

## ABSTRACT

Title of Dissertation:           PHYSICAL BOUNDARIES MAKE  
                                          PSYCHOLOGICAL BOUNDARIES  
                                          STRONGER: THE SYNERGISTIC EFFECT  
                                          OF OPEN WORKSPACE AND AUTHENTIC  
                                          CLIMATE ON EMPLOYEE KNOWLEDGE  
                                          SHARING AND VOICE BEHAVIOR

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Physical settings in the workplace carry important implications for employees' perceptions and behaviors. Organizations' increasing need for employees' sharing of expertise and ideas has led to an increased interest in the management of physical barriers in the workplace (Elsbach & Pratt, 2007). While prior research, which focuses primarily on the functional perspective (e.g., visibility, accessibility, level of noise), has yielded valuable insights into the role of open workspace (i.e., workspace with few or no physical barriers) in influencing employee knowledge sharing behavior (among other collaborative behaviors), the existing work may have over-emphasized the instrumental aspects of physical barriers. As a result,

other critical psychological processes (such as the symbolic effects) through which physical barriers impact employees' sharing of expertise and ideas could be overlooked, resulting in an incomplete and even biased view of open workspace. The goal of this dissertation is to extend the existing research by employing a symbolic perspective and investigate how and when fewer physical barriers in the workspace have a positive effect on employees' knowledge sharing and voice behavior.

Specifically, integrating the symbolic perspective of the physical environment with optimal distinctiveness theory, I propose that fewer physical barriers can increase employees' knowledge sharing and voice behavior through decreased employees' experienced isolation by signaling a sense of connectedness and inclusion. Furthermore, the positive relational cues of open workspace are more likely to be salient when there is a high (versus low) authentic climate. The results from two studies (a laboratory experiment and a field survey) supported that fewer physical barriers in employees' workspace increased its occupant's knowledge sharing and voice behavior, especially when there was a high (versus low) authentic climate. Moreover, employees' experienced isolation mediated the above relationship. Together, my results suggest that there is a synergistic effect of physical barriers and authentic climate on employee knowledge sharing and voice by conveying positive relational cues.

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VOICE BEHAVIOR

by

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## CHAPTER 1: INTRODUCTION

As organizations shift from production to knowledge economies, they increasingly rely on employees' sharing of expertise and ideas to promote creativity, innovation, and change (Grant & Ashford, 2008). Indeed, there is ample evidence suggesting that employees' sharing of expertise and ideas are beneficial for organizations to improve efficiency (Cummings, 2004; Mackenzie, Podsakoff, & Podsakoff, 2011), reduce errors (Edmondson, 2003), and identify chances for improvement (Cheung et al., 2016; Nemeth, 1997). *Knowledge sharing behavior*, or group members' sharing of task-relevant ideas, information, and suggestions with coworkers (Srivastava, Bartol, & Locke, 2006), and upward *voice behavior*, defined as employees' expression of constructive work-related ideas to organizational leaders (Detert & Burris, 2007; Tangirala & Ramanujam, 2012), are two critical ways for organizations to leverage employee's expertise and ideas to gain a competitive advantage in a competitive and dynamic economy (e.g., Chiaburu & Harrison, 2008; DeShon & Gillespie, 2005; Edmondson, 2003; Grant, 2013; Hansen, 2002; Jackson et al., 2006; Mackenzie et al., 2011; Morrison, 2011; Mueller, 2014; Weick & Sutcliffe, 2001). Motivated by this trend, organizations have invested tremendous efforts and resources to break down the boundaries (i.e., both physical and social) to build a collaborative working environment, thus enabling organizations to better leverage employees' expertise and ideas.

One of such efforts is the changes in office designs, evolving from more private and enclosed office to open and shared workspace (Elsbach, 2003; McElroy & Morrow, 2010; Morrison & Macky, 2017), the later often characterized as a

workspace with few or no physical barriers between employees' workspaces (Ayoko & Ashkanasy, 2020). Organizations invest millions of dollars in these changes, believing that key to promote employees' knowledge sharing and other collaborative behavior is to break down the psychological boundaries between employees and facilitate employees' interpersonal relations. Indeed, research evidence suggests that employee interpersonal experiences (both professional and social) play a major role in influencing employees' pro-group and collaborative behaviors (such as sharing their own knowledge and ideas with coworkers and their supervisor) (e.g., Siachou et al., 2021). As physical features can bring people together or keep them apart (Osmond, 1957; Stea, Foss, & Christensen, 2015), it is believed that organizations can break down the psychological boundaries between employees by removing the physical barriers between them (Ashkanasy, Ayoko, & Jehn, 2014; Chigot, 2003; Irving & Ayoko, 2014; Kabo et al., 2014; Vischer, 2005).

While there have been speculations about the relational benefits of open workspace and the positive implications for employee knowledge sharing and voice behavior (among other collaborative behaviors), empirical evidence to date appears to be inconsistent across studies. A close examination of the literature on open workspace and employee communication or collaborative behavior suggests that the current research has focused primarily on the *functional* perspective of (lack of) physical barriers (or instrumental values) (e.g., Brand & Smith, 2005; Irving & Akoyo, 2014; Kim & de Dear, 2013; Zalesny & Farace, 1987). For instance, prior studies found that open workspace may facilitate interactions among occupants by decreasing the barriers to communication (i.e., higher accessibility) (Kim & de Dear,



2013), improving inter-visual connectivity (Appel-Meulenbroek, de Vries, & Weggeman, 2017), enabling spontaneous interactions (Appel-Meulenbroek et al., 2017), and improving the capability for social tracking among co-workers (Brand & Smith, 2005). However, open workspace can also hinder employees' collaborative behavior due to experienced overstimulation (e.g., increased noise & distractions) from the environment (Cohen, 1980; Maher & von Hippel, 2005; Oldham, 1988) or increased concern for privacy (e.g., Bernstein & Turban, 2018). While the functional perspective of the physical environment provides an important lens to understand the impact of open workspace on employees' interpersonal experiences and collaborative behavior, this stream of research has over-emphasized the technical and instrumental aspects of the physical features at the expense of overlooking employees' subjective experiences and interpretations of the physical setting.

Indeed, scholars have long recognized that the physical environment can influence employees' motivations and behaviors not only through its ability to support the work activities of those embedded in it, but also through the *symbolic* cues associated with the physical environment (Becker, 1981; Elsbach & Pratt, 2007). In the context of physical barriers, physical barriers can serve as a symbolic of psychological separation and isolation from others (Brand & Smith, 2005; Stea et al., 2015). In contrast, a workspace with fewer physical barriers is likely to convey positive relational cues of connectedness and oneness between employees. Yet, this symbolic perspective of physical barriers has not been fully examined in the literature on open workspace. This is problematic as it leaves a critical psychological process (i.e., the symbolic effect) underlying the effect of physical barriers on employee

knowledge sharing and voice behavior under-examined. More importantly, as the symbolic associations of the physical environment are often context contingent (Rafaeli & Vilnai-Yavetz, 2004), without considering the symbolic effects of the physical environment, contexts that may help explain the inconsistent findings would not be fully understood.

Leveraging insights from the symbolic perspective of the physical environment, I argue that physical barriers in one's workspace convey relational cues and influence employees' *experienced isolation*, defined as a subjective experience that captures the extent to which employees feel out of the loop in office interactions (Baruch & Nicholson, 1997; Diekema, 1992; Vega & Brennan, 2000). Specifically, I expect that fewer physical barriers in one's workspace is likely to reduce its occupant's feeling of isolation by signaling a sense of connectedness and inclusion. However, as physical cues can be subtle, not explicit, ambiguous and ambiguous, employees' interpretation of the physical cues may vary, depending on the social context they are embedded in (Rafaeli & Vilnai-Yavetz, 2004). I argue that the possible link between fewer physical barriers and employees' reduced experienced isolation may depend on how the context is supporting (or not) such association. Therefore, in this dissertation, I further explore the question of when the negative relationship between fewer physical barriers and employees' experienced isolation is likely to be strongest.

Building on optimal distinctiveness theory (Brewer, 1991, 1993; Shore et al., 2011), which argues that individuals are most likely feel included (or less isolated) when *both* their needs to (a) feel being treated as an insider and (b) feel encouraged to retain uniqueness with the group are satisfied, I propose that *authentic climate*, or a

shared belief that authentic self-expression is encouraged at work (definition adapted from Cable, Gino, & Staats, 2013), will strengthen the negative relationship between fewer physical barriers in one's workspace and employees' experienced isolation. Specifically, authentic climate can strengthen the positive relational cues of fewer physical barriers by communicating consistent positive message that genuine relationship building, and workplace inclusion is encouraged in this work environment (e.g., Harter, 2002; Sheldon & Elliot, 1999; Thomaes et al., 2017). By satisfying employees' need for uniqueness, authentic climate may serve as a cue for meaningful (as opposed to "lip service like") connectedness and promote a sense of inclusion among employee (or reduce their experienced isolation).

Finally, I argue that reduced feeling of isolation resulted from fewer physical barriers in one's workspace and high authentic climate can in turn increase employees' knowledge sharing and voice behavior. As employees rely heavily on their coworkers and workplace connections for social and professional support and resources (e.g., Cooper & Kurland, 2002; Kramer, Callister, & Turban, 1995; Miller & Jablin, 1991; Morrison, 1993), those who feel less isolated are more likely to reciprocate (Cropanzano & Mitchell, 2005) and/or feel more confident (Baron, 1996; Duffy, Ganster, & Pagon, 2002) to sharing their knowledge and ideas with their coworkers and leaders (namely, engaging in more knowledge sharing and voice behavior). Figure 1 illustrates my theoretical model.

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Insert Figure 1 about here  
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In investigating these relationships, this research makes several important contributions to the literatures on physical environment in the workspace (open

workspace in particular), employee perceived isolation, employee knowledge sharing and voice behavior. First, by focusing on the symbolic value perspective of the physical environment, this study identifies and empirically tests the unique mechanism, *experienced isolation*, through which fewer physical barriers in one's workspace influence employees' knowledge sharing and voice behavior. By examining experienced isolation as the primary mechanism, this study contributes to an in-depth and more complete theoretical understanding of how and why fewer physical barriers in the workspace can impact employees' knowledge sharing and voice behavior. Indeed, while there have been studies examining the role of physical barriers in influencing employee knowledge sharing (or other collaborative behavior from the functional effects (such as visibility, accessibility, and noise level) (Appel-Meulenbroek et al., 2017; Irving, Ayoko, & Ashkanasy, 2020; Kabo et al., 2014), the psychological processes associated with the symbolic effect of physical barriers are largely under-examined and thus leaving the important questions of how and why physical barriers may influence employee knowledge sharing and voice behavior unanswered. This study addresses these important questions by focusing on the symbolic effects of fewer physical barriers and extends our understanding by demonstrating that physical barriers in one's workspace can also impact employees' knowledge sharing and voice behavior through the symbolic value of separation and psychological isolation.

Second, this study highlights a synergistic effect between the “hardware” (physical environment) and “software” (climate) social characteristics of the organizational context on employees' knowledge sharing and voice behavior. My

theorizing suggests that a high authentic climate serves as positive relational cues to employees such that they feel appreciated and accepted as who they are, which is likely to enhance the positive relational cues of oneness and connectedness signaled by an open workspace, through which authentic climate can strengthen the positive relationship between fewer physical barriers in one's workspace and employees' knowledge sharing as well as voice behavior. While nascent work has investigated the main impact of fewer physical barriers (or open workspace) on employees' collaborative behavior from the functional perspective of the physical environment (Appel-Meulenbroek et al., 2017; Bernstein & Turban, 2018; Irving et al., 2020; Monaghan & Ayoko, 2019), the findings from this work are equivocal. By focusing on the symbolic perspective, which suggests that the symbolic value of the physical context is often context contingent (Rafaeli & Vilnai-Yavetz, 2004), I extend this line of work and identify authentic climate as an important contextual factor. Without considering the symbolic perspective, critical contextual factors (such as social characteristics of the working environment) that can help explain the inconsistent findings may not be fully understood. In other words, this study points to one approach to reconcile the inconsistent findings in the literature on the impact of fewer physical barriers on employee knowledge sharing and voice behavior. Specifically, this study highlights the importance to consider the contextual role of social context of the working environment (such as climate) when examining the role of physical environment in influencing employees' feelings and behavior.

## CHAPTER 2: THEORETICAL BACKGROUND AND HYPOTHESES

Over the past decades, organizations have undergone significant changes in office design, evolving from private, enclosed office to open and shared workspace (Elsbach, 2003; McElroy & Morrow, 2010; Morrison & Macky, 2017), the later often referred to as open-plan offices, defined as “an office configuration characterized by openness, flexibility and few interior boundaries; and where there is no walls or partitions between employees” (Ayoko & Ashkanasy, 2020, p. 489). Given this definition, in this study, I focus specifically on the number of physical barriers in one’s workspace as this feature has been suggested to be the most visually and functionally salient feature of the workplace (Brown, Lawrence, & Robinson, 2005; Brown & Robinson, 2011; Elsbach & Pratt, 2007). While open workspace with fewer physical barriers is often studied at departmental or organizational level, research suggests that the number of physical barriers surrounding employees’ workspace may also vary substantially at the employee level (Hatch, 1987; Oldham & Rotchford, 1983). That is, employees from the same office or department may have different numbers of physical barriers surrounding their work desks. In line with this, I study the number of physical barriers in the workspace as an employee level construct and explore how and when fewer physical barriers in one’s workspace influence its occupant’s knowledge sharing and voice behavior.

### 2.1 The Symbolic Perspective of Physical Barriers

While prior research on open workspace and employee outcomes has primarily focused on the *functional* perspective of physical environment, some scholars have also recognized the symbolism of office environments (e.g., Desai & Kouchaki, 2017;

Elsbach & Pratt, 2007; Hatch, 1987; Rafaeli & Pratt, 2006; Sutton & Rafaeli, 1987). Indeed, this work argues that subjective interpretations rather than objective attributes of the physical setting impact employee feelings and behavior (Ornstein, 1986; Rafaeli & Vilnai-Yavetz, 2004; Sundstrom, Herbert, & Brown, 1982; Zalesny & Farace, 1987). That is, physical setting features can convey non-verbal messages to their occupants, which serves as important cues that help individuals understand (or communicate) their place in the environment (Davis, 1984; Schein, 1990). For instance, large, salient artifacts such as desks may serve as symbols of status categorizations of office occupant (Elsbach, 2004); the presence of credentials and diplomas in one's workspace can be used to symbolize one's achievement orientation (Morrow & McElroy, 1981). As another example, in a case study of green colored buses, Rafaeli and Vilnai-Yavetz (2004) demonstrated that even in the sense making process of "a seemingly mundane artifact" (i.e., the green colored buses), people's interpretations involved the dimension of symbolism (e.g., "Green symbolizes nature, symbolizes environmental friendliness, greenery, shrubbery, this is what they wanted to communicate..."), which consequentially influences stakeholders' attributions and attitudes towards the artifact and the organization. These studies provided support for the symbolic perspective of the physical environment, which presumes people as observers and interpreters of the physical environment (Heft, 1997). Through the sense making and interpretation process, people draw inferences from and assign meanings to the physical environment.

In the context of physical barriers, I argue that fewer physical barriers in one's workspace may convey relational cues and influence employees' interpersonal

experience at work. Specifically, fewer physical barriers in one's workplace may cause employees to view their work environment in a manner that the boundaries between themselves and others are blurred, and they are in the same "side" with their coworkers. That is, fewer physical barriers are likely to enhance one's sense of connectedness and inclusion by his or her work group. In contrast, employees who are working in an enclosed workspace with the maximum number of physical barriers may interpret such feature as a signal of psychological separation from others (Stea et al., 2015), thus is likely to experience an enhanced feeling of isolation. Supporting this argument, in an experiment, Morrow and McElroy (1981) found that the use of desk as barrier between occupant and visitors decreases visitors' perception of welcomeness and office invitingness. Based on this study, it is likely that employees may perceive physical barriers surrounding one's workspace as cues for unwelcomeness for interactions, and thus feel more isolated from others and within the organization. Furthermore, physical barriers in the office can also directly cue the psychological grouping of individuals (Turner, 1984). Bartel, Wrzesniewski, and Wiesenfeld (2012)'s study provided indirect evidence to this argument. Their study on teleworkers demonstrated that physical isolation experienced by virtual employees decreased their perception of inclusion and feeling of being valued as a member of the organization. Therefore, I expect that employees working in a workspace with fewer (versus more) physical barriers are more likely to feel connected with (versus isolated by) their coworkers.



## 2.2 Physical Barriers and Employee Experienced Isolation

Building on the symbolic perspective of physical barriers, I assert that the symbolic effect of physical barriers in one's workspace can be explicitly captured by employee *experienced isolation*, referring to a subjective experience that captures the extent to which employees feel out of the loop in office interactions (Baruch & Nicholson, 1997; Diekema, 1992; Vega & Brennan, 2000). Given that such experience generally comingles feelings of professional, as well as social, connectedness, like others, I view experienced isolation as encompassing beliefs about the sufficiency of both professional and social contacts (Cooper & Kurland, 2002). Isolation is fundamentally the feeling that one is "cut off from others" (Diekema, 1992, p. 484), and it "occurs when the desire for support, understanding, and other social and emotional aspects of interaction are not met" (Taha & Caldwell, 1993, p. 277). Based on the broad conceptualization of isolation (Shore et al., 2011), I view a sense of isolation and inclusion as opposite ends of a continuum, which means that when employees experience a high level of one implies a low level of the other.

I contend that physical barriers may influence employees' experienced isolation through the symbolic effect. Indeed, physical barriers in the workspace often convey cues that influence how employees cognitively frame their standing and relationship with others (Davis, 1984). Specifically, fewer physical barriers in one's workspace may convey a visual impression of inclusion and connectedness whereas an enclosed workspace with more physical barriers is more likely to convey an impression of separation and isolation from others (Brand & Smith, 2005). These physical cues, in turn, are likely to influence how employees perceive their work-based and social

relationship with others (Hua et al., 2011; McElroy & Morrow, 2010). Specifically, employees who are working in an open space with fewer physical barriers may feel more connected with their coworkers both professionally and socially. Supporting this argument, Brand and Smith (2005) found in a field study that employees assigned to low physical enclosure spaces experienced higher level of team spirit than did those work in a space with high physical enclosure. Similarly, employees who are working in a workspace with fewer (versus more) physical barriers are likely to experience a stronger sense of “being in the loop”, and thus less likely to feel isolated.

While the symbolic perspective of physical barriers indicates a negative relationship between fewer physical barriers in one’s workspace and employee experienced isolation, the strength (or even the direction) of this relationship may depend on other dimensions of organizational context such as group climate. That is, employees’ interpretations of and reactions toward the physical cues may depend on the social environment such that the salience and implications of the physical cues draw from physical environment will be stronger when the physical cues are consistent with the cues provided by the social context (Fayard & Weeks, 2011). This is because employees’ interpretation of physical barriers in their workplace can be ambiguous (e.g., open workspace as inclusion or surveillance), hence it may need other sources of information (e.g., social environment) to strengthen the associations (i.e., open workspace signals positive relational cues). In contrast, the effect of physical barriers on employees’ experienced isolation would be weakened when employees receive inconsistent or contradictory cues from other sources (such as from group climate).

### 2.3 The Moderating Role of Authentic Climate

Integrating the symbolic perspective of the physical environment with the optimal distinctiveness theory (Brewer, 1991, 1993; Shore et al., 2011), I propose that the negative association between fewer physical barriers in one's workspace and employee experienced isolation is likely to be stronger when there is a high *authentic climate*, the later defined as a belief that authentic self-expression is encouraged at work (adapted from Cable et al., 2013). According to the optimal distinctiveness theory (Brewer, 1991, 1993; Shore et al., 2011), individuals are more likely to feel a sense of inclusion when they (a) feel being treated as an insider and (b) feel encouraged to retain uniqueness with the group. Authentic climate may enhance the negative association between fewer physical barriers and employee experienced isolation by satisfying employees' need for uniqueness, and thus complementing the role of open workspace in promoting employees' sense of inclusion. Indeed, while I argue that a workspace with fewer physical barriers can have a negative impact on employees' sense of isolation by signaling positive relational cues, the physical cues alone may not be sufficient for the development of positive and close relationships as it only caters to individuals' need to feel connected. Supporting this argument, in a case study, Garrett, Spretzer, and Bacevice (2017)'s observations revealed that an open workspace alone may not be sufficient to develop a strong sense of connection among occupants (or reduce the feeling of isolation). Specifically, their observation revealed that the formation of occupants' sense of connection in the shared workspace needs the presence of corresponding norms, such as a climate that enables employees to be their "authentic self" (p. 829). Hence, when employees who are in an open

workspace also perceive their climate as pro-authenticity, such climate may foster genuine interpersonal relationship building and reduce employees' sense of isolation by strengthening the relational cues of connectedness associated with open workspace with the message of inclusiveness (e.g., Harter, 2002; Sheldon & Elliot, 1999; Thomaes et al., 2017). Indeed, prior research has highlighted the central role of authenticity in the development of genuine interpersonal relationships, indicating that it is difficult to create emotional connections with people when portraying an artificial extension of the self, especially when one believes that the others are doing the same (Sullivan & Maniero, 2007).

Additionally, by conveying a consistent message with open workspace that the workplace is an inclusive environment, authentic climate may also enhance the negative association between fewer physical barriers and employee experienced isolation. Indeed, central to the idea of symbols is that they can be arbitrary and ambiguous, so an important aspect of the research on symbolic perspective of the physical environment (artifacts) is examining the socio-cultural context that provides observers the symbolic resources necessary for their sense-making and interpretation (e.g., Rafaeli & Vilnai-Yavetz, 2004). Supporting this idea, Fayard and Weeks (2011) also observed that employees' interpretation of and reactions toward the physical cues may depend on the social environment such that the salience and implications of the physical cues draw from physical environment will be stronger when the physical cues are consistent with the social cues. In the context of physical barriers, I argue that when employees work in a workstation with fewer physical barriers and perceive their group climate as pro-authenticity, the social norms of being appreciated and

accepted as their unique selves (Caza, Moss, & Vough, 2018; Cha et al., 2019; Deci & Ryan, 2000) are likely to confirm and strengthen their interpretation of the open workspace as cues for connectedness and inclusion. In contrast, when employees work in an open workstation and perceive their group climate as low on authentic climate (i.e., a climate that does not advocate authenticity), the social norms that encourage people to act in certain ways and keep their unique selves to themselves may lead employees to adjust their interpretation of open workspace as inclusive to be less so. Hence, I propose that:

*H1: Authentic climate moderates the negative relationship between fewer physical barriers in one's workspace and employee experienced isolation such that the negative effect will be stronger when there is a high (versus low) authentic climate.*

Building on the symbolic perspective of physical barriers, next, I will further explicate the consequential impact of fewer physical barriers and authentic climate on knowledge sharing and voice behavior through employee experienced isolation.

#### 2.4 The Effect on Knowledge Sharing and Voice Behavior

Physical barriers in one's workspace may have critical implications for employees' knowledge sharing and voice behaviors. I focus on these two types of behaviors because both *knowledge sharing behavior*, defined as group members' sharing of task-relevant ideas, information, and suggestions with coworkers (Srivastava et al., 2006), and upward *voice behavior*, or employees' expression of constructive work-related ideas to organizational leaders (Detert & Burris, 2007; Tangirala & Ramanujam, 2012), are considered critical for organizations to leverage

employees' expertise and ideas to gain a competitive advantage in a competitive and dynamic economy (e.g., Edmondson, 2003; Grant, 2013; Morrison, 2011; Mueller, 2014; Weick & Sutcliffe, 2001). Despite the distinctions in the direction (and other dimensions) of knowledge sharing and voice behavior (i.e., lateral with coworkers and upward with managers, respectively), both types of behaviors involve providing others (coworkers or managers) with one's own private and task-relevant knowledge and insights with others, and with the intention to improve group functioning and effectiveness (e.g., Kim & Yun, 2015; Van Dyne & LePine, 1998). Hence both types of behaviors are considered as prosocial and extra role behavior, which are often motivated by employees' altruistic and pro-group motives (for a review, see Morrison, 2011; Wang & Noe, 2010). Based on the shared natures of knowledge sharing and voice behavior, I reason that employees' interpersonal relationship experience carries great weight in influencing employees' knowledge sharing and voice behavior. Specifically, employees are more likely to engage in such behaviors when they experience more positive (versus more negative) relationship at work.

Building on this line of arguments, I argue that a reduced sense of isolation induced by a workspace with fewer physical barriers and high authentic climate will positively impact employee knowledge sharing and voice behavior. This is because, first, individuals have the basic human need to belong (Baumeister & Leary, 1995) and violating such need may have serious negative implications on employee knowledge sharing and voice behavior. In effect, when an employee feels professionally and (or) socially isolated, his or her inherent striving and desire to feel connected in the workplace (Baumeister & Leary, 1995) has been thwarted. The

thwarted basic need for inclusion may result in a series of negative consequences, such as experience increased anxiety (Baumeister & Tice, 1990), loneliness (Jones, 1990), in more extreme cases, diminished psychological or even physical health (DeWall & Baumeister, 2006; Schneider, Hitlan, & Radhakrishnan, 2000), and lower ability to launch valued job initiatives (Mann, Varey, & Button, 2000). Second, when feeling being professionally or socially isolated, employees tend to dislike colleagues more (Pepitone & Wilpizeski, 1960), thus may react by engaging in less altruistic and collaborative behavior (such as knowledge sharing and voice behavior). Third, employees' interpersonal relationship at work is inextricably linked to employee development (Cooper & Kurland, 2002). Indeed, studies consistently demonstrate that employees rely primarily on their immediate supervisors and departmental co-workers for job- and organization-related information (e.g., Kramer et al., 1995; Miller & Jablin, 1991; Morrison, 1993). When employees feel being excluded from attaining such information, they may retaliate by withholding their own private knowledge and ideas from their coworkers and organizational leaders (Cropanzano & Mitchell, 2005). Finally, employees' interpersonal relationship at work may impact their knowledge sharing and voice behavior by influencing their confidence in their ability to contribute to interactive discussion. For instant, when feeling being professionally isolated, employees often feel that they need yet lack relevant information, such as detailed understandings necessary for working with complex information; or the nuances of personalities of coworkers, managers, or clients (Baron, 1996; Duffy et al., 2002).

Together, I expect that authentic climate constitutes a relationship-building friendly context that strengthens the negative effect of fewer physical barriers in one's workspace on employees' experienced isolation, resulting in a more inclusive context that promotes employee knowledge sharing and voice behavior. Hence, I propose that:

*Hypothesis 2: Authentic climate moderates the impact of fewer physical barriers in one's workspace on employee a) knowledge sharing and b) voice behavior such that the positive effect is strengthened when there is a high (versus low) authentic climate.*

*Hypothesis 3: Employees' experienced isolation mediates the joint impact of fewer physical barriers and authentic climate on employee a) knowledge sharing and b) voice behavior such that the positive indirect effect between fewer physical barriers and employee a) knowledge sharing and b) voice behavior via reduced isolation is strengthened when there is a high (versus low) authentic climate.*

### **CHAPTER 3: OVERVIEW OF STUDIES**

To test my hypotheses, I conducted two studies in this study. In Study 1, I conducted a lab experiment with undergraduate students in U.S.A. The goal of this study was to test the model in a more controlled context and establish causality for the proposed effects. Due to the concerns for external validity of the phenomena of interest and generalizability across cultures, in Study 2, I used a multi-source data in a field setting in China to examine my hypotheses. Through this study, I constructively



replicated the findings of Study 1. Through these two studies, I provided converging support for the conceptual model.

## **CHAPTER 4: STUDY 1: LABORATORY EXPERIMENT**

### ***4.1 Sample and Procedures***

**Participants.** Participants were undergraduate students at a business school from a major public university in the United States. Students were recruited through a subject pool for course credit to complete a two-part study. Of the 355 students completed this study, 54.4% were male. The average age of the participants was 20.91 years old ( $SD=2.26$ ). The majority of the participants were White or Caucasian (54.1%), 23.7% were Asian or Asian Americans, and 9.0% were Hispanic.

**Procedure and Design.** Participants were randomly assigned to one of the four conditions (enclosed workspace with three physical barriers vs. open workspace with no physical barriers; low vs. high authentic climate) as between-subject factors, depending on the set-up of the lab room of the day.

The study was designed as a laboratory experiment. After the consent process, participants read a scenario asking them to adopt the role of a recruitment specialist, working for a HR consulting firm. The scenario told participants that they worked in a team of three other members and the main responsibilities of their job were to review resumes, screen candidates, and gather information and intelligence on potential job candidates. Participants were told that they would be provided with a context about their working environment to help them better immerse themselves into their role in the scenario.

**Manipulation of physical barriers.** In this study, I manipulated the physical barriers in one's workspace by creating an enclosed (or open) physical space with (or without) physical barriers. This manipulation fits better with my theoretical argument that the presence of physical barriers impact individual's perceptions and behaviors. For the open workspace (no physical barriers) condition, participants were seated in a big table with no physical barriers among them. For the enclosed workspace (with three physical barriers) condition, I used black cardboards to mimic the physical barriers in one's office settings (see Appendix A for visual illustration). All other physical settings in the lab room were identical between the two conditions. To control for alternative micro mechanisms, especially those through the functional effects, participants were not allowed to interact with each other or walk around during the study.

To enhance the manipulation, I provided a visual illustration of the office setting with a written description of the workspace (The pictures are illustrated in Appendix A). After reading the description, participants were asked to describe their feelings about their working environment to two questions: please (a) visualize and describe how it feels like to work in this office setting and (b) how the office layout might influence your interaction with your teammates.

In the enclosed workspace condition, participants read:

*“You work in an office where each employee is given a separate cubicle. That is, all employees have a partitioned or enclosed space where they work. This means that although you work with other recruitment specialists, you cannot see your teammates when you are working at your desk.”*

In the open workspace condition, participants read:

*“Your workspace is in a large open space. There are no enclosed cubicles or partitions. People sit at workspaces that are visible to each other. This means that you can see the other recruitment specialists in your team when you are working at your desk.”*

**Manipulation of authentic climate.** I manipulated authentic climate by describing the norms and values of the organization. The authentic climate condition was described as a shared belief that the organization values authenticity and encourages people to be themselves. In contrast, I described the low authentic climate condition as a climate that values professionalism. This manipulation conceptually represents a low authentic climate because a professional climate encourages employees to behave in certain ways and discourages employees to bring their unique selves to the workplace. At the same time it does not convey necessarily a negative tone as wording such as “inauthentic culture” would have suggested, confounding the nature of the climate with valence of the tone of the manipulation. Such operationalization is consistent with Cable et al. (2013). Specifically, participants in low authentic climate condition read:

*“SilverFox is a company that values professionalism in its workforce and encourages everyone to be a consummate consultant. The company has always pushed employees to display commitment to their profession as consultants and behave appropriately at the workplace. As a result, people in the company are mindful of how they come across in their work interactions—they make sure never to appear unprofessional in anyway even within the organization.*

*As one of your colleagues said, “In SilverFox, ...people are expected to be thoughtful and measured when communicating with others. There are constant reminders that this is a professional workplace and that people have to leave their individual quirks at the door and act in a professional manner.””*

In high authentic climate condition, participants read:

*“SilverFox (the company name in the scenario) is a company that values individuality in its workforce and encourages everyone to just “be yourself”. The company has always pushed employees to be genuine to themselves and display a*

*commitment to who they are. As a result, people in the company are authentic and real—no one “puts on airs” or tries to present themselves as who they are not.*

*As one of your colleagues said, “In SilverFox, ...everyone is different and people are comfortable expressing their unique abilities, quirks, and passions. No one puts on a show. You can act on your own beliefs and values. You are accepted for who you are.””*

#### 4.2 Measures

**Manipulation check of physical barriers.** I measured the manipulation check of physical barriers at the end of the survey with 2 items ( $\alpha=.93$ ) developed for this study. The items were “In my office, there are physical barriers between my coworkers and me” and “While I work at my station, I cannot see or be seen by my coworkers.”

**Manipulation check of authentic climate.** I used a 5-item scale adapted from Wood et al. (2008) ( $\alpha=.97$ ) as the manipulation check of authentic climate. Sample items included, “In SilverFox, you can always stand by what you believe in.” and “In SilverFox, you can be yourself in your day-to-day activities at work.”

**Experienced isolation.** Experienced isolation was measured with 6 items from Golden, Veiga, and Dino (2008) ( $\alpha=.94$ ). The measure includes both professional and social isolation. The sample item of professional isolation dimension (4 items) was “In SilverFox, I feel left out on activities and meetings that could enhance my career” and the sample item of the social isolation (2 items) dimension was “In SilverFox, I feel out of informal interaction with others.”

**Control variable.** To rule out alternative explanations, I also measured and controlled for participants’ concern for privacy. Prior research has found that employees’ concern for privacy is the major reason that leads to negative attitudes

and behaviors for employees working in an open workspace (For a review, see Ashkanasy et al. (2014)). Concern for privacy was measured with 9 items developed by Sheldon et al. (1997) ( $\alpha=.90$ ). One sample item was “In SilverFox, I can freely express the aspects of myself as an authentic part of who I am” (reverse coded).

After completing the survey questions, participants continued to read that they were recently working on a project to collect intelligence on a high potential candidate for an important client of their firm.

### **Knowledge sharing task**

Following prior research on knowledge sharing behavior, the knowledge sharing task used in this study was adapted from information sampling paradigm (e.g., Larson & Harmon, 2007; Stasser & Titus, 1987), in which each participant is given both shared and unique information and asked to participate in a group decision. A hidden profile exists in each group which leads to the optimal decision. In the task description, participants read:

*“There is one possible job candidate who your boss has wanted more information and intelligence on. He has asked you and your colleagues in the team to individually reach out to your own sources and gather information on this candidate from his customers, peers and past-employers. Following this, you put in a lot of effort to collect information on the candidate. Of course, with this kind of information, there is always a bit of uncertainty regarding how reliable and trustworthy it is. You tried as well as you could to collect the best information and verify it.”*

Before submitting the information to the manager, they need to decide if they would like to share the five pieces of information collected by them, ranked with different importance when making the decision regarding the job candidate (ranging from “1” = least important, to “5” = most important), with their coworkers sitting next to each other.

**Knowledge sharing behavior coding.** I coded participants' knowledge sharing behavior with three indicators: the amount of shared information, the total value of shared information, and the quality of shared information. Specifically, I coded the amount of shared information by counting the total pieces of information being shared. The total value of shared information was calculated as the sum of the endowed value of each piece of information being shared and the quality of shared information was coded as a dummy variable (0 and 1), depending on whether the most valuable information (i.e., the information of importance value of 5) was shared.

### **Voice behavior**

In this study, I measured participants' voice behavior with a mixed motives scenario. Specifically, participants read that as they reflected on the process they had been through, they realized that they had suggestions to improve the process through which their boss delegated the task. Although speaking up with their supervisor with these suggestions might benefit the team for the future, they were also mindful that bringing this up meant taking up your time from work and could possibly offend your boss. After reading the scenario, participants reported their voice behavior to three items from Maynes and Podsakoff (2014) (voice behavior,  $\alpha=.92$ ) and silence behavior with four items from Detert and Edmondson (2011) (silence behavior,  $\alpha=.86$ ). Silence behavior, or employees' withholding of potentially important input (Morrison & Milliken, 2000), was measured because these two constructs (i.e., voice and silence behavior) may capture different aspects of employee sharing (or not) ideas or concerns with their organizational leaders (Detert & Edmondson, 2011; Kish-Gephart et al., 2009) and may vary in terms of their antecedents (Madrid, Patterson,

& Levina, 2015; Sherf, Parke, & Isaakyan, 2021). By including both measures in this study, the results may provide a more nuanced view of how physical barriers and authentic climate impact employees' decision to speak up (i.e., voice) or remain silent (i.e., silence) and contribute to the debate on whether silence and voice are the end points of the same continuum (Morrison, 2011). Sample items of voice behavior included, "I would speak up with my ideas to my boss." and "I would provide my suggestions to my boss." Sample items of silence behavior included, "I would withhold my ideas from my boss" and "I would not bring up the difficulties caused by the way my boss delegated the task to us."

### 4.3 Results

#### **4.3.1 Manipulation checks**

The manipulation check confirmed that my manipulation of physical barriers was successful. Participants rated the low physical barriers condition ( $N = 172$ , Mean = 1.60) as significantly lower on physical barriers than the high physical barriers condition ( $N = 183$ , Mean = 4.49),  $t(353) = 29.55$ ,  $p < .0001$ . Similarly, the manipulation check of authentic climate confirmed that the manipulation was successful. That is, participants rated the low authentic climate condition ( $N = 178$ , Mean = 2.07) as significantly lower than the high authentic climate condition ( $N = 177$ , Mean = 4.50),  $t(353) = -28.59$ ,  $p < .0001$ . The manipulation check ratings of authentic climate were not different between the open workspace condition and the enclosed workspace condition ( $t(353) = -.82$ ,  $p = .41$ ). Similarly, the manipulation check ratings of physical barriers were not different between the low and high

authentic climate conditions ( $t(353) = .15, p = .88$ ). There was no interaction between the two manipulated conditions in predicting the manipulation check of physical barriers ( $F_{(1, 353)} = .02, p = .88$ ) or the manipulation check of authentic climate ( $F_{(1, 353)} = .67, p = .41$ ).

#### **4.3.2 Confirmatory Factor Analysis**

Prior to running my analysis in Study 1, I conducted a confirmative factor analysis (CFA) to verifying the distinctiveness of the constructs in the model, using MPlus 7.0 software (Muthén & Muthén, 2018). I included the items for all measured constructs, including experienced isolation, concern for privacy, voice behavior and silence behavior. In the full model, in which all variables loaded on their own constructs ( $\chi^2(129) = 461.34, CFI = .93, RMSEA = .09, SRMR = .06$ ) fit the data significantly better than alternative, reduced models where (a) voice behavior and silence behavior loaded on a single factor and all other constructs loaded on their own factors ( $\chi^2(132) = 700.66, CFI = .89, RMSEA = .11, SRMR = .07$ ), and (b) a model where experienced isolation and concern for privacy loaded on a single factor and all other constructs loaded on their own factor ( $\chi^2(132) = 1447.95, CFI = .74, RMSEA = .17, SRMR = .13$ ). These results provided support for the construct validity of my set of core variables.

#### **4.3.3 Hypothesis tests**

Table 1 presents correlations among the focal variables and other descriptive. In this study, fewer physical barriers and authentic climate were coded as dummy



variables (1=enclosed workspace, 2=open workspace; 1=low authentic climate, 2=high authentic climate).

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Insert Table 1 about here  
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To test the moderating effect of fewer physical barriers and authentic climate on employee outcomes (i.e., experienced isolation, knowledge sharing behavior, and voice behavior) (Hypothesis 1 & 2), I conducted a  $2 \times 2$  ANOVA analysis. Hypothesis 1 predicted that authentic climate moderates the relationship between physical barriers and employee experienced isolation. The ANOVA results, however, revealed that the interaction between fewer physical barriers and authentic climate on employee's experienced isolation was not significant ( $F_{(1, 351)} = .33, p = .57$ ). Hence, Hypothesis 1 was not supported.

Hypothesis 2 predicted that authentic climate moderates the relationship between physical barriers and employee's a) knowledge sharing and b) voice behavior. The interaction between physical barriers and authentic climate on knowledge sharing count was not significant ( $F_{(1, 351)} = 1.17, p = .28$ ). However, the interaction between physical barriers and authentic climate on knowledge sharing value was significant ( $F_{(1, 351)} = 3.90, p = .049, \eta^2 = .01$ ). The interaction is presented graphically in Figure 2a. Consistent with my theorizing, the simple effects tests provided support that those who were assigned to the open workspace condition shared higher value of knowledge when authentic climate was high ( $M_{\text{openworkspace*highauthentic}} = 10.32, SD = 4.08$ ) rather than low ( $M_{\text{openworkspace*lowauthentic}} = 8.67, SD = 4.25, d = 1.65, p = .009$ ). In contrast, for those assigned to the enclosed workspace condition, there was no difference in shared knowledge value between the low and high authentic climate

conditions ( $M_{\text{enclosedworkspace*lowauthentic}} = 10.10$ ,  $SD_{\text{enclosedworkspace*lowauthentic}} = 4.00$ ,  $M_{\text{enclosedworkspace*highauthentic}} = 10.02$ ,  $SD_{\text{enclosedworkspace*highauthentic}} = 4.14$ ,  $d = -.08$ ,  $p = .90$ ).

Unexpectedly though, the level of shared knowledge value in the enclosed conditions (regardless of culture) was comparable to that of the open workspace and high authentic climate condition, which suggest that authentic climate did not strengthen the positive relationship between open workspace and knowledge sharing, but that it was low authentic climate that was particularly detrimental to employee knowledge sharing in an open workspace context.

Moreover, the interactional effect between fewer physical barriers and authentic climate on knowledge sharing quality was significant ( $F_{(1, 351)} = 5.86$ ,  $p = .02$ ,  $\eta^2 = .02$ ). The interaction is presented graphically in Figure 2b. Consistent with my theorizing, the results suggest that those who were assigned to the open workspace condition were more likely to share the most valuable information with their coworkers when authentic climate was high ( $M_{\text{openworkspace*highauthentic}} = .79$ ,  $SD = .41$ ) rather than low ( $M_{\text{openworkspace*lowauthentic}} = .63$ ,  $SD = .49$ ,  $d = .16$ ,  $p = .02$ ). In contrast, for those assigned to the enclosed workspace condition, there was no difference in the likelihood of sharing the most valuable knowledge between the low and high authentic climate conditions ( $M_{\text{enclosedworkspace*lowauthentic}} = .77$ ,  $SD_{\text{enclosedworkspace*lowauthentic}} = .42$ ,  $M_{\text{enclosedworkspace*highauthentic}} = .70$ ,  $SD_{\text{enclosedworkspace*highauthentic}} = .46$ ,  $d = -.07$ ,  $p = .27$ ). However, again, the results showed that authentic climate did not strengthen the positive relationship between open workspace and knowledge sharing, but that it was low authentic climate that was particularly detrimental to employee knowledge sharing in an open workspace

context. The findings are further discussed in the discussion. Together, the results provided a general support for Hypothesis 2a.

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Insert Figure 2a & 2b about here  
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In addition, the interaction between physical barriers and authentic climate on employee voice behavior was not significant ( $F_{(1, 351)} = .05, p = .83$ ). Similarly, the interaction between physical barriers and authentic climate on employee silence behavior was not significant ( $F_{(1, 351)} = .74, p = .39$ ). Hence Hypothesis 2b was not supported.

Hypothesis 3 predicted that employee experienced isolation mediates the joint impact of fewer physical barriers and authentic climate on employee's a) knowledge sharing behavior and b) voice behavior. As the interaction between fewer physical barriers and authentic climate on experienced isolation was not significant, I did not further test the moderated mediation effect. As a result, Hypothesis 3 was not supported.

#### **4.3.4 Supplementary analysis**

Although my theorizing did not differentiate the joint impact of fewer physical barriers and authentic climate on the two dimensions of experienced isolation (i.e., professional and social isolation), I performed a complementary analysis to explore whether the interactional effects were supported on either dimension (after controlling for concern for privacy). The ANOVA results suggested that the interaction between physical barriers and authentic climate on professional isolation was not significant ( $F_{(1, 351)} = .70, p = .40$ ), but the interaction was significant on social isolation ( $F_{(1, 351)}$

= 8.48,  $p = .004$ ,  $\eta^2 = .01$ ). The interaction is presented in Figure 3. Simple effects analysis showed that those who were assigned to the open workspace experienced lower level of social isolation ( $M_{\text{openworkspace*lowauthentic}} = 3.13$ ,  $SD = 1.36$ ) than those in the enclosed workspace condition ( $M_{\text{enclosedworkspace*lowauthentic}} = 4.19$ ,  $SD = 1.00$ ,  $d = -1.05$ ,  $p < .001$ ) when authentic climate was low; Importantly, this effect was stronger for the high authentic climate conditions - those who were assigned to the open workspace experienced lower level of social isolation ( $M_{\text{openworkspace*highauthentic}} = 1.46$ ,  $SD = .72$ ) than those in the enclosed workspace condition ( $M_{\text{enclosedworkspace*highauthentic}} = 3.22$ ,  $SD = 1.34$ ,  $d = -1.76$ ,  $p < .001$ ).

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 Insert Figure 3 about here  
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Based on the above results, I further tested whether social isolation mediates the joint effects of fewer physical barriers and authentic climate on knowledge sharing behavior. As shown in Table 2, Model 4, the relationship between social isolation and knowledge sharing count was negative and significant ( $B = -.16$ ,  $SE = .07$ ,  $p = .03$ ). Furthermore, the indirect effect of fewer physical barriers on knowledge sharing count mediated by social isolation was positive and significant for the low authentic climate condition ( $Z = .17$ ,  $p = .04$ ) and positive and significant for the high authentic climate condition ( $Z = .28$ ,  $p = .03$ ); but the difference between the two indirect effects were marginally significant ( $Z = .11$ ,  $p = .08$ ). The bootstrapping result (95% CI= [-.01, .24]) provided additional support for the marginally significant conditional indirect effects. However, since the relationship between social isolation and knowledge sharing value was not significant ( $B = -.40$ ,  $SE = .28$ , n.s.), I did not further test the conditional indirect effects for knowledge sharing value. Similarly, the

relationship between social isolation and knowledge sharing quality was also not significant ( $B = -.07$ ,  $SE = .16$ , n.s.).

Finally, I tested whether social isolation mediates the joint effects of fewer physical barriers and authentic climate on voice behavior. As shown in Table 2, Model 10, the relationship between social isolation and voice behavior was negative and significant ( $B = -.12$ ,  $SE = .06$ ,  $p = .04$ ). In addition, the indirect effect of fewer physical barriers on voice behavior mediated by social isolation was positive and marginally significant when authentic climate was low ( $Z = .13$ ,  $p = .05$ ) and positive and significant when authentic climate was high ( $Z = .21$ ,  $p = .047$ ); but the difference between the two indirect effects were marginally significant ( $Z = .08$ ,  $p = .096$ ). The bootstrapping result (95% CI=  $[-.02, .18]$ ) provided additional support for the marginally significant conditional indirect effects on voice behavior. However, the relationship between social isolation and silence behavior was not significant ( $B = .09$ ,  $SE = .06$ , n.s.).

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Insert Table 3 about here  
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#### 4.4 Discussion

The results from Study 1 only provided support for Hypothesis 2a. As predicted, those who were assigned to the open workspace condition were more likely to engage in knowledge sharing behavior (i.e., knowledge sharing value and knowledge sharing quality) when authentic climate was high (versus low); in contrast, for those assigned to the enclosed workspace condition, there were no difference in knowledge sharing between the low and high authentic climate conditions (Hypothesis 2a). Moreover,

unexpectedly, the results suggested that authentic climate did not strengthen the positive relationship between open workspace and employee knowledge sharing behavior (i.e., knowledge sharing value and knowledge sharing quality), but it was more the case that low authentic climate was extremely detrimental to knowledge sharing behavior when in open workspace context.

Moreover, although my results did not provide support for Hypothesis 1 and 3, the supplementary analysis indicated that authentic climate moderated the negative relationship between fewer physical barriers and participants' feeling of social isolation such that participants who were assigned to the open workspace and high authentic climate experienced lowest level of social isolation (partially supported Hypothesis 1). Furthermore, consistent with Hypothesis 3a, the supplementary analysis results suggested that the positive indirect effect of fewer physical barriers on *knowledge sharing count* via social isolation was stronger when authentic climate was high (versus low). Similarly, the positive indirect effect of fewer physical barriers on *voice behavior* via social isolation was stronger when authentic climate was high (versus low), providing partial support for Hypothesis 3b. Together, the supplementary analysis also provided partial support for Hypothesis 3a and 3b.

The use of laboratory experiment helped to address the questions of causality. Additionally, in Study 1, I manipulated physical barriers using blackboards (or no blackboards in open workspace condition), a written description and a picture illustration. More importantly, in the laboratory setting, participants were not able to interact with their assigned team members. With this manipulation, this study allowed me to test my argument that the impact of physical barriers on participants' feelings

and behavior occurs primarily through the symbolic effect and the effect cannot be explained just by the functional effect of physical barriers (i.e., physical barriers physically restricting or facilitating interpersonal interactions). In other words, this study provided empirical support for my arguments that the impact of physical barriers in one's workspace on people's feelings and behavior goes beyond the functional effect of providing a convenient environment for social interactions but occurs more through the conveyed symbolic messages, such that fewer (vs. more) physical barriers in one's workspace convey positive (vs. negative) relational cues of oneness and connectedness (vs. separation and isolation) with others. Moreover, the findings from Study 1 provided more nuanced insights into the question of how physical barriers impact the quality and quantity of its occupant's knowledge sharing behavior.

However, this study is not without its shortcomings. First, although the supplementary analysis in this study provided partial support for Hypothesis 1 and 3, the effects were only supported for social isolation, but not for professional isolation (which I discuss further in the General Discussion). As the study was conducted in the laboratory setting, where participants had no real interactions with each other or time/opportunity for relational building, it is important to test this model with employee participants from real organizations. Second, the pattern observed in this study (i.e., authentic climate did not strengthen the positive relationship between open workspace and employee knowledge sharing; instead, it was that low authentic climate was extremely detrimental to knowledge sharing for open workspace environment) was unexpected and was not consistent with the results of the

interactional effect on social isolation (i.e., participants in the open workspace and high authentic climate condition experienced lowest level of social isolation relative to other conditions). Therefore, it is important to test my model in a different setting and check if the pattern is robust and can be replicated. Third, the field study was conducted in the United States. Because of the high individualism culture of the research context (Hofstede, 1984), employees may be less susceptible to environmental cues to develop a feeling of inclusion (and are more easily to experience isolation) within the work group. To address these concerns, I conducted a field study in a different cultural setting (i.e., China) (Study 2) to replicate the findings from this study, and used a different method (i.e., a field study) to further enhance the external validity of the findings.

## **CHAPTER 5: STUDY 2: FIELD STUDY**

### **5.1 Sample and Procedure**

I conducted a time-lagged field study, collecting multilevel, multisource data from 232 employees from 56 work teams nested within 33 knowledge-intensive firms in China through the author's personal contact. These firms were ideal settings for this research as employees worked in these firms had many opportunities for employee knowledge sharing (or hiding) and voice behavior. Employees surveyed in this study represented a broad range of white-collar worker, ranging from highly skilled professional workers to clerical staff with limited qualifications. The variety of participants' occupations was intended to cast a wide net so that the sample was representative of office workers in general rather than any particular sub-sample.



At Time 1, I administrated the online survey to 232 employees and their supervisors ( $N=56$ ) through the contact information provided by their supervisor prior the first round of survey. All employees and their corresponding supervisors returned the survey. One month later, at Time 2, I obtained responses from 216 employees (93% response rate) and 54 corresponding supervisors from 33 firms. After deleting responses with missing data on core variables, the final sample included 206 employees with matched data from 53 supervisors in 33 firms, resulting in an average of 4 employees rated by each supervisor ( $SD = 2.89$ ). As compensation for their participation, employee participants received \$3.00 for completing each round of survey. Supervisors received \$8.00 for completing each round of survey.

In the final sample, 48.5% employees were female, averaged 29.1 years old, and 91.3% had received college education or above. They had an average of 5.0 years of work experience ( $SD = 5.4$ ), and an average of 2.7 years of experience in their current job ( $SD = 4.1$ ). For supervisors, 30.6% were female, averaged 32.6 years old, and 90.4% had received college education or above. The average work experience of supervisors was 8.4 years ( $SD = 5.8$ ), and an average of 4.4 years of experience in their current job ( $SD = 3.7$ ).

## 5.2 Measures

All questions in the survey were asked in Chinese because this was the first and primary language for all the respondents in this survey. I followed the standard back translation methodology in the translation of items adopted from English measures (Brislin, 1970; Werner & Campbell, 1970) to ensure the cultural equivalence of the items used in questionnaires. A third person, a Chinese native

speaker (a management Professor in a prestige university in China) compared the original version with the translation. Based on her comments, I reworded a few items to ensure clarity.

Unless otherwise indicated, all the items were measured on a 5-point Likert scale (ranging from 1, strongly disagree, to 5, strongly agree).

**The number of physical barriers.** In organization, physical barriers may take the form of doors, walls, and frosted or partially frosted glass (Archea, 1977). Hence, in the survey, employees reported the number of these three types of physical barriers in their workspace (i.e., wall, door, & glass partition) at Time 1. Employees were asked to circle the correct number (0, 1, 2, 3, or 4) indicating the “Number of sides of your workspace enclosed by wall/door/glass partition” (Fried, 1990; Sundstrom, Burt, & Kamp, 1980). I calculated the sum of the number of the three types of barriers. This value was then recoded and reverse-coded to measure the openness of the workspace (i.e., fewer physical barriers in one’s workspace), which ranges from 1 to 5, “1” represents fully enclosed workspace and “5” represents open workspace. (see Appendix B for the full scale)

**Authentic climate.** Employees rated authentic climate at their work group (or department) at Time 1 with the same 5 item-scale from Study 1 ( $\alpha=.90$ ). The score was then aggregated at group level and the group mean value was used for analysis. Interrater agreement (i.e.,  $r_{wg(j)}$ ; cf. James, Demaree, & Wolf, 1984), was high, averaging .88 across the 54 workgroups (LeBreton & Senter, 2008). ICC(1) was .17, indicating group membership could explain 17% of the variance in authentic climate. The reliability of the group means, ICC(2), was .43,  $F_{(53, 155)} = 1.77, p < .001$ , which

supports our expectation that authentic climate varied meaningfully between workgroups. Together, these indexes supported aggregation to the work group level (Bliese, 2000).

**Experienced isolation.** Employees rated experienced isolation at Time 2 with the same 6 items from Study 1 ( $\alpha=.92$ ).

**Knowledge sharing behavior.** Employees' knowledge sharing behavior was measured at Time 2 rated by employees. I used the self-reported ratings of employees' knowledge sharing behavior because employees shall have the best knowledge regarding whether they (or choose not to) share their knowledge or simply because they lack sufficient knowledge (e.g., Cabrera, Collins, & Salgado, 2006; Lin, 2007). Knowledge sharing behavior was measured with a 5-item scale developed by Srivastava et al. (2006) ( $\alpha=.75$ ). The sample item was "I share my special know-how and expertise with others".

**Voice behavior.** Voice behavior was measured at Time 2 and was rated by employees' direct supervisor. Supervisors rated employees' voice behavior with the 5-item scale from Maynes and Podsakoff (2014) ( $\alpha=.95$ ). Sample items included, "This employee frequently makes suggestions about how to do things in new or more effective ways at work." and "This employee often speaks up with recommendations about how to fix work related problems."

**Control variables.** I controlled for employee's experienced visibility, hearing, and accessibility from their workspace, as it is often suggested that the increased possibilities for visibility and movement in open workspace make it more convenient for individuals to share information with one another (e.g., Oldham &

Brass, 1979). Visibility was measured with 6 items adapted from Sundstrom et al. (1980) ( $\alpha=.90$ ). One sample item was “To what extent is your workspace visible from your supervisor’s workspace?”. I measured hearing with 3 items developed for this study ( $\alpha=.73$ ). One sample item was “to what extent can you overhear the conversations of your peers?”. Accessibility was measured with 6 items developed for this study ( $\alpha=.80$ ). One sample item was “To what do your peers have free access to your workspace?”.

To rule out alternative explanations, I further controlled for employees’ concern for privacy and experience of disruption. Concern for privacy was measured with the same 9 items from Study 1 ( $\alpha=.85$ ). Experienced disruption was measured with 5 items developed by Parker, Morgeson and Johns (2017) ( $\alpha=.89$ ). One sample item was “I’m interrupted by people seeking information from me”.

### 5.3 Results

#### **5.3.1 Confirmatory Factor Analysis**

In order to verify the distinctiveness of the variables in the model, I conducted a multilevel confirmative factor analysis (CFA) using structural equation modeling with MPlus 7.0 software (Muthén & Muthén, 2018). At individual level, the full model, in which all variables (i.e., authentic climate, experienced isolation, knowledge sharing, and voice behavior) loaded on their own constructs ( $\chi^2(183) = 426.94$ , CFI = .90, RMSEA = .08, SRMR = .07) fit the data significantly better than alternative, reduced models where (a) knowledge sharing and voice behavior loaded on a single factor and all other constructs loaded on their own factors ( $\chi^2(186) =$

635.56, CFI = .82, RMSEA = .10, SRMR = .13), (b) a model where experienced isolation, knowledge sharing, and voice behavior loaded on a single factor and authentic climate loaded on its own factor ( $\chi^2(188) = 1377.77$ , CFI = .53, RMSEA = .16, SRMR = .17), and (c) a model where all four factors loaded on one single factor ( $\chi^2(189) = 1851.79$ , CFI = .34, RMSEA = .19, SRMR = .20). These results provided support for the construct validity of my set of core variables.

### 5.3.2 Analytical Approach

In this sample, individuals were nested within work groups. In order to account for the non-independence of observations, I conducted the regression analysis using cluster-robust standard errors (McNeish, Stapleton, & Silverman, 2017) using the MPlus 7.0 software (Muthén & Muthén, 2018). This option uses a maximum-likelihood estimator and accounts for non-independence by correcting for clustering bias in the standard error estimates (McNeish et al., 2017).

### 5.3.3 Hypothesis tests

Table 3 presents the means, standard deviations, and correlations among all the variables of interest. The correlations for all variables provided a preliminary support for my hypotheses.

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 Insert Table 3 about here  
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The results of the regression analysis are presented in Table 4. To check the robustness of the results, I tested the model with control variables of other aspects that can account for the effect of physical barriers in the supplementary analysis (see detailed results in the Appendix C). As the inclusion of these control variables did not

impact the significance of my results, for the sake of parsimony, I did not include these control variables in my final presentation of results. Hypothesis 1 predicted that authentic climate moderates the impact of fewer physical barriers in the workspace on employee experienced isolation. As shown in Table 4, Model 2, the interaction between fewer physical barriers and authentic climate on employee's experienced isolation was negative and significant ( $\gamma = -.11$ ,  $SE = .05$ ,  $p = .03$ ). Following Aiken et al. (1991), the interaction was presented graphically at two levels of authentic climate (i.e., +1 SD and -1 SD) in Figure 4. A simple slopes test indicated that fewer physical barriers was negatively related to employee's experienced isolation at lower (-1 SD) level of authentic climate ( $-.07$ ,  $p = .02$ ), and at higher (+1 SD) level of authentic climate ( $-.16$ ,  $p < .001$ ); but the two simple slopes were significantly different from each other ( $-.09$ ,  $p = .03$ ). Hence Hypothesis 1 was supported.

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 Insert Table 4 & Figure 4 about here  
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Hypothesis 2 predicted that authentic climate moderates the relationship between fewer physical barriers in one's workspace and employee a) knowledge sharing and b) voice behavior. As shown in Table 4, Model 3, the interaction between fewer physical barriers and authentic climate on knowledge sharing behavior was positive and significant ( $\gamma = .14$ ,  $SE = .05$ ,  $p = .01$ ) (presented in Figure 5). The simple slopes test further supported that fewer physical barriers were not significantly related to employee's knowledge sharing behavior at lower level of authentic climate ( $.04$ , n.s.), but positive and significant at higher level of authentic climate ( $.16$ ,  $p < .001$ ); and the two simple slopes were significantly different from each other ( $.12$ ,  $p = .01$ ).

However, the interaction between fewer physical barriers and authentic climate on

voice behavior was positive but not significant ( $\gamma = .17$ ,  $SE = .12$ , n.s.). Hence only Hypothesis 2a was supported.

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Insert Figure 5 about here  
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Hypothesis 3 predicted that employee's experienced isolation mediates the joint impact of fewer physical barriers and authentic climate on employee a) knowledge sharing and b) voice behavior. As shown in Table 4, after controlled for alternative mechanisms (i.e., concern for privacy and experienced disruption), experienced isolation was negatively and significantly related to knowledge sharing ( $\gamma = -.26$ ,  $SE = .06$ ,  $p < .001$ ) and voice behavior ( $\gamma = -.26$ ,  $SE = .07$ ,  $p < .001$ ). I then examined the moderated mediation using the Monte Carlo simulation. When authentic climate was low, the indirect path from fewer physical barriers to employee's knowledge sharing via experienced isolation was significant and positive (.02, 95% CI = [.00, .04]), and significant and positive when authentic climate was high (.04, 95% CI = [.02, .07]); but the two indirect effects were significantly different from each other (.02, 95% CI = [.00, .05]). Similarly, the indirect effect of fewer physical barriers on employee's voice behavior via experienced isolation was positive and significant when authentic climate was low (.02, 95% CI = [.00, .04]) and high (.04, 95% CI = [.02, .06]), but the difference between the two indirect effects were significantly different from each other (.02, 95% CI = [.01, .04]) (see Table 5 for a summary of the moderated mediation effects). Together, both Hypothesis 3a and Hypothesis 3b were supported.

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Insert Table 5 about here  
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#### 5.4 Discussion

The results from the multi-wave, multi-source field study provided strong support for all my hypotheses except for Hypothesis 2b. First, the field study provided evidence that authentic climate moderated the negative relationship between fewer physical barriers and employee experienced isolation such that the relationship was stronger when authentic climate was high (versus low) (Hypothesis 1). Furthermore, the results showed a synergistic effect of fewer physical barriers in the workspace and authentic climate on employee knowledge sharing behavior such that employees are mostly likely to share knowledge when there were fewer physical barriers and high authentic climate (Hypothesis 2a). Finally, findings from Study 2 supported that employee experienced isolation mediated the joint impact of fewer physical barriers and authentic climate on employees' a) knowledge sharing and b) voice behavior (Hypothesis 3a and 3b). Next, I discuss the general theoretical and practical implications of both my studies' findings.

### **CHAPTER 6: GENERAL DISCUSSION**

The main objective of this research was to provide a more holistic and in-depth theoretical understanding of the role of physical barriers (or the lack of physical barriers) in one's workspace in influencing employee knowledge sharing and voice behavior. Integrating the symbolic perspective of the physical environment with optimal distinctiveness theory, the findings from both the laboratory experiment (moderated mediation effect) and the field study highlighted a synergistic effect between fewer physical barriers in one's workspace and authentic climate on promoting employee knowledge sharing with coworkers and upward information



sharing with their supervisors (i.e., in the form of voice behavior). The results further indicated that employees' reduced feeling of isolation was the primary underlying psychological mechanism (in comparison with perceived privacy and experienced disruptions) that accounted for why fewer physical barriers in one's workspace and authentic climate together facilitate employee knowledge sharing and voice behavior. The findings from this study generate several theoretical and practical implications.

### 6.1 Theoretical implications

While prior research has demonstrated that open workspace can have both positive and negative impacts on employee collaborative behavior (including knowledge sharing behavior), this work has focused primarily on the functional effects (e.g., Appel-Meulenbroek et al., 2017; Bernstein & Turban, 2018; Brand & Smith, 2005; Irving & Ayoko, 2014; Mark, 2002; Monaghan & Ayoko, 2019), leaving the symbolic effects under-examined. Building on the symbolic perspective of the physical environment, this study identifies and tests a unique psychological mechanism—employee experienced isolation, a psychological state that includes both social and professional isolation—through which physical barriers impact employee knowledge sharing and voice behavior. While prior research has discussed the functional effect of separation and interpersonal connections (e.g., open workspace provides higher accessibility and enables more frequent spontaneous conversations) in explaining the effect of physical barriers on employee communication and collaboration (Stea et al., 2015), this study enriches this understanding by theorizing and empirically testing the symbolic effect of experienced isolation. In fact, employee experienced isolation significantly mediated

the relationship between fewer physical barriers and employee outcomes (i.e., knowledge sharing and voice behavior) even after controlling for the functional features associated with physical barriers and other explanations such as concern for privacy. The present findings therefore highlight an important, hitherto relatively underexplored, role of (fewer) physical barriers in one's workspace in signaling relational cues through which employees may feel more (or less) isolated from others. By doing so, this research responds to recent calls for a better theoretical understanding of the workplace relationship implications of the physical settings in assessing the effects of physical environment on employee outcomes (Khazanchi et al., 2018).

Furthermore, this study highlights the importance to consider the contextual role of the social characteristics of organizational environment when investigating the impact of the physical environment on employee outcomes. Specifically, this research examined how fewer physical barriers in the workspace acts in conjunction with authentic climate in promoting employees' knowledge sharing and voice behavior. The results supported that there was a synergistic effect between fewer physical barriers in one's workspace and authentic climate such that it takes *both* to achieve an optimal level of desired employee outcome (i.e., increased employee knowledge sharing and voice behavior) . Moreover, while prior literature has recognized and studied physical settings in the workplace as a symbolic representation of organizational culture (i.e., the social environment) (e.g., Byron & Laurence, 2015; Pratt & Rafaeli, 1997; Schein, 1990), this study treats the physical and social context as two independent and parallel forces and opens a new approach to examine the

dynamics between the “hardware” physical context and the “software” social context of organizational environment in influencing employee outcomes.

Relatedly, this study also sheds light on the authenticity research, which has emphasized the benefits of encouraging authentic self-expression to both employees and organizations (Cable et al., 2013; Erickson, 1995; Gino, Sezer, & Huang, 2020). By examining the interplay between physical barriers and authentic climate on employee outcomes, the findings suggest that authentic climate is more likely to lead to desired employee outcomes (i.e., low level of employee experienced isolation, high level of knowledge sharing and voice behavior) when it matches the cues conveyed by physical settings.

Moreover, this study contributes to a better understanding of the antecedents of employee isolation by integrating optimal distinctiveness theory with the research on organizational environment (both physical and social). While prior work has recognized the role of physical isolation, often studied in the context of telework or physical distance, in influencing employees’ experienced isolation (Bartel et al., 2012; Cooper & Kurland, 2002; Golden et al., 2008), this paper extends this view by demonstrating that the presence (lack) of physical barriers can also enhance (reduce) employees’ sense of isolation through the symbolic effect of isolation (connectedness), even when people are physically close to each other. Moreover, supporting optimal distinctiveness theory, my findings further demonstrated that to decrease the feeling of isolation (or to increase employees’ sense of inclusion), employees may need to feel both a sense of connectedness (signaled by an open

workspace) and feel comfortable to express their unique selves (enabled by the authentic climate).

Finally, this research contributes to the knowledge sharing and voice literature by highlighting the role of physical barriers in one's workspace as a contextual predictor of employee knowledge sharing and voice behavior. The findings from my two studies highlighted that physical barriers in one's workspace as part of the wider organizational context deserves to be given more direct consideration. While prior research has recognized the role of open workspace in influencing employee knowledge sharing and other collaborative behavior (Appel-Meulenbroek et al., 2017; Bernstein & Turban, 2018; Brand & Smith, 2005; Irving & Ayoko, 2014; Zalesny & Farace, 1987), this study extends this work by moving beyond the functional effect and focusing on the symbolic effect. By doing this, this study provides a more holistic and better understanding of when and how fewer physical barriers in one's workspace promote employee knowledge sharing and voice behavior.

## 6.2 Practical Implications

This research has several important practical and managerial implications. First, it draws attention to the management of physical barriers in the workplace. As noted in the knowledge management and voice literature, with the new trends in the workplace (such as increased diversity of team composition and multi-team collaboration), it becomes especially critical but more challenging to promote knowledge sharing within unit and across units and upward voice within the organization (Morrison, 2011; Wang & Noe, 2010). To address the challenges, managers may consider reducing the number of (or totally removing) physical

barriers in the office as fewer physical barriers in the workspace can reduce employees' experienced isolation and thus promote employee knowledge sharing and voice behavior. More importantly, to foster an optimal level of employee knowledge sharing and voice behavior, managers also need to pay close attention to social environment such that the norms and values promoted in the workplace are consistent with the cues conveyed in the physical settings. In particular, managers may consider advocate an authentic climate within the organization to better leverage the benefits of open workspace on employee knowledge sharing and voice behavior.

Moreover, this study highlights the importance for managers to pay attention not only to the functional effects of their office design and other physical features, but also be mindful of the symbolic messages conveyed by their physical settings in the office. It is also important to note that any changes to the physical settings in the office may also lead to unexpected negative consequences such as increased disruptions and concern for privacy for employees (Bernstein & Turban, 2018; Hatch, 1987; Oldham & Brass, 1979). Therefore, managers need to be cognizant of both the functional and symbolic implications of their physical environment in the office and be mindful of potential negative consequences that may be triggered by changes in the physical setting.

### 6.3 Limitations and Future Research

As with any research, this study is not without its limitations, which could be fruitfully addressed by future research. First, while I found support for my theoretical argument that there was a synergistic effect of fewer physical barriers and authentic climate on employee knowledge sharing and voice behavior in the field setting (Study

2), the relationships were not fully supported in the lab setting (Study 1). Firstly, the lab results suggested a pattern that low authentic climate was extremely hurtful for open workspace context but not necessarily beneficial in strengthening the positive relationship between fewer physical barriers and knowledge sharing. One factor that may account for the differential results across my two studies could be the contextual differences between the two studies. Specifically, the manipulation of physical barriers was relatively weak as participants were only seated in this context for less than one hour (versus employees from the field study were deeply embedded in their working environment). As a result, the physical features (i.e., physical barriers) might have a weaker direct impact on participants' behavior in the lab setting than in the field setting. Additionally, compared to the field setting where knowledge sharing is closely tied to employee performance, promotion, and even monetary rewards (Siachou et al., 2021), the incentives to (not) share knowledge in the lab setting is relatively weak. Therefore, participants in the lab setting may be less reactive to environmental stimulus (such as physical settings) in terms of adjusting their knowledge sharing behavior. Secondly, the supplementary analysis of Study 1 only provided support for the interactional effect between fewer physical barriers and authentic climate on the social isolation dimension (but not significant on the professional isolation dimension), and the conditional indirect effect through social isolation on voice behavior and knowledge sharing count were only marginally significant. It is plausible that, although the feelings of professional and social connectedness are often intertwined in real organizations (Cooper & Kurland, 2002) because employees in real organizations often interact with each other for both

professional and social support, this feature is missing in the lab setting (i.e., participants did not interact with each other during the lab study). Another plausible explanation is that the relational cues conveyed by physical barriers mainly influence employees' perception of their social connectedness with others, which may later infuse their feelings about their professional relations. Future research may further explore these possibilities to provide an in-depth understanding of the phenomenon.

Another limitation of this research is that, in the field study (Study 2), following prior studies' definition and operationalization (Archea, 1977; Fried, 1990; Sundstrom et al., 1980), I measured physical barriers with the number of different types of physical barriers (i.e., doors, walls, and frosted or partially frosted glass) in one's workspace and used the sum of these three types of barriers as my measure. While this operationalization of physical barriers considered the heterogeneity of office designs across organizations, this measure failed to provide more nuanced insights into the question of whether and how the features of physical barriers (e.g., height, visibility, symbolize of status) may impact the proposed relationship between fewer physical barriers and employee outcomes. Although I addressed these concerns in this research by controlling for the functional effects associated with physical barriers and testing the model in a more controlled context (i.e., the lab experiment in Study 1), future research may further address this issue by examining the model with quasi field experiment where the model can still be tested with employees from real organizations but in a more controlled environment.

Third, building on the symbolic perspective, my theorizing argues that the impact of physical barriers on employee knowledge sharing and voice behavior

occurs primarily through employees' subjective interpretations rather than objective attributes of this physical feature. To test this argument, in the field study, I controlled the functional features associated with physical barriers (e.g., visibility, hearing, and accessibility) and alternative explanations (i.e., concern for privacy and experienced disruption). However, the possibility that the functional effect may impact employees' subjective interpretations by influencing the relationship between coworkers was not ruled out by this study. As an effort to address this issue, I also tested my model and found support with a laboratory experiment, where I used a minimalized intervention design so that participants were not able to interact with each other during the study and controlled for participants' concern for privacy. While the laboratory experiment allowed me to isolate the symbolic effect of physical environment by controlling for the functional effect, in real life, these two effects may still occur simultaneously (leading to similar or opposite employee outcomes) or one pathway could be more dominant than the other in influencing employee attitudes and behavior over time. Addressing these possibilities was beyond the scope of this research, however, it would be worthwhile for future researchers to further explore this possibility.

Relatedly, in this dissertation, the results from my studies found non-significant associations between the number of physical barriers and employees' concern for privacy (Study 1 & 2) as well as experienced disruptions (Study 2). It is possible that, in the lab setting, need for privacy is not activated and expected for participants; whereas in real organizations, norms and practices are developed overtime to help employees cope with the challenges associated with their workspace (e.g., increased



noise or loss of privacy). For instance, employees may manage their boundary with others with plants or file organizers and cope with unwanted disruptions by putting on earphones (Appel-Meulenbroek et al., 2020). Future research may explore the role of time and other contextual factors and compare the relative strength of multiple mechanisms (e.g., experienced isolation, concern for privacy, and experienced disruption) through which physical barriers influence employee collaborative behaviors.

Fifth, in examining the relationship between physical barriers and employee knowledge sharing and voice behavior, this study highlights the importance to consider authentic climate as a critical contextual factor. However, this relationship could be explored by completely different perspectives from this research (e.g., focusing on other theoretical perspective or multiple dimensions of physical barriers, and exploring other contextual factors). For instance, fewer physical barriers may influence employee collaborative behavior by amplifying the social comparison processes. That is, by offering better inter-visual connectivity (Appel-Meulenbroek et al., 2017), fewer physical barriers in the workplace may strengthen the effect of unequal treatments or differential interpersonal dynamics (e.g., leader-member exchange differentiation, sub-groups within teams) by allowing constant social comparison between employees. Furthermore, physical barriers may overlap with employee status and rank. Specifically, employees with higher status may have more private workspace or offices (with more physical barriers) and, at the same time, more likely to engage in knowledges sharing and voice behavior (Morrison, 2011; Wang & Noe, 2010). The results of the supplementary analysis showed a non-

significant effect of physical barriers on employee status (see Appendix C for more details). However, it is possible that in other contexts where employees are more stratified in terms of ranks or status, physical barriers may confound with employees' status and suppress its impact on employee knowledge sharing and voice behavior.

Additionally, as office design is often discussed within the context of changing job characteristics (e.g., increased interdependence and knowledge-intensive work) (Ayoko et al., 2014; Elsbach & Pratt, 2007; Hua et al., 2011), scholars may explore how job design characteristics (e.g., task interdependence, job complexity) may complement or enhance the relationship between physical barriers and employee outcomes. Finally, individuals' personalities (e.g., extraversion, conscientiousness, self-esteem) may also play a role in influencing how they may react when they work in an open (or enclosed) workspace. Indeed, as person-environment fit theory (Edwards, 2008) states, person-environment interaction is optimal when the environment supports the most important needs of users, and does not demand more than their capabilities stretch.

Finally, as telework becomes more prevalent under the influence of the COVID-19 pandemic, it may be worthwhile to explore how this trend may impact the impact of physical barriers on employees' experienced isolation and consequential knowledge sharing and voice behavior. On the one hand, some features associated with virtual workers may convey similar symbolic meaning of physical barriers and thus have similar impact on employees' perceptions and behavior. For instance, the use of video may play a role in influencing employees' sense of isolation from others by conveying similar symbolic message with that associated with physical barriers.

Based on the findings from this study, those who do not open video (versus those open video) during virtual interactions with coworkers may perceive a stronger sense of isolation and separation from others. On the other hand, in the context of the pandemic, physical barriers may be associated with other meanings (such as safety). As a result, the proposed relationship between physical barriers and employee experienced isolation may be weakened in this context. The findings from my studies did not support this speculation because both of my studies were conducted during the pandemic and provided support for my model. However, future research may further test this possibility by replicating my findings with data collected from post-pandemic time.

## **CHAPTER 7: CONCLUSION**

Organizational scholars have recently called for a more nuanced exploration of the role of physical settings on employee outcomes and the underlying psychological processes. This study contributes to this burgeoning stream of research by applying a symbolic perspective of physical environment and testing the effect of physical barriers on employee knowledge sharing and voice behavior. The findings indicate a positive relationship between fewer physical barriers in one's workspace and employee knowledge sharing as well as voice behavior, especially when there is a high (versus low) authentic climate. Moreover, the findings emphasize the role of experienced isolation as the primary psychological mechanism that underlies the above relationship.

## **Appendix A Study 1 Manipulation of Physical Barriers**

### **Part 1**

#### **Condition 1 Photo illustration of the manipulation of enclosed workspace**



#### **Condition 2 Photo illustration of the manipulation of open workspace**



## Part 2

### Condition 1 Picture illustration of enclosed workspace



### Condition 2 Picture illustration of open workspace



## Appendix B Study 2 Full Scales

- Physical barriers  
Please indicate the number of frosted or partially frosted glass, walls, and doors around your workspace.
  - a. frosted or partially frosted glass
  - b. walls
  - c. doors
- Visibility (1=not at all, 5=to a great extent)
  - a. To what extent is your workspace visible from your supervisor's workspace?
  - b. To what extent is your workspace visible from your peers' workspace?
  - c. To what extent can others see or observe what you are doing in your workspace?
  - d. To what extent is your supervisor's workspace visible from your workspace?
  - e. To what extent is your peers' workspace visible from your workspace?
  - f. To what extent can you see or observe what others are doing from your workspace?
- Hearing (1=not at all, 5=to a great extent)
  - a. To what extent can your peers overhear you when you are speaking in your normal tone in your workspace?
  - b. To what extent can your supervisor overhear you when you are speaking in your normal tone in your workspace?
  - c. To what extent can you overhear the conversations of your peers?
- Accessibility (1=not at all, 5=to a great extent)
  - a. To what extent do your peers have free access to your workspace?
  - b. To what extent can your peers use your workspace when you are not there?
  - c. How often do your colleagues pass through your workspace in order to get to another place in the organization?
  - d. To what extent does your supervisor have free access to your workspace?
  - e. To what extent can your supervisor freely use your workspace when you are not there?
  - f. How often does your supervisor pass through your workspace in order to get to another place in the organization?
- Authentic climate (Wood et al., 2008)  
At your department (work team), ...

- a. you can always stand by what you believe in
- b. you would be comfortable to be true to yourself in most situations
- c. your daily behavior at work reflect “the true self”
- d. you can behave in accordance with your own values and beliefs
- e. you can be yourself in your day-to-day activities at work

○ Perceived privacy (adapted from Sheldon et al., 1997’s authenticity measure)

In my work group, ...

- a. I can freely express the aspects of myself as an authentic part of who I am.
- b. I can express the part of myself that is meaningful and valuable to me.
- c. I have freedom to choose my way of being.
- d. I do not feel tense or pressured to express any part of my life.
- e. I have control over how I am seen in the eyes of others.
- f. I have control over what times I would like to interact with others.
- g. I have control over the image I present to others.
- h. I have control over what I choose to disclose to others.
- i. I have control over how I come across to others.

○ Disruption and distraction (Parke, Weinhardt, Brodsky, Tangirala, & DeVoe, 2017’s measure of work interruptions) (1=never, 5=most of the time)

While at work, ...

- a. I am interrupted by people seeking information from me.
- b. I am interrupted by people seeking my help.
- c. I am interrupted by people who give or assign a new task to me.
- d. I am interrupted by people who provide me work-related updates or information.
- e. I am interrupted by people for non-work related matters (e.g., socializing)

○ Experienced isolation (Golden, Veiga, & Dino, 2008)

Professional isolation

- a. I feel left out on activities and meetings that could enhance my career.
- b. I feel left out on opportunities to be mentored.
- c. I feel out of the loop.
- d. I feel isolated.

Social isolation

- e. I feel left out the emotional support of coworkers.
- f. I feel left out informal interaction with others.

○ Knowledge sharing behavior (Srivastava, Bartol, & Locke, 2006)

At department (work team) level, how often do you engage in the following behavior?

- a) I share my special know-how and expertise with others
  - b) If I have some special knowledge about how to perform the team task, I am not likely to tell the other member about it (R)
  - c) I share no information, knowledge, or skills with others (R)
  - d) I freely provide others with hard-to-find knowledge or specialized skills
  - e) I share a lot of information with others
- Voice behavior (Maynes & Podsakoff, 2014)
    - a. This employee frequently makes suggestions about how to do things in new or more effective ways at work.
    - b. This employee often suggests changes to work projects in order to make them better.
    - c. This employee often speaks up with recommendations about how to fix work-related problems.
    - d. This employee frequently makes suggestions about how to improve work methods or practices.
    - e. This employee regularly proposes ideas for new or more effective work methods.



## Appendix C Supplementary Analysis of Study 2

In the supplementary analysis, I first tested whether team facilities would compensate for physical barriers in influencing employee experienced isolation. In the survey, I measured team facilities by asking employees to respond to the question: “Are there other amenities in your office for collaborative work (“Yes” or “No”)? 1) Team room; 2) Shared working space; 3) Meeting room; or 4) Other amenities or space for team work” The sum of the “yes” responses to the four types of team facilities was used as the measure of team facilities. The regression results using the CR-SE method indicated that the presence of team facilities was negatively related to employee experienced isolation ( $\gamma = -.11$ ,  $SE = .04$ ,  $p = .01$ ) (visibility, hearing, and accessibility were also controlled in the analysis). Despite the significant effect of team facilities, the interactional effect between fewer physical barriers and authentic climate on employee experienced isolation, similar to the results reported in the dissertation, remained negative and significant ( $\gamma = -.11$ ,  $SE = .05$ ,  $p = .02$ ).

In addition, I further tested whether job characteristics would compensate for the impact of physical features. In Study 2, I measured and controlled for task interdependence, job complexity, and problem solving. Task interdependence was measured with a five-item scale developed by Pearce and Gregersen (1991). One sample item was “I work closely with others in doing my work.” Job complexity was measured with a four-item scale from Morgeson and Humphrey (2006). One sample item was “My job requires that I only do one task or activity at a time.” Problem solving was measured with a four-item scale from Morgeson and Humphrey (2006). One sample item was “The job involves solving problems that have no obvious

correct answer.” The regression results showed that task interdependence ( $\gamma = -.18$ ,  $SE = .06$ ,  $p = .004$ ) and job complexity ( $\gamma = -.14$ ,  $SE = .07$ ,  $p = .045$ ) (but not problem solving) were significantly and negatively related to employee experienced isolation (visibility, hearing, and accessibility were also controlled in the analysis). After controlling for the job characteristics, the interactional effect between fewer physical barriers and authentic climate remained negative and significant ( $\gamma = -.11$ ,  $SE = .05$ ,  $p = .02$ ), as reported in the dissertation.

Finally, I tested whether there is a suppression effect with employee status. Specifically, employees with higher status may have more barriers surrounding their workspace. Therefore, I examined in this supplementary analysis whether physical barriers correlate with employee status. In Study 2, I asked employees to self-rate their status with 3 items from Eisenberger et al. (2002). One sample item was “I am well respected in my work group.” The regression results, however, showed that the relationship between fewer physical barriers and employee self-rated status was not significant ( $\gamma = -.04$ ,  $SE = .03$ ,  $p = .15$ ).

*Table 1 Descriptive Statistics and Correlations in Study 1*

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1) Physical barrier condition	1.48	.50	-										
2) Authentic condition	1.50	.50	-.01	-									
3) Barrier manipulation check	3.09	1.72	-.84**	-.01	(.93)								
4) Authentic manipulation check	3.28	1.46	.04	.84**	-.09	(.97)							
5) Experienced isolation	2.70	1.31	-.58**	-.34**	.66**	-.46**	(.94)						
6) Concern for privacy	2.91	1.14	-.03	-.50**	.07	-.61**	.39**	(.90)					
7) Shared knowledge value	9.78	4.15	-.07	.09	.05	.13*	-.09	-.10	-				
8) Shared knowledge count	2.98	1.07	-.10	.15**	.07	.19**	-.08	-.10	.88**	-			
9) Shared knowledge quality	.72	.45	-.03	.04	-.002	.08	-.10	-.06	.81**	.53**	-		
10) Voice	3.42	1.02	.07	.44**	-.12*	.53**	-.44**	-.33**	.25**	.27**	.19**	(.92)	
11) Silence	2.82	.95	-.12*	-.34**	.19**	-.42**	.44**	.34**	-.17**	-.21**	-.08	-.64**	(.86)

Notes:  $N=355$ . Physical barrier condition: enclosed workspace condition coded as “1” and open workspace coded as “2”. For authentic climate condition: low authentic climate condition coded as “1” and high authentic climate condition coded as “2”.

Table 2 Unstandardized Results of Complementary Analysis in Study 1

	Professional isolation	Social isolation	Knowledge sharing count		Knowledge sharing value		Knowledge sharing quality		Voice behavior		Silence behavior	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Intercept	6.32**(.51)	5.51**(.60)	3.35**(.55)	3.98**(.69)	13.34** (2.16)	16.86** (2.67)	-3.39** (1.21)	-5.44** (1.53)	1.74**(.48)	3.95** (.56)	3.77**(.47)	1.37*(.54)
<i>Independent Variables</i>												
Fewer physical barriers condition	-1.84**(.33)	-.35 (.38)	-.57(.35)	-.54 (.38)	-3.16* (1.37)	-3.55* (1.40)	-1.81*(.75)	-2.26** (.82)	.22 (.31)	-.25 (.31)	.02 (.30)	.51*(.30)
Authentic climate condition	-.95**(.33)	-.27 (.38)	-.05 (.35)	-.06 (.36)	-1.81 (1.36)	-2.23 (1.41)	-1.53*(.76)	-1.83* (.80)	.97**(.30)	.68*(.30)	-.41(.30)	-.02 (.29)
Professional isolation				.04 (.08)		-.09 (.33)		-.21(.18)		-.22**(.07)		.22**(.07)
Social isolation				-.16* (.07)		-.40 (.28)		-.07 (.16)		-.12* (.06)		.09 (.06)
Perceived privacy				-.01 (.06)		-.14 (.23)		-.06 (.13)		-.03 (.05)		.10* (.05)
<i>Interaction term</i>												
Fewer Barriers*												
Authentic climate	.17 (.21)	-.70**(.24)	.24 (.22)	.13 (.23)	1.73*(.87)	1.5+ (.90)	1.15*(.48)	1.15* (.51)	-.04 (.19)	-.08 (.19)	-.16 (.19)	-.17 (.18)
R <sup>2</sup>	.43	.43	.03	.06	.02	.04	.03	.04	.20	.28	.13	.22

Notes: N=355. Physical barrier condition: enclosed workspace condition coded as “1” and open workspace coded as “2”. For authentic climate condition: low authentic climate condition coded as “1” and high authentic climate condition coded as “2”.

Table 3 Descriptive Statistics and Correlations among Study 2 Variables

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1) Fewer physical barriers	2.24	1.53	-									
2) Authentic climate	3.77	.44	.12	(.90)								
3) Experienced isolation	2.19	.74	-.27**	-.24**	(.92)							
4) Knowledge sharing	3.89	.67	.25**	.09	-.40**	(.75)						
5) Voice	3.74	.77	.04	.26**	-.19**	.02	(.95)					
6) Visibility	3.52	.92	.22**	.06	-.11	.15*	-.07	(.90)				
7) Hearing	3.86	.77	.12	-.05	-.19**	.18*	-.04	.30**	(.73)			
8) Accessibility	3.95	.86	.27**	-.09	-.09	.09	-.13	.42**	.35**	(.80)		
9) Perceived privacy	3.38	.56	.08	.22**	-.21**	.28**	.02	.21**	.13	.00	(.85)	
10) Experienced disruption	2.91	.73	.00	-.10	.29**	-.14*	.03	.11	.04	.10	.03	(.89)

Notes:  $N(\text{level } 1) = 206$ ;  $N(\text{level } 2) = 53$ . Standardized internal consistency reliability estimates (alphas) appear in parentheses along the diagonal. \*\* $p < .01$ ; \* $p < .05$ .

*Table 4 Unstandardized Results of Regression on Knowledge Sharing and Voice Behavior in Study 2*

	Experienced isolation		Knowledge sharing behavior			Voice behavior		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Intercept	2.56**(.36)	2.96**(.30)	3.07**(.32)	3.45**(.50)	3.32**(.48)	4.38**(.36)	5.00**(.48)	4.92**(.47)
<i>Control Variables</i>								
Visibility	-.03 (.07)	-.02 (.06)	.06 (.05)	.02 (.05)	.03 (.04)	-.04 (.06)	-.03 (.07)	-.05 (.06)
Hearing	-.19**(.07)	-.20**(.07)	.21**(.06)	.14*(.07)	.13*(.06)	-.05 (.09)	-.11 (.09)	-.09 (.09)
Accessibility	.04 (.06)	.01(.05)	-.04 (.05)	-.01 (.06)	-.02 (.06)	-.08 (.07)	-.11 (.07)	-.08 (.07)
<i>Independent Variables</i>								
Fewer physical barriers	-.13**(.03)	-.12**(.03)	.10**(.03)	.06*(.03)	.07*(.03)	.02 (.06)	.01 (.07)	-.01 (.06)
Authentic climate		-.40**(.12)	.12 (.13)		-.05 (.11)	.40* (.20)		.35 <sup>+</sup> (.21)
Experienced isolation				-.26**(.06)	-.26**(.06)		-.26**(.07)	-.23**(.07)
Perceived privacy				.24**(.08)	.24**(.09)		-.02 (.09)	-.07 (.10)
Experienced disruption				-.07 (.06)	-.06 (.06)		.13 <sup>+</sup> (.07)	.13 <sup>+</sup> (.07)
<i>Interaction term</i>								
Fewer physical barriers*								
Authentic climate		<b>-.11*(.05)</b>	<b>.14*(.05)</b>		<b>.09<sup>+</sup>(.05)</b>	<b>.17 (.12)</b>		<b>-.18 (.12)</b>
<i>R</i> <sup>2</sup>	.09	.15	.11	.23	.24	.10	.07	.14
<i>N (level 1)</i>	208	206	206	206	206	198	206	198

Notes: *N(level 1)* =206; *N(level 2)* =53. Unstandardized coefficients are reported. In the parenthesis is the standard error.

\*\*p<.01; \*p<.05; <sup>+</sup>p<.10. Data was analyzed with CR-SE in MPLus.

*Table 5 Summary of the Moderated Mediation Effects in Study 2*

Model	Moderator level (Authentic climate)	95% CI
Fewer physical barrier → Experienced isolation → Knowledge sharing	-1SD	.02, 95% CI=[.00, .04]
	+1SD	.04, 95% CI=[.02, .07]
	Difference	.02, 95% CI=[.00, .05]
	-1SD	.02, 95% CI=[.00, .04])
Fewer physical barrier → Experienced isolation → Voice	+1SD	.04, 95% CI=[.02, .06]
	Difference	.02, 95% CI=[.01, .04]

Figure 1 Conceptual Model

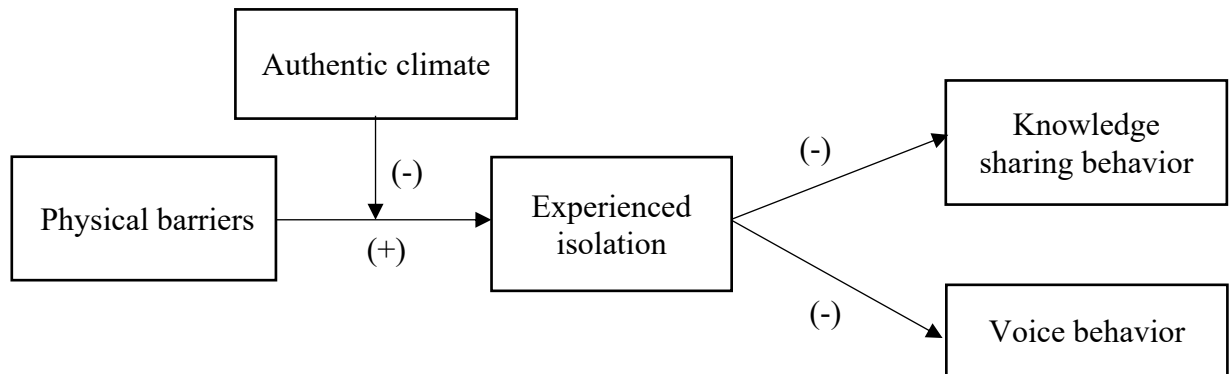


Figure 2a. Simple Slopes of Interaction of Authentic Climate on the Physical Barriers—Knowledge Sharing Value Relationship in Study 1

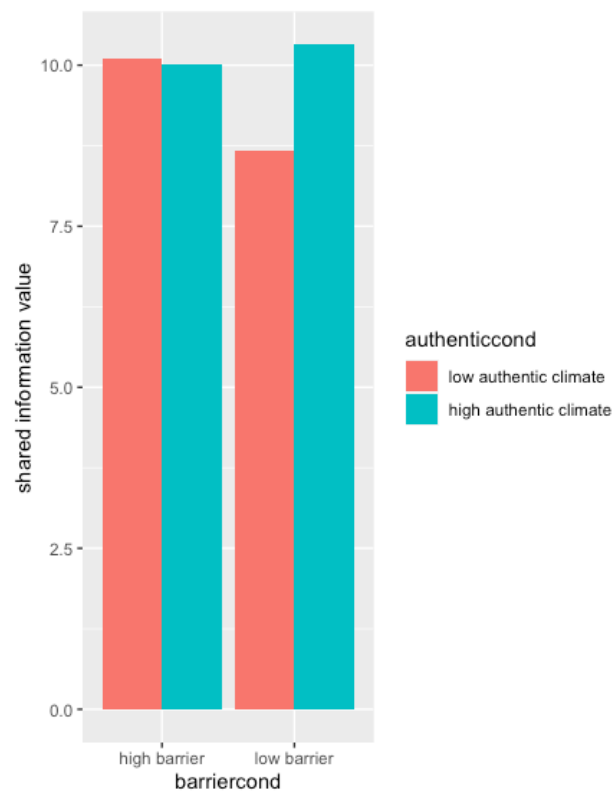




Figure 2b. Simple Slopes of Interaction of Authentic Climate on the Physical Barriers—Sharing Most Valuable Knowledge Relationship in Study 1

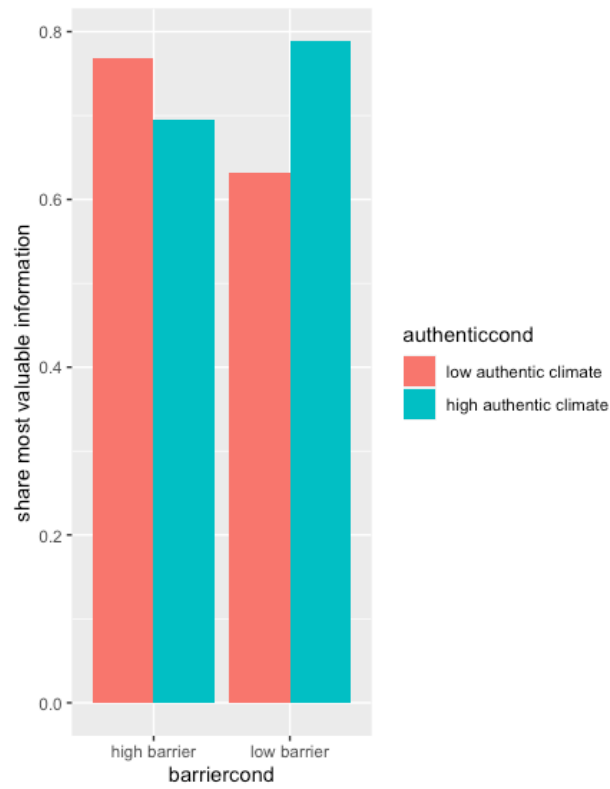
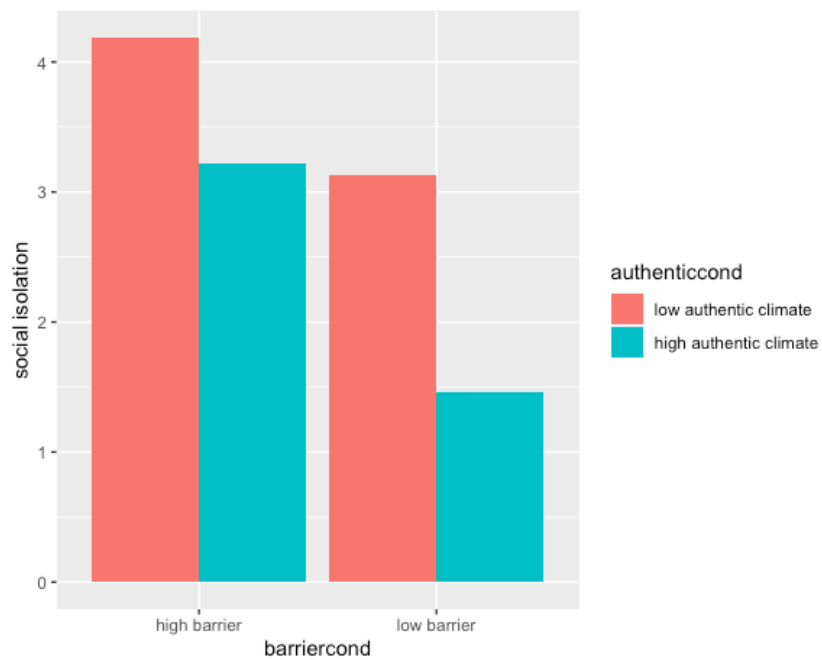
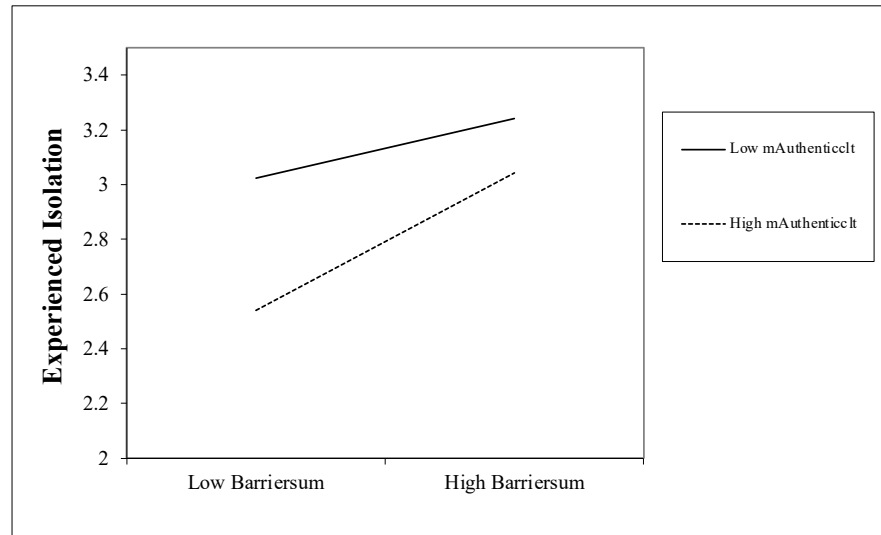


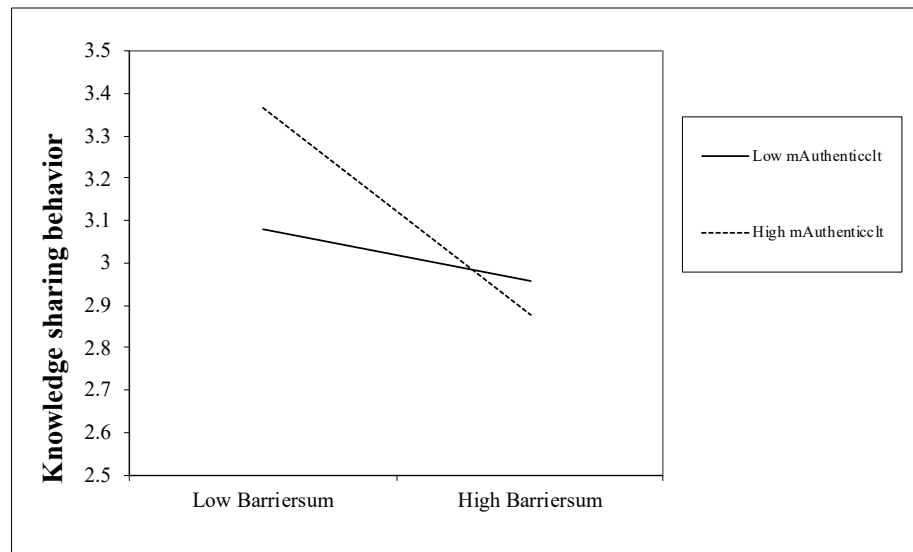
Figure 3. Simple Slopes of Interaction of Authentic Climate on the Physical Barriers—Social Isolation Link in Study 1



*Figure 4.* Simple Slopes of Interaction of Authentic Climate on the Physical Barriers—Experienced Isolation Link in Study 2



*Figure 5.* Simple Slopes of Interaction of Authentic Climate on the Physical Barriers—Knowledge Sharing Behavior Link in Study 2



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