 5 6 7
Q3.1. Because this is the type of work I chose to do to attain a certain lifestyle.
Q3.2. For the income it provides me.
Q3.3. I ask myself this question, I don't seem to be able to manage the important tasks related to this work.
Q3.4. Because I derive much pleasure from learning new things.
Q3.5. Because it has become a fundamental part of who I am.
Q3.6. Because I want to succeed at this job, if not I would be very ashamed of myself.
Q3.7. Because I chose this type of work to attain my career goals.
Q3.8. For the satisfaction I experience from taking on interesting challenges
Q3.9. Because it allows me to earn money.
Q3.10. Because it is part of the way in which I have chosen to live my life.
Q3.11. Because I want to be very good at this work, otherwise I would be very disappointed.
Q3.12. I don't know why, we are provided with unrealistic working conditions.
Q3.13. Because I want to be a "winner" in life.
Q3.14. Because it is the type of work I have chosen to attain certain important objectives.
Q3.15. For the satisfaction I experience when I am successful at doing difficult tasks.
Q3.16. Because this type of work provides me with security.
Q3.17. I don't know, too much is expected of us.
Q3.18. Because this job is a part of my life.

Note. Intrinsic motivation _ 4,8,15; integrated regulation _ 5,10,18; identified regulation _ 1,7,14; introjected regulation_ 6,11,13; external regulation _ 2,9,16; amotivation _ 3,12,17.

Environments Enhancing Productivity:
Together, the environments I work in:

1. Are optimal for doing my work.
2. Meet my work needs.
3. Help me accomplish my work goals.

Environments Enhancing Well-being:
Together, the environments I work in:

4. Make me feel mentally healthy.
5. Contribute positively to my work-life balance.
6. Contribute positively to my work-life satisfaction.