Designing for the Healthy Office:
How Students Define and Envision Healthy Workplaces
Focus Group Research – Initial Data Analysis

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Introduction to Drivers of Need Satisfaction

The Interdisciplinary Center for Healthy Workplaces (ICHW) at the University of California, Berkeley, created a model of worker well-being that identifies essential physical and psychological states underpinning employee engagement and health (Fig. 1). Critical to this model are perceived conditions in built workplace settings that facilitate these positive emotions: privacy, flexibility, predictability, equity, comfort, connection, and safety (Fig. 2). Our hypothesis is that these drivers of need satisfaction are both present in and impacted by the built environment; therefore, designing these elements into a range of workspaces can help foster positive physical and psychological states in employees, a practice known as evidence-based design (Hamilton & Watkins, 2009).

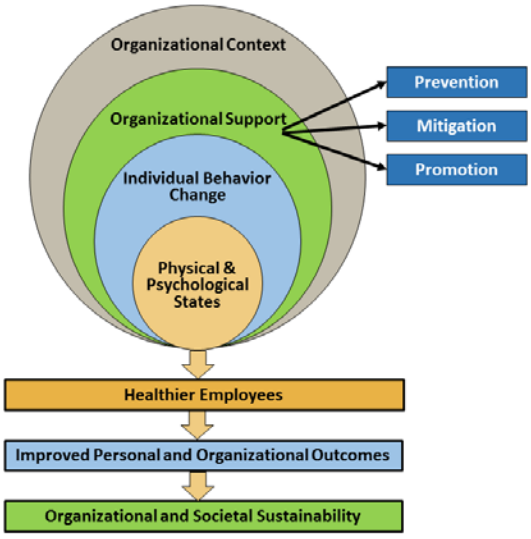


Figure 1. The HealthyWorkplaces model of worker health and well-being

How might we test this assertion? One approach might be to engage in a series of post-occupancy evaluations (Zimring, 2001) which evaluate the performance of workplaces (and other building types) once built and occupied. In this way, post-occupancy evaluations (POEs) could offer valuable insights into how people use office environments and—importantly, perceive and experience the seven drivers in their workplace. Though POEs give voice to a range of users (Zeisel, 1975), contribute to organizational learning (Zimring, 2001), and thus are valuable to informing building programming, the insights they reveal about successful features of building design are necessarily limited to existing environments and design solutions. In contrast, our research, detailed below, begins with a blank sheet of paper and thus fosters creative solutions that transcend the limits of what is currently built and designed.

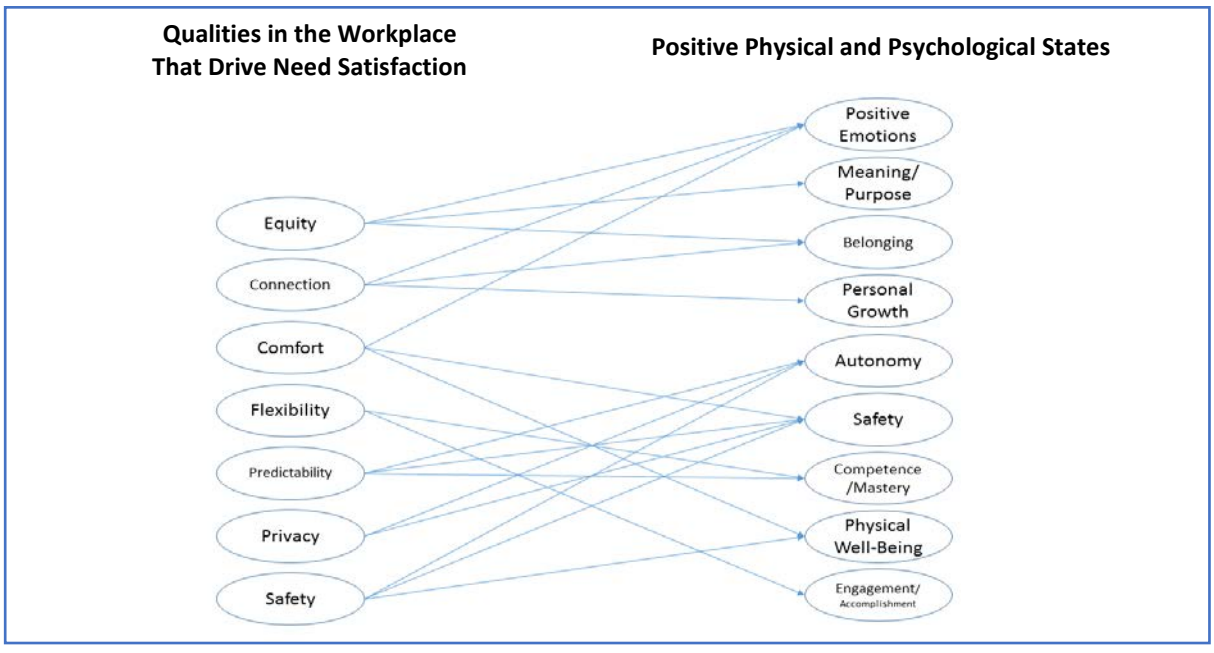


Figure 2. Psychological states and drivers of need satisfaction from the HealthyWorkplaces model of worker well-being. Each quality (left) drive the satisfaction of several basic needs (right).

Focus Group Methodology

In Fall 2016 we led two focus groups on the UC Berkeley campus, each comprised of upper-division undergraduate students (n=14 and n=23, respectively), to (a) articulate a range of possible definitions of the aforementioned drivers of need satisfaction and (b) ideate a range of possible built manifestations of these drivers. This research, then, is both evaluative, in that it helps us understand individual and contextual variation in how drivers are defined and experienced; and programmatic, in that it illuminates new ideas for how to translate these drivers into built form. At each focus group, we divided the participants into seven smaller teams of two to four students and assigned each team just one of the drivers to focus on. Each team was joined by a note-taker, who served as both a facilitator and designated artist to help teams translate their ideas into visual form. The focus group program consisted of a series of individual and group-level activities, and teams were encouraged to use both written and visual media to convey their ideas.

Defining Drivers

We began each session by asking participants to think, individually, about what their assigned driver (e.g., comfort, connection, etc.) means to them and record the definitions and associations that came to mind—using words and/or images—on a piece of paper. The teams then discussed and recorded their collective ideas on their team's butcher paper (Fig. 3).

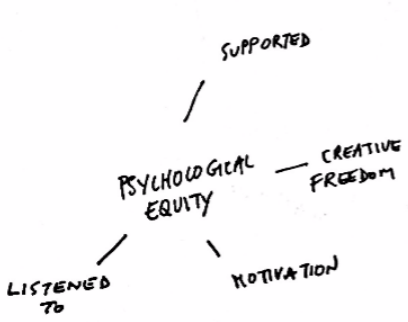


Figure 3. Sample notes (definitions)

Identifying Built Correlates

From there, we asked each person to think, individually, about how they would translate their ideas about and definitions of the driver into built form; in other words, we asked participants to imagine what an *equitable* workplace might look like. To facilitate this process, we encouraged participants to imagine an empty box (Fig. 4; Appendix) that they would modify to realize their ideas. Next, teams shared and discussed their ideas and then worked together to come up with (and draw) an ideal workplace based on everything they talked about for their driver.

At the end of the session, we asked each team to present their ideas to the larger group so that we could see divergences and intersections between the different drivers and their built correlates; this proved to be an essential and informative finale to each session.

We believe this methodology represents both a novel and valuable approach. First, the idea of the empty box affords participants the freedom to identify and create built environment solutions that are not constrained by a direct evaluation of or reaction to existing environments. (Of course, an experiential element factors into participants' ideas and definitions, but we believe such experiences serve as a source of inspiration, rather than limiting force). Additionally, by assigning each team to a

single driver, we allow each person to think deeply about one topic—e.g., privacy or safety—and in so doing allow sufficient space for more creative solutions to emerge (e.g., how to design for privacy beyond building a private office).

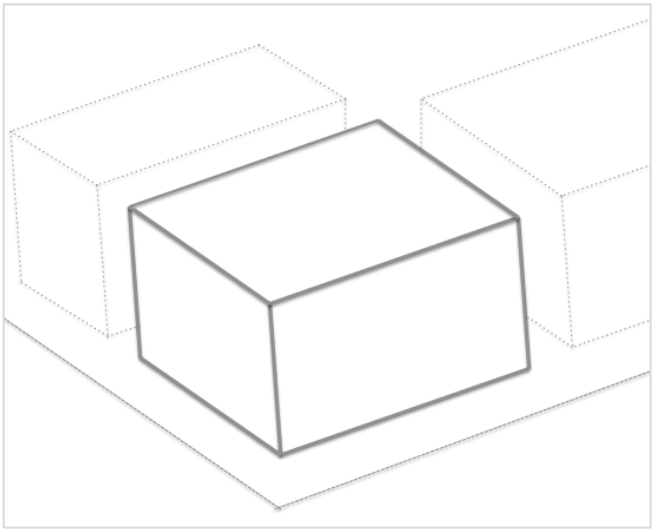


Figure 4. Focus group activity prompt: the "empty Box"

Preliminary Findings

We plan to conduct more focus groups in the coming months; still, preliminary findings from these first two focus groups confirm the value of this approach. Here, we offer an initial analysis of focus group data through two lenses.

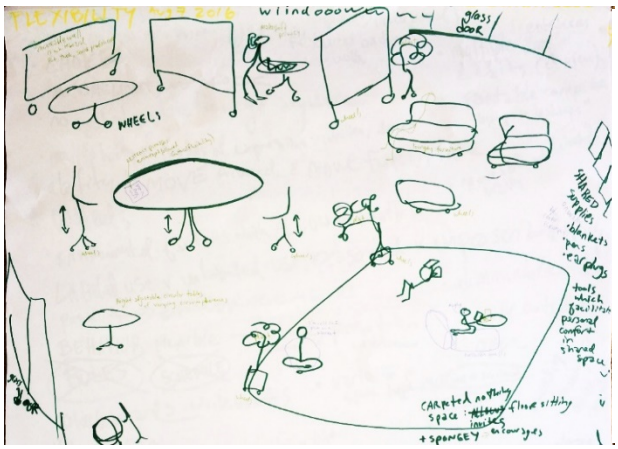
Lens #1: All Associations with a Single Element

One way we might look at the data obtained through these focus groups is to identify elements or themes that came up across multiple drivers in order to understand the myriad ways each element contributes to individual need satisfaction. So far we have identified seven elements that relate to more than one driver: nature, posture, user-engaged design, shapes, colors, break rooms, and balancing open and closed spaces. Below is an overview of how each theme relates to a number of drivers, suggestions for how to realize these ideas in built office settings, and a brief reflection on how these insights extend what we know from the literature.

- **Nature:** We know that physical and visual access to nature is associated with attention restoration (Kaplan, 1995), stress reduction (Ulrich, 1984; Lindheim & Syme, 1983), improved health outcomes (Ulrich, 1984), improved learning outcomes (Erwin et al., 2013), and physical activity (Bell & Dyment, 2008). Even artificial views of nature—for example paintings or photographs—can have a calming effect (Cooper Marcus & Sachs, 2013). Further, visual access to nature implies the presence of windows and natural light, both of which can reduce exposure to the deleterious impacts of artificial light (Lindheim & Syme, 1983). Yet our research suggests that designing for access to green spaces can have a range of additional benefits. First, providing spaces for work and breaks indoors and out can foster a sense of both physical and psychological **comfort** and facilitate **connection** to nature and to other people. Second, in addition to offering views of and physical access to nature, windows and doors can facilitate **flexible** workspaces by providing "unrestricted spaces," allowing people to tell the time based not on rigid schedules or clocks, but by the position of the sun, and inviting different ways to interact with the building, such as entering and exiting from different doors. Third, plants and/or trees planted around the perimeter of a building can promote physical **safety** (in addition to plants affording "mental safety," in the words of one team). Finally, access to plants—both indoors and out—might also convey a sense of **equity** (or not) depending on the extent to which access is equally distributed across office hierarchies. (Fig. 5 and Fig. 6)
- **Posture and postural variation:** Prolonged sitting is associated with a host of deleterious health outcomes (Saunders, 2011); in contrast, postural variation reduces back pain and eye strain (Gardner & Kelly, 2005; Mandal, 1997; Opsvik, 2008); frequent breaks reduce the negative effects of sedentary behavior (Hamilton et al., 2008); and physical movement can foster cognition and creativity (Jensen, 2005). In addition, our research suggests that designing for postural variation—in other words, providing opportunities for people to work in a range of

postures including and beyond the seated posture—is deeply entwined with how participants think about comfort and flexibility. Regarding physical **comfort**, participants identified the importance of adjustable desks, "a good fitting chair"—perhaps one that an individual can pick out on her own, rather than be assigned—and breaks (both in time and space) to stretch. Postural variation, identified as one element of **flexibility** ("flexible space = flexible body"), can be achieved, according to participants, by offering adjustable furniture, carpeted spaces (which are more inviting for postures like sitting and laying than hard floors), and outdoor spaces (e.g., trees for people to sit under, paths to walk along). (Fig. 5 and Fig. 7)

- **User-engaged design:** We use this term to refer to a variety of practices pertaining both to the engagement of users in the design process and the ability of users to design or otherwise modify their workspace. This is a robust theme in person-environment studies, and one associated with a host of beneficial outcomes. For example, involving users in the design of their own space (e.g., home, workplace) promotes health (Lindheim & Syme, 1983; Neuhauser et al., 2013), engagement, and a sense of control. Control, in turn, is related to higher job satisfaction and productivity (Lee & Brand, 2005); control over personal space and privacy are also important to that end (Sommer, 1969). Additionally, giving people the ability to move furniture affords what William Whyte (1980) terms "social comfort," and leads to more vibrant and successful public spaces. Why is engaging users so critical to achieving effective design solutions? Quite simply, it helps to overcome the gap between a designer's perception of user needs and the actual needs of users (c.f. Cooper, 1975). The need to invite users into the design process was a theme that came up frequently in our focus groups. For example, one team defined a **comfortable** workplace as one in which a person would "be able to design the room"—for example, by being given $200 to buy his work chair—and another team suggested that giving all employees a space—such as a communal "poster wall"—to contribute personal art would help foster an **equitable** workplace because it would ensure that everyone would have equal opportunity to contribute to—and see themselves in—the shared space. Additionally, designing for choice and movability (two aspects of **flexibility**) assume user involvement in the continual (re)creation of space; to that end, one team articulated the importance of designing for "lots of variation" and providing ample—and diverse—tools to support it.
- **Colors and shapes:** Though some studies have shown that color can foster creativity, aid wayfinding (c.f. Rem Koolhaas' Seattle Public Library), encourage activity (warmer colors) or aid relaxation (cooler colors) (Applebaum et al., 2010), in general the literature on how color affects



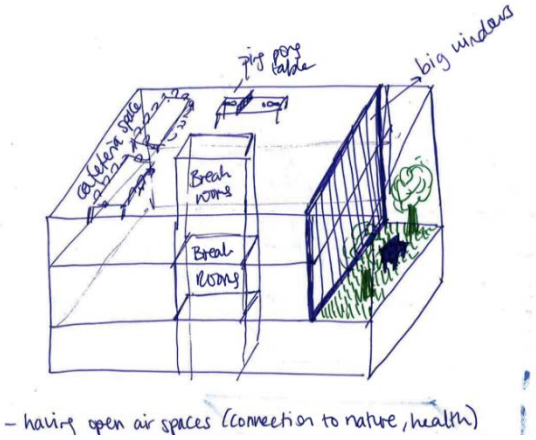


Figure 5 (left): the trees are on wheels (access to nature) and carpeting invites postural variation.
Figure 6 (right): access to nature through building design

people is anything but straightforward or easy to follow (Veitch, 2012). Perhaps this is one reason that so many public and/or shared spaces are devoid of color: classrooms, offices, and public buildings are almost uniformly characterized by white walls. Yet our research suggests that injecting color into workplace settings could promote **connection** (warm colors, according to participants "promote emotion" and provide a sense of "comfort to collaborate"), **predictability** (colors can be used to aid familiarity with a space), and **safety** (in terms of mental safety, participants emphasized the role of "pleasant colors to make me calm" and "color for calmly and deeply thinking"). (Fig. 8) In addition to rethinking the norm of white walls, our research demonstrates the value of thinking beyond the customary orthogonal office. For example, one team's idea of a comfortable office was one that was shaped like a trapezoid; another team drew a circular building with a central courtyard rooftop garden, and glass walls to convey a sense of **comfort**. Such "round, rather than linear" designs foster a sense of **equity**, too. Further, hexagonal workspaces could foster **connection** by facilitating collaboration. These ideas underscore Galen Cranz's (2010) observation that buildings operate at symbolic and behavioral levels. (Fig. 9 and Fig. 10)

- **Break room:** Almost every team expressed the need for break rooms; however, the purported function of these spaces meant different things according to the driver being discussed. Regarding **comfort**, participants noted that break rooms can provide a sense of physical comfort by providing amenities for stretching, supporting scheduled break time, and being stocked with food and drinks. Teams discussing **connection** reminded us that "coffee break rooms encourage people to talk" and suggested a number of spaces for social connection including a "game/social room," a "hang-out spot/eating area," and a couch or "sofa to relax." As for **flexibility**, a "flexible body" (see "postural variation," above) could be encouraged by the presence of a place for people to "walk around" and "take breaks." Finally, regarding **privacy**, participants suggested that break rooms can provide a sense of refuge: "if it's a collaborative space, [people] need a private room that they can be alone fully." What is striking about these various definitions is that they show the conflicting demands we make upon spaces as seemingly simple as a break room: for some, it's a space of refuge; for others, a space for connection. Also, the idea of bodily flexibility serves as an important reminder that break rooms—often filled with tables and chairs—might be a prime area in which to include furniture to encourage postural variation. These findings elaborate what we know about how to design spaces for both refuge

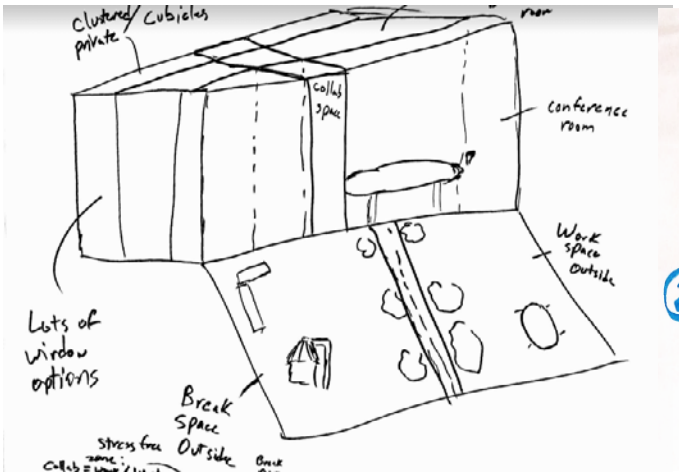


Figure 7 (left): spaces for work and rest inside and out. Figure 8 (right): colors and "mental safety"

and social connection. A sense of refuge is restorative and calming because it offers physical and/or mental escape from ones work (c.f. Heerwagen & Hase, 2001); gardens and outdoor spaces are particularly instrumental to that end if designed with a sense of refuge in mind (Marcus & Sachs, 2013). Indeed, prospect and refuge theory demonstrates the value of designing in a way that promotes both an ability to view ones surroundings (prospect) and a feeling of safe enclosure (refuge). Additionally, to make a space more social requires careful planning about the provision and layout of semi-fixed furniture: a sociopetal arrangement encourages sociability, whereas a sociofugal arrangement preferences its opposite (Sommer, 1969). Finally, William Whyte reminds us that the most successful public spaces are those with ample places to sit (Whyte, 1980).

Lens #2: All Associations with a Single Driver

Another way to analyze these data is to identify all of the associations with a given driver (outcome); for example, we might look at all of the ways in which privacy came up in participants' definitions or drawings. The value of this analysis is that it offers a range of associations that complement the literature on each driver. Case in point: **privacy**.

The literature on privacy tells us that control is an important factor: Sundstrom (1986, in Spain, 1992) defined privacy as "the ability to control access to one's self of group." Yet architect Francis Duffy (1984) reminds us that spatial and technical resources that afford visual and acoustic privacy are distributed unevenly across organizational hierarchies. Privacy is most often defined and exercised in spatial terms as walls, partitions or other barriers, space, and opacity.

Our research extends the aforementioned definitions and spatial correlates of privacy. First, the way in which participants defined privacy conveys a more nuanced view of this term. Privacy, for our participants, consisted of digital, personal, and spatial privacy. More specifically, privacy was defined in a number of ways: "your space is respected," "you can have moments where you deal with your private life," the ability to claim or personalize space with familiar items ("private in this sense almost indicates private property, making the space my own"), and "no looking over shoulders…or sneaking up." To achieve these many dimensions of privacy, the teams identified ways to afford privacy through both spatial elements—e.g., mechanisms of spatial enclosure and orientation—and behavioral elements—e.g., allowing people to mediate between public/shared and private/individual settings and resources. Interestingly, each group assigned to privacy brought up the need to balance privacy and collaboration; as one group stated, privacy is about "having spaces for both collaboration and privacy," while another cautioned that "if it is a collaborative space, [people] need a private room that they can be alone fully [*sic*]."

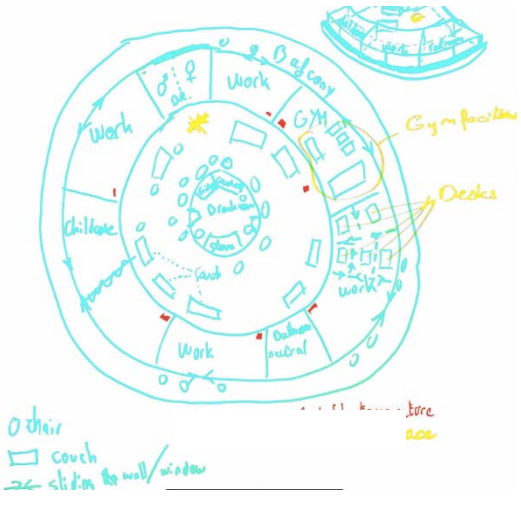
Second, what is clear from the focus group data is that privacy is associated with every other driver of need satisfaction: the need for privacy was expressed by every group, even those not assigned that driver. This is an important reminder that privacy is a basic—and therefore essential—element that drives personal need satisfaction and that organizations and architects ignore this essential element at their own peril. Below is a list of how various teams articulated the need for privacy in the context of the 6 other drivers of workplace satisfaction:

- **Comfort**: one element of comfort, according to our research, is the need for "a place for real private work" as well as places for communal work and/or social connections. To achieve this need, teams suggested designing both open and closed spaces into workplace settings, as well as using materials (like opaque glass) that afford both connection and privacy.

- **Connection**: one type of connection identified by our focus group participants was between management and employees; importantly, to facilitate such connections requires the "merging" of public and private spaces in office settings.
- **Equity**: teams working on the topic of equity echoed this theme of the need to balance collective and individual (or, said another way, public and private) spaces. One means to achieve equity, the teams suggested, is to break barriers between people by building for transparency (e.g., the use of glass, no or low partitions between desks). Yet, the teams were careful to add that this transparency needs to be tempered with opportunities for privacy—in other words, to ensure "privacy, but not too private"—for example, to allow for "visual privacy while working but turn around for easy collaboration."
- **Flexibility**: one element of flexibility was the idea of "makeshift privacy," wherein common themes of movability, choice, and variation are all easily mobilized in the built environment to allow workers the ability to create settings and/or circumstances that afford requisite amounts of privacy (ostensibly according to different tasks, personal preferences, etc.)
- **Predictability**: two facets identified as essential to a predictable workplace were autonomy and privacy, and examples of design ideas that join the two include the ability to personalize spaces with personal items, environments that promote auditory privacy (e.g., with carpeting), and access to "ample space for private conversation."
- **Safety**: privacy was identified as part of one dimension of safety—mental safety—and might be achieved via a two-way mirror or a central lounge space bordered by private offices and enclosed workspaces.

Though the above suggestions for workplace design may not deviate radically from conventional wisdom or building practices, they do offer a novel insight: the way in which privacy is inextricably linked to six other drivers of need satisfaction, making it both a complex concept and an essential element to design toward.

Our research also exposed a number of issues regarding privacy. First, by noting that "open offices = less privacy," participants echoed and confirmed a central concern: that the increasingly trendy open offices do little to address the profound and multifaceted needs for privacy described above. Second, despite the need for (spatial) closure assumed in the definitions above, both teams discussing privacy



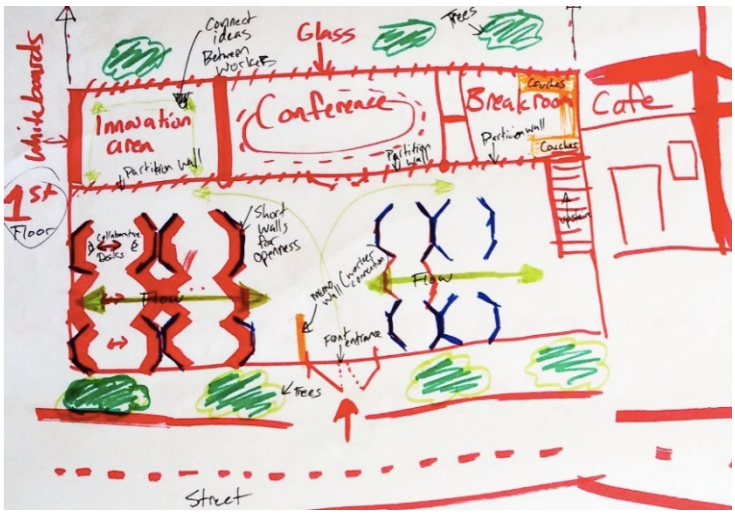


Figure 9 (left): circular building. Figure 10 (right): hexagonal desks.

articulated a desire for views and transparency—e.g., windows surrounding offices on all sides. This begs a question and a design imperative: how to deal with (integrate) contradicting ideas like "open" and "closed"? Finally, one team brought up the question of a "default" setting: for example, is it better to design an office setting to "default" at privacy—with optional spaces and opportunities for group work and interactions—or at collaboration—with optional spaces and opportunities for refuge and privacy? The answer, of course, depends on context—but the question alone is an important one to ask.

Discussion

These findings are significant—and, as we conduct more focus groups will offer even more diverse ideas regarding how to design for need satisfaction—because they suggest a greater range of design options to achieve specific outcomes. Our hope is to be able to use this data to inform the creation of an inventory of design ideas for each driver. Doing so would enable us to advise organizations on questions such as how to design for privacy, for example, even if not every employee could have a private office. Additionally, these data demonstrate a range of pathways to need satisfaction. As mentioned above, we see these data as both confirming and extending what we currently know from the literature about each of the seven drivers. In many cases, we demonstrate additional associations people make with certain ideas that are not fully accounted for in the literature. For example, we found that designing for visual and physical access to nature is essential not only for stress reduction and attention restoration, but also for equity, comfort, and connection. In this way, we make an even stronger case for the benefits of designing with these drivers in mind.

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Appendix

Focus Group Activity Prompts

<u>Individual</u> Written Prompt #1:

"Think about what <u>connection</u> means to you. What would make a space feel more <u>connected</u>?" Using words and images, take 5-7 minutes to record your ideas on this piece of paper.

Prompt #2:

Now that you've had a chance to hear from everyone in your group, we invite you to reflect on the gray box we showed you at the beginning of the focus group session.

Imagine that this gray box will become an office workplace. Tell us how it should be changed to become a healthy workspace that promotes your assigned driver (e.g., <u>connection</u>). Your proposals can be for any scale of design (desk, entryway, wall colors, shared spaces, inside, outside, etc.)