PLANNING FOR Higher Education

RESEARCH ARTICLE

Walking for Wellness

"Feeling Maps" Can Help Planners to Create Campus Routes that Improve Student Well-Being

by David Spooner, ASLA, PLA

Planners at the University of Georgia used "feeling maps" to help identify and create healthier connections for faculty, students, and staff traversing between campus destinations.

The Health Benefits of a Walkable Campus

Creating a walkable campus is a popular design goal for students, staff, and university administration. Four main conditions recommended in *The General Theory of Walkability* (Speck 2012) must be met to achieve this goal. Those best walking routes are useful, safe, comfortable, and interesting. Research indicates that walking can be therapeutic and alleviate anxiety and psychological stress (Kelly et al. 2018).

People inherently know when a walking route feels good or bad, based on their experience of moving through the built environment (Stilgoe 1998). Some walkways produce better feelings than others,

3 TAKEAWAYS . . .

. . . to Improve Physical and Mental Health on Campus

1. **Query those who walk on campus to determine their perspective** of the best and worst walking routes on college grounds.
2. **Use feeling maps to identify objects and features of the built environment to improve our mood while walking.**
3. **Develop new design and planning strategies** to improve the campus walking experience.

which affects emotional well-being and everyday happiness. Urban designers argue that we cannot fully understand a city's health benefits without considering how we feel as we walk through it (Montgomery 2013). This same argument can and should be applied to university campuses.

The average college student spends nearly two hours walking approximately 11,000 steps—or almost five miles—daily (Behrens 2005). Extending this calculation to a week means students spend 10 hours walking 25 miles. This surpasses the Physical Activity Guidelines for Americans recommendations, which illustrates how walking to class can have a positive impact on mental health when the experience of walking "feels good."

Feeling Maps and the Link between Human Emotion and the Quality of the Built Environment

Designers have some understanding of what makes one walking route feel better than another. For example, when we walk through places containing rich visual textures, light, and shadow, we become visually engaged with the built environment and feel invigorated to be part of it (Gehl 2010). Walkways containing spatial definition and a heightened sense of enclosure are preferred because people enjoy walking through close-fitting spaces (Speck 2012). While studies such as these investigate how visual and spatial qualities impact perception, fewer studies directly link our perceptions to our emotions and feelings about the places we visit daily. One exception to this is found in the work of Christopher Alexander (1979, 2003), whose research links human emotion to the quality of the built environment.

Alexander's research demonstrated that the way people feel in the built environment is essentially a shared experience by those who visit the space. He argues that our feelings associated with a place reflect its spatial and functional order and can be mapped to a broader audience. The easiest way to observe this connection is to track people's movements and simultaneously ask how they feel. Their responses connect specific feelings to specific places, and this process is standardized in an assessment tool called a "Feeling Map" (Weinreb and Rofe 2013).

The research shared in this article aims to track students' emotional reactions to their daily walking routes and discover patterns and similarities in feelings that students have for the places they walk on campus. The primary goal of this research was to emphasize the mental health benefits of walking on campus by showing correlations between specific walking routes and positive feelings. The secondary goals were to demonstrate a new methodology for identifying emotional reactions to campus walking routes and to illustrate how our combined feelings can be used to inform future campus planning efforts. Specifically, this research investigated the following questions:

- Do students react emotionally to walking routes, and can those feelings be mapped?
- What correlations exist between walking routes and positive emotions?
- What objects or features (along the walking route) did students attribute to their positive experiences?
- How can this information inform future campus planning decisions regarding the location and configuration of proposed campus walking routes?

For many students, simply being part of the crowd while walking on campus felt good and heightened their sense of purpose and belonging.

Study Description

There were three intended uses for this study. The first was to inform people about the potential mental health benefits of walking on campus by showing that a correlation exists between walking and (positive) feelings. The second was to provide designers with a methodology for conducting similar studies at other institutions. The third was to use the results as a precedent for designing walking paths on other campuses. This study utilized six years of data collected from 90 University of Georgia (UGA) students. All participants were enrolled in a one-credit-hour seminar that focused on the concept of a sense of place in the built environment. During the 2015 through 2020 fall semesters, seminar students completed a project that required them to map their daily walking routes and answer questions about their walking experience. Each student was provided a detailed campus map and asked to mark their daily starting and ending points. A continuous line drawn between the two points represented their daily route and identified any stops they made along the way.

Each student was given assignment instructions that mirrored the methodology of a study produced by Weinreb and Rofe (2013). Students were asked to remain aware of their feelings for the duration of the route, identify any movement sequences where they felt a positive reaction and describe that feeling, identify at what point their feelings changed, and be prepared to rate the change on a four-point Likert scale (1 = feeling very bad, 2 = feeling bad, 3 = feeling good, and 4 = feeling very good). Students were told that the neutral value was intentionally left out to encourage them to decide between a positive or negative change in feeling.

Once the maps were completed, students were asked to reflect on the quality of their walking routes and highlight all sequences that elicited positive feelings. Using their favorite walkway sequence, they took between 12 and 24 eye-level photographs. Those images became a digital flip-book that roughly captured the route's kinesthetic motion and experiential quality when each image was viewed in rapid succession. (In the future, designers will use the flip-books as precedent examples as they plan walking paths on campuses outside of UGA.) To conclude the assignment, students explained why their chosen sequences had elicited positive feelings. They were asked to identify and describe any physical features they had encountered along their route that enhanced their walking experience.

Results

Each of the 90 students completed their feeling map and identified at least one walking sequence that qualified as eliciting a positive feeling. When reviewing the maps as a complete collection, no two walking routes were the same. However,

approximately one-third of the students identified two identical walking sequences as being emotionally positive. The sequences were an entrance walk to West Campus adjacent to the Miller Learning Center (n=31) and a walkway adjacent to Herty Field (n=27).

The written responses submitted by students were analyzed for content in two different ways. The first was to identify subject matter correlations between emotions and the walking route. The second was to identify specific objects or features that contributed to a positive walking experience. Subject matter correlations were created when keywords or phrases were repeated by a minimum of 18 students (≥20%). The top four correlation categories were proximity to nature, connection to the campus community, temporal, and destination. The number and percent of responses for each category, brief definitions, and descriptive quotes from student replies are listed in Figure 1.

Figure 1 **Subject Matter Correlations Between Emotions and Walking Routes**

Proximity to Nature (n=39, 43.3%) Student responses that referred to seeing or being near nature while they walked on campus.	"Seeing all the trees gives me a sense of peace and tranquility." "The leaf canopy makes this part of the walk feel like I am hiking in North Georgia." "When I walk on this path, I sometimes forget I am on campus and think about being out in nature on a hike somewhere else."
Connection to Campus Community (n=26, 28.9%) Student responses that suggest a connection to the university, campus, or campus community.	"Being mixed in with everyone along this part of the walk makes me feel connected to UGA." "Seeing all the buildings with columns makes this part feel like the 'quintessential college walk' on campus." "The campus entrance walkway next to the MLC [Miller Learning Center] makes me feel like I am part of a larger learning community." "I don't know why, but every time I walk this way it makes me feel proud to be part of UGA."
Temporal (n=20, 22.2%) Student responses that referred to some aspect of time or the timing of the campus walk.	"Whenever I walk this way, it makes me feel good because it marks the end of my day." "Whenever I finish an exam, I like to walk to Herty Field to decompress before I go to my next class." "I walk by this space every M-W-F and it marks that I am almost done for the day."
Destination (n=18, 20%) Student responses that referred to the final destination of the walk.	"I love this part of the walk because it takes me to my favorite class." "This part of my walk reminds me that I am almost home." "I like walking this way because every Friday I use this path to meet my friends for lunch at the dining hall."

Specific objects or features mentioned by a minimum of 18 students (≥20%) as contributing factors to positive feelings were trees, the presence of other people, path configuration, and views of open space. The number and percent responses for each category and representative quotes from student replies are listed in Figure 2.

Figure 2 **Objects and Features Contributing to Positive Feelings**

Trees (n=43, 47.8%)	"I love walking under the tree canopy. It's like a tunnel to another world." "I like how the vegetation encloses the walkway and makes you feel like you are walking in nature." "Seeing the cluster of birch trees is the best part of my walk." "The way the trees are arranged in a grid makes me feel like I am in a comfortable living room."
Presence of Other People (n=36, 40.0%)	"Every time I walk here, so does everyone else. It makes me feel like I am part of UGA." "Seeing people is my favorite thing about this walk." "This place [Herty Field] is always crowded with people and it's fun to walk by to see everyone." "It's funny timing, but at this intersection I usually bump into a friend."
Path Configuration (n=21, 23.3%)	"I like it when you reach this point after climbing up the long set of stairs. The view is amazing!" "Crossing the bridge is the best part. It marks a transition point where I know I am getting close to my next stop." "The curved walk makes me wonder what's coming next." "The intersection gets congested, but to me it marks that I am almost home."
Views of Open Space (n=18, 20.0%)	"I enjoy being able to see across the green grass to the buildings in the background." "The way the space opens up and allows you to see all the people is what I like most about this walk." "I like how the view opens at the top of the stairs. You can see the stadium and south campus from here."

Discussion

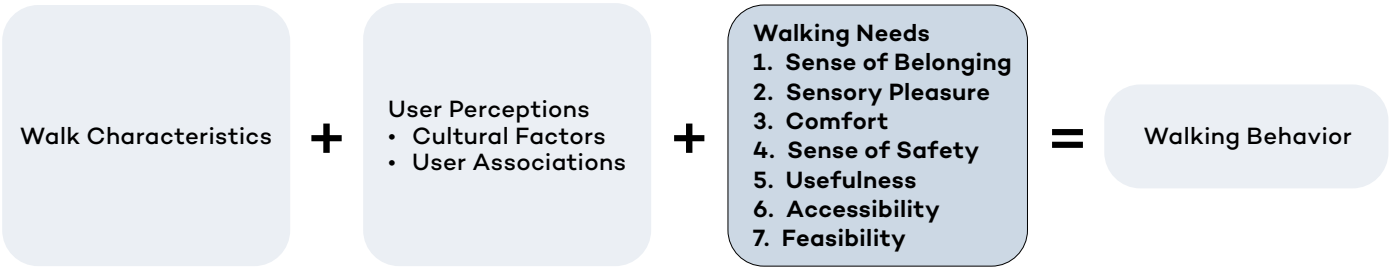
All 90 participants successfully identified and mapped at least one walking sequence where they felt their happiness was due to one or more factors along a walking route. To explain the results, Mehta's (2008) Walking Needs Diagram (see Figure 3) was used as the foundational theory. His diagram identified seven components contributing to healthy walking behavior and a pleasurable walking experience.

Five of Mehta's seven components are associated with the functional qualities of the walkway, such as its comfort, safety, usefulness, accessibility, and feasibility. His remaining two walking path needs focus on sensory reactions. Sensory pleasure and a sense of belonging are tied to human emotions, and both were found to be relevant in this study. Sensory pleasure depends on the number and type of stimuli perceived within the environment. A sense of belonging is a person's ability to connect to a group of people and feel a sense of attachment to it (Mehta 2008). Each of the walking sequences on the UGA campus that students associated with a positive feeling can be said to satisfy a need for belonging, offer an enhanced sensory experience, or both.

A Sense of Belonging

Sociologists have emphasized that shared experiences with other people, places, and events play a role in developing a sense of belonging (Hester 1984). Specific to college campuses, there is evidence that shared rituals and practices reflecting the institution's heritage are also contributing belonging factors (Schlossberg 1989). In this study, 26 of 90 students, or 28.9 percent, associated having a connection to the campus community with positive feelings (see Figure 1). For many students, simply being part of the crowd while walking on campus felt good and heightened their sense of purpose and belonging. Views from the walking paths were also associated with being part of a larger campus community and a higher education experience. Those views included campus façades, colonnades, and other architectural detailing on academic buildings.

Figure 3 **Conceptual Framework of Walking Needs (adapted from Mehta 2008)**



. . . students were asked to reflect on the quality of their walking routes and highlight all sequences that elicited positive feelings.

Approximately 20 percent of responses referenced the student's destination or some aspect of a specific time as a positive campus attribute (see Figure 1). For example, walking toward a favorable destination such as a dormitory, dining hall, or particular class conjured positive feelings. Some students mentioned that walking back to their dormitory after their last class of the day was a pleasurable experience. Several students said they found the cyclical and repetitive nature of their walking routes to be enjoyable, especially when a preferred route was used to reach daily destinations. The repetition enhanced familiarity and gave a stronger sense of a student belonging to the campus.

Sensory Pleasure

Sensory experiences depend on the perceived quantity, quality, and flow of stimuli from objects adjacent to the walking route. Too much sensory information can overwhelm, whereas too little has the opposite effect. This leads to the question of how many stimuli are too many versus too few. There is no definitive standard, but physiological research has indicated that people need stimulation at short intervals of between five and eight seconds. When this interval is applied to an average walking speed, a visual change should occur every 20 to 25 feet (Gehl 2010). All of the walking routes identified in this study conformed to the standard.

Objects and Features Contributing to Positive Feelings

An analysis of student responses revealed the four objects along a walkway that contributed to positive feelings. The results showed that trees, the presence of other people, path configuration, and views into open space aroused the participants' senses (see Figure 2). Viewing natural vegetation had the highest correlation to students' positive feelings. Forty-three students, or 47.8 percent, responded that seeing vegetation while walking and being close to nature made them happy. For some students, close-up views of trees gave them feelings of peace and tranquility and reminded them of experiencing nature while hiking. Many students indicated that the spatial configuration of trees or how they were spaced positively impacted their walking experience. This was particularly true when the spacing produced an allée or row effect and created a sense of enclosure.

Forty percent of students reported that seeing other people while walking on campus made them happy, which was a rating almost as high as that given to trees. William Whyte's (1980) study on urban plazas in New York City found that "people are attracted to other people" (19). The same idea is true when walking, and several urban design studies have found that people prefer to use walkways when others are present. The explanation is that we are inherently a social species and crave face-to-face contact in the places we routinely visit (Mehta 2008).

Twenty-one students, or 23.3 percent of respondents, indicated that pathway configuration contributed to their happiness, mainly when it afforded an excellent view or marked a transition on campus. Stairs, bridges, and intersections where two or more paths crossed were identified as happiness points along walking paths.

Walkways containing curves or direction changes were also found to be significant: they enhanced the sense of anticipation because the view constantly changed with each forward step. Additionally, positive feelings were associated with walkways that afforded views into open spaces. Campus greens and quadrangles are perfect examples of these types of spaces.

Two walking sequences received the highest ranking from students (see Figure 4). Thirty-one students, or 34 percent, liked the campus entrance walk adjacent to the Miller Learning Center, and 27 students, or 30 percent, liked walking adjacent to Herty Field. One explanation for these rankings comes from an analysis of the written responses, which revealed that both walkways contain high levels of sensory pleasure and contribute to a sense of belonging. These two sequences include three of the four subject matter correlations and the presence of all four objects and features. This finding suggests that routes containing multiple characteristics may have a cumulative impact on pleasure-associated walking behavior. However, additional research is needed to determine whether one element is more significant than others, or whether numerous features caused these two walking sequences to rank more highly than others.

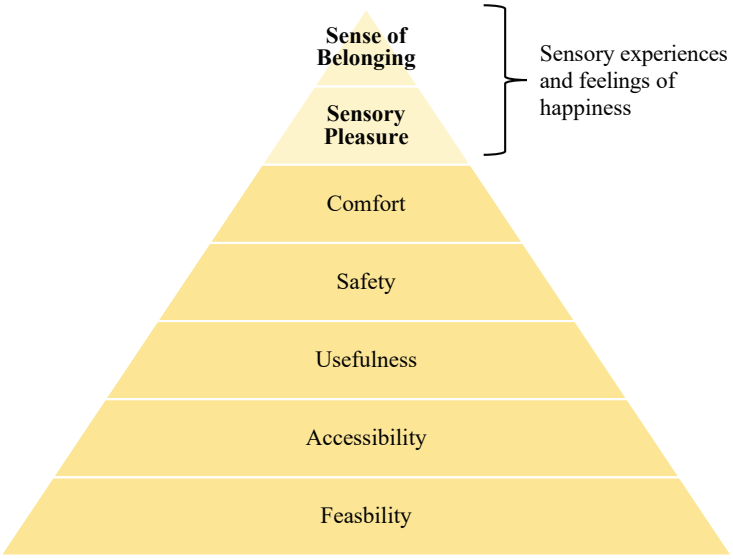
Figure 4 **Herty Field and Miller Learning Center Entry Walking Sequences**

NOTE: Illustrating walking sequences on a single page is difficult because the sense of motion is lost. To compensate, Bosselmann (1998) recommended arranging images in columns, starting from the bottom of the page to the top, instead of left to right. The vertical configuration "pulls the reader into the space" because the upward movement of the eyes implies forward progression.

Conclusion

Our feelings travel with us wherever we go, and we know instantaneously when a walking path is inviting and friendly or forbidding and frightening. Ellard (2015) argued that we should design places, structures, and outdoor spaces to influence our thoughts and alter how we feel. One way to achieve this is to use Mehta's (2008) hierarchy of walking needs to guide circulation and walkway design. The findings in this study support his model and advance the idea that the top two tiers, sensory pleasure and sense of belonging, are responsible for affecting how people feel about individual walking experiences.

Figure 5 **Hierarchy of Walking Needs (Mehta 2008)**



Our study found that students can and do form emotional reactions to the places where they walk. Eight objects or features along two different walking routes contributed to their happiness. Many academic institutions will continue to grow in physical size if enrollments expand in the future. Campus planners should explore the option of using feeling maps to improve the experiential quality of walking on campus.

At the University of Georgia, landscape architects affiliated with the Office of University Architects are responsible for planning and designing the physical campus. The results of this study confirmed that their work was making a positive impact. The two walking sequences that produced the best feelings in this study are two recently built examples on the campus. Herty Field is a project that converted a parking lot into a popular green space that many students walk through to reach their daily destinations. The campus entry sequence is a part of a significant effort to revamp the campus core and provide a new, walkable entrance from the west. The significant financial investments in these two areas of UGA's campus have resulted in a massive transformation of the built environment. In terms of the mental wellness of students, the capital improvements are paying off. Fifty-eight out of 90 students in this study indicated that walking through the aforementioned spaces was a positive, uplifting experience.

The findings of this study also support the Exercise for Heart Health program sponsored by UGA's University Health Center (UHC). The program was established to educate university community members on the health benefits of walking. While UHC's focus is on physical health, the mental health aspects discussed in this article support the intent of improving all health aspects of members of the university community. One example is that following the onset of COVID-19, in

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2020, UGA administrators extended the intersession between classes by five minutes. The intention was to help improve on-time arrivals by reducing delays caused by social distancing on crowded buses and encouraging more people to walk to their destinations. By adding only five minutes to the period between classes, faculty and students were able to walk a full mile, with most campus destinations, from any starting point, falling well within this distance.

Robert Thayer, a professor at California State University, dedicated his career to studying the environmental affects that the natural and built environments have on human disposition. He equates walking to a drug that can "fix a dark mood (Montgomery 2013)," make us happier, and improve our self-esteem. While Thayer's research did not link moods directly to the design and configuration of the built environment, the feeling map methodology described in this article will allow college and university planners to identify special places on campus where this occurs. Mapping these locations will help us to identify design precedents that inform our ability to create happier walks in the future.

References

Alexander, Christopher. 2003. *The Nature of Order. Book I: The Phenomenon of Life*. Berkeley: Center for Environmental Structure.

Alexander, Christopher. 1979. *The Timeless Way of Building*. New York: Oxford University Press.

Behrens, Timothy K., and Mary K. Dinger. 2005. "Ambulatory Physical Activity Patterns of College Students." *American Journal of Health Education* 36, no. 4: 221–227.

Bosselmann, Peter. 1998. *Representation of Places Reality and Realism in City Design*. Berkeley: University of California Press.

Ellard, Colin. 2015. *Places of the Heart: The Psychogeography of Everyday Life*. New York: Bellevue Literary Press.

Gehl, Jan. 2010. *Cities for People*. Washington, D.C.: Island Press.

Hester, Randolph T. 1984. *Planning Neighborhood Space with People*. 2nd ed. New York: Van Nostrand Reinhold.

Kelly, P., C. Williamson, A. Niven, R. Hunter, N. Mutrie, and J. Richards. 2018. "Walking on Sunshine: Scoping Review of the Evidence for Walking and Mental Health." *British Journal of Sports Medicine* 52, no. 12: 800–806.

Mehta, Vikas. 2008. "Walkable Streets: Pedestrian Behavior, Perceptions, and Attitudes." *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 1, no. 3: 217–245.

Montgomery, Charles. 2013. *Happy City: Transforming Our Lives Through Urban Design*. New York: Farrar, Straus, and Giroux.

Schlossberg, Nancy. 1989. "Marginality and Mattering: Key Issues in Building Community." In *Designing Campus Activities to Foster a Sense of Community*, edited by Dennis C. Roberts, San Francisco: Jossey-Bass.

Speck, Jeff. 2012. *Walkable City*. New York: North Point Press.

Stilgoe, John. 1998. *Outside Lies Magic*. New York: Walker and Company.

Weinreb, Amelia Rosenberg, and Yodan Rofe. 2013. "Mapping Feeling: An Approach to the Study of Emotional Response to the Built Environment and Landscape." *Journal of Architectural and Planning Research* 30, no. 2: 127–145.

Whyte, William H. 1980. *The Social Life of Small Urban Spaces*. Ann Arbor: Edwards Brothers, Inc.

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