



Can the workspace influence users' emotions in positive—or negative—ways? Haworth's global design and innovation team set out to explore this emotive connection to work within the office environment by studying the specific impacts of a variety of spatial and furniture layouts on the emotions of corporate office workers. Utilizing Haworth's Affordances Framework, which speaks to the physical, cognitive, and emotional needs of the worker, the team evaluated how elements in the workspace influence emotion. Their research revealed that, indeed, these elements led to unique impacts on specific emotions for participants. More in-depth analysis and office plan renderings are included. Implications and follow-up studies are discussed here.

In a well-known fable, three stonecutters toil to carve rocks for new construction. When asked why they chose to perform this back-breaking task day after day, the first explains he needs the money to live; the second because he considers himself the best stonecutter in the county; and the third answers with purpose and pride: "I am building a cathedral."

What is the moral? The connection we make with our work is driven by aspiration and making a difference, perhaps for humanity or the environment, locally or globally. The third stonecutter brings a broader vision to his work, making an emotional link to a greater purpose that will affect generations to come. It is this link that became the catalyst for studying the emotive connection to the work environment.

Design and Emotion

In 2016, Haworth conducted research to provide evidence-based guidance for emotive qualities in workspaces. The evaluated spaces featured various products (e.g., seating, desks, tables) and applications (e.g., informal collaborative spaces within open-plan individual assigned spaces). However, rather than reactions to these specific products, perceptions of the open landscape created by the products and applications constituted the important focus of the study.

For two decades, Haworth has worked to develop a design structure called the Affordance Framework. This framework continues to enable Haworth and customers to organize, evaluate, and influence space to potentially enhance and support human performance. The Affordance Framework consists of the three broad categories—cognitive, emotional, and physical—that subdivide into Haworth's 10 Affordances considered critical for supporting the human experience in a workspace.

This exercise focused on the Emotional Affordances of Authenticity, Well-being, and Affinity. The emotive principles that support these affordances—trust, inspiration, autonomy, calm, belonging, energy, and engagement—constitute the variables measured in the present study. These emotive principles were developed from various Haworth research activities, such as secondary research, in-depth interviews, and design workshops with industry experts. As Haworth helps customers create spaces to enrich the human experience, it is of interest to understand how these variables may impact the perceived experience of these affordances.

Despite its importance, empirical research in the field of emotion and furniture layouts/design is sparse. Dazkir and Read (2012) investigated emotive responses to interior settings and furniture forms. Specifically, the researchers measured emotive responses to simulated residential interior settings featuring curvilinear and rectilinear furniture lines. Their findings suggest that curvilinear settings evoked higher percentages of positive emotions compared to rectilinear settings. Dazkir and Read's research supports the validity

of simulated interior environments using pictures, as well as additional investigation of emotive responses to interior spaces defined by various furniture layouts and designs.

The Affordances

Cognitive



Embedding – Opportunities to place and retain appropriate mnemonic artifacts.



Externalization – Options for creating, recording, and expressing thoughts within the physical environment.



Access – The means to gather, organize, store, and retrieve information.



Insulation – The means to manage both irrelevant and meaningful stimuli.

Emotional



Authenticity – Familiar, meaningful, and engaging surrounding.



Well-being – A sense of personal control and safety



Affinity – A feeling of connectedness with coworkers and others.

Physical



Anthropometrics – Furniture, fixtures, and spaces suitable to the worker's physical characteristics



Ambient(s) – Healthy and supportive (appropriate) environmental conditions.



Movement – Various opportunities to change posture, position, and location

Exploring the Impact of Open-plan Layouts on Emotions

Haworth partnered with Qualtrics to collect data from a representative sample of 314 corporate office workers who worked in an open-plan environment. Perceptual response programming (PRP), a research technique pioneered by Haworth's Ideation Group, constituted the methodology of the study. PRP relies on extensive evidence demonstrating that reactions to very brief experiences can be authentic and predict future behavior.

The procedure for the study involved briefly presenting high-resolution images of open-plan workspaces and measuring reactions to those spaces. These workspaces differed in specific, predetermined ways relating to products, product applications, lighting, occupancy, and space layout. Participants were first given the definitions for each emotive principle (listed in the next column and following page) prior to being presented with the images. The images were presented, one at a time, for five seconds or until participants responded. Likert-type measurement scales accompanied each image and participants clicked on the response that best described their perception of the depicted workspace, thus "rating" each space on the descriptive dimensions (or emotive principles). The definitions also accompanied each Likert-type item for participants' reference as they rated the images based on the emotive principle.

Advantages of the PRP procedure included independent ratings of each image, rather than comparing two or more images. This provided a reliable, valid estimate for perceptions of the spaces depicted. The order of image presentation was randomized across participants, ruling out "survey fatigue," image-order dependencies, and other methodological artifacts. Additionally, evidence suggests that the brief presentation times for the pictured spaces ensured that participants' automatic, affective reactions were measured rather than their more reflective, analytical evaluations, thus predicting actual emotional experience.

The team derived the dimensions used to describe space perceptions from Haworth's Affordance Framework using the Emotive Principles: trust, inspiration, autonomy, calm, belonging, energy, and engagement. Hypotheses were developed for each emotion, as shown in the Emotive Qualities Related to Design Variables matrix on page 5. These definitions were provided to participants before the presentation of the images and again halfway through the study. Data were analyzed with ANOVA (a collection of statistical models used to analyze the differences among group means) using SPSS software.

The following emotive principles are defined and include the summary of the variables studied with their impact to the emotive qualities.

Trust

The feeling that you can depend on coworkers and having confidence in team members.

When people have confidence in their team because they can depend on coworkers, they achieve trust. However, neither the soft seating nor the color palette (natural wood surfaces, neutral surfaces, and a cool, "high-tech" colors were compared) influenced perceptions of trust in this study. One possible implication is that it may be difficult to influence perceptions of trust merely through space layout or product design strategies.

Inspiration

The feeling of being uplifted, influenced in a positive way; to feel creative or full of ideas.

When people are inspired, they are more creative and generate ideas. The space characteristics of workstation density and layout variety influenced perceptions of inspiration. Low-density and varied layouts were rated as more inspiring than high-density and same layout. While accent lighting versus overhead lighting was tested, the results did not determine either significance or insignificance. Further studies will be required to understand lighting and potential inspirational influences. The comparison based on color palette did not reach statistical significance as impacting inspiration. Possible implication(s) include that some space design and product strategies can influence perceptions of inspiration.

Autonomy

The feeling that your work area allows you to choose where and how you work.

People are autonomous when they have choice in where and how to work. Findings indicated that incorporating layout variation into an office space increases perception of autonomy. Also, varied workspace zones increased perceptions of autonomy. Color palette failed to reach significance. Tentative implication(s) are that some space design and product strategies can influence perceptions of autonomy, although mere "novelty" or "uniqueness" may play a role.

Calm

The feeling of being mentally relaxed and stress-free.

Mental relaxation and reduced stress invoke calmness in people. Findings in this study indicated that workspaces with less density increase the feeling of calm. Incorporating variety in workstation layout increased feelings of calm as compared to the same application orientation. Warm and cool color palettes increased feelings of calm as compared to a neutral color palette. Space design and product strategies can influence a sense of calm, with low-density, varied, naturally colored options preferred.

Belonging

The feeling of welcome, that you fit well in your work area.

A sense of belonging and feeling welcome is important to many people. To determine how a space affected belonging, perceptual responses to the presentation of three images were compared: 1) screen 18 inches above the desk; 2) screen and storage unit; 3) 48-inch panel. The influence of these divider styles on perceptions of belonging did not reach significance, yet interactive, soft seating at the end of open-plan workstations and a warm, natural color palette did. Tentative implication(s) are that workstation division may not influence feelings of belonging, but inclusive/interactive features and warm, natural colors can.



Calm | Low Density

Energy

A feeling of vitality and enthusiasm for your work.

Energized people are enthusiastic and emit vitality. It was evident in this study that layout variety and activity zones impacted perceptions of energy; in contrast, color palette did not reach significance. Evidence of occupied workspace was also tested; however, the results did not determine either significance or insignificance. Tentative implication(s) are that clean-desk policies will need further testing for emotive impact. Enabling interaction may increase such energy perceptions. Additionally, layout variety can increase perceptions of inspiration, calm, autonomy, and energy—a nice (if confusing) outcome.



Engaged | Activity Zones

Engagement

The feeling of being involved in your work projects; feeling that your work is meaningful and important.

When people are engaged in their work, they are actively involved and believe their work is meaningful. Although evidence of workstation occupancy failed to influence perceptions of engagement, a warm, natural color palette increased engagement perceptions. Tentative implication(s) also included that activity zones may be uniformly positive, and warm, natural colors are preferred under these conditions.



Belonging | Soft Seating at End of Workstations

The images were used in the study demonstrating the variable change that positively impact the emotive principle listed with the image.



Autonomy | Variation

Eliciting Emotion from Workspace Layout

Research findings indicate that specific emotions are, indeed, impacted by elements of design in open-plan workspace. For instance, color palette influences perceived, calm, belonging, and engagement. Likewise, layout variation of work points versus variation sameness influences feelings of inspiration, autonomy, calm, and energy. However, trust is not affected by the perceptual manipulations of environments.

Each of these emotions has a placement in the Affordances Framework. For example, energy is an emotive response for the affordance of Authenticity. Autonomy, calm, and inspiration are measurable emotive responses for the affordance of Well-being. Belonging and engagement are the measurable responses for the affordance of Affinity. The findings presented here support the validity of these emotional affordances in representing constructs that are engaged by open-plan office design.

As an exploratory study, the findings indicate further research will be necessary to understand more contextual elements of these emotive qualities. For instance, do these same emotive findings spread across all application types (e.g., private office, L-shape high panels, benching, etc.) or are there differences across applications? Further, the images in the study excluded people. How does the presence of people and daily activity change these emotive responses? With these preliminary promising results, Haworth will continue to investigate—with new layouts and product solutions—how these emotional affordances of the workspace specifically impact emotion.

Emotive Qualities Related to Design Variables

	EVIDENCE OF OCCUPANCY VS. CLEAN	LOW DENSITY VS. HIGH DENSITY	LAYOUT VARIATION VS. SAMENESS	ACCENT LIGHTING VS. OVERHEAD LIGHTING	WARM VS. NEUTRAL VS. COOL COLOR PALETTE	VARIED WORKSPACE VS. NO VARIATION	SOFT SEATING VS. NO SEATING	BOUNDARIES	ACTIVITY ZONES VS. HOMO-GENEOUS	KEY
INSPIRING	--	SIGNIFICANT (low)	SIGNIFICANT (variation)	UNDETERMINED	NOT SIGNIFICANT	--	--	--	--	Highly Significant
AUTONOMY	--	--	SIGNIFICANT (variation)	--	NOT SIGNIFICANT	HIGHLY SIGNIFICANT (zones)	--	--	--	Significant
TRUST	--	--	--	--	NOT SIGNIFICANT	--	NOT SIGNIFICANT	--	--	Undetermined
CALM	--	SIGNIFICANT (low)	SIGNIFICANT (variation)	--	SIGNIFICANT (warm and cool only)	--	--	--	--	Not Significant
BELONGING	--	--	--	--	SIGNIFICANT (warm only)	--	SIGNIFICANT (soft seating)	NOT SIGNIFICANT	--	Not Tested
ENERGY	UNDETERMINED	--	SIGNIFICANT (variation)	--	NOT SIGNIFICANT	--	--	--	HIGHLY SIGNIFICANT (zones)	
ENGAGED	NOT SIGNIFICANT	--	--	--	SIGNIFICANT (warm)	--	--	--	HIGHLY SIGNIFICANT (zones)	

References and Additional Reading

Banaji, M.R. & Greenwald, A.G. *Blindspot: Hidden Biases of Good People*. New York: Delacorts Press, 2013.

Brand, J.L., Reuschel, J., Lee, J., and Inman, M. *Perceptual Response Programming of Office Workstations*. Technical Research Report: Haworth, 2005.

Dazkir, S. S., and Read, M. A. Furniture forms and their influence on our emotional responses toward interior environments. *Environment and Behavior*, 44(5), (2012): 722-732.

Gladwell, M. *Blink: The Power of Thinking without Thinking*. New York: Little, Brown & Company, 2005.

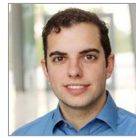
Kahneman, D. *Thinking Fast and Slow*. New York: Macmillan, 2015.

Lakey, B., Cooper, C., Cronin, A. and Whitaker, T. Symbolic providers help people regulate affect relationally: Implications for perceived support. *Personal Relationships*, 21, (2014): 404–419.

Contributor



Dr. Jay Brand holds a B.A. in Psychology, English, and Religion; and a M.A. and Ph.D. in Experimental Psychology: Human Perception & Performance and Cognition. He is owner/principal of Brand-new Insight, LLC consulting firm, serves as Professor of Leadership and Higher Education at Andrews University, and is Senior Editor of *Ergonomics in Design*.



Travis Whitaker holds a M.S. degree and specializes in social psychological research. As the Market Research Analyst for Haworth's Global Design and Innovation team, he studied human interaction effects on behavior, emotion, and performance. Travis integrated his previous work with psychology and statistics into addressing empirical and market issues in the furniture design industry.



Elizabeth Hernandez holds a B.F.A. in Interior Design. She has worked in furniture design since 2010, and joined Haworth in 2015 as Senior Interiors Developer. A member of the Global Innovation and Design product development team, Elizabeth brings a unique perspective that complements the industrial design function: an attention to detail and a big picture view of the landscape to develop products that deliver appropriate solutions and meet clients' needs.



Irene Kearney holds a B.A. in English and is currently a M.F.A. Candidate in the Design Management Program at the Savannah College of Art and Design. As a Design Research Intern for Haworth, Irene performed, organized, and analyzed primary and secondary research to support Haworth's Affordance Framework.



Beck Johnson holds a B.S. in Scientific and Technical Communication and an M.A. in Communication. With 15+ years of experience in social science research methodologies and as a Research Specialist at Haworth she conducts primary and secondary research addressing workplace issues.



Marta Wasseenaar, LEED AP, holds a B.A. degree in Psychology and Business Administration and is the Global Innovation Manager for Haworth's Global Design and Innovation team. With 20+ years' experience in the contract furniture industry, she leads global market insights and research to support the advanced development of Haworth's products and solutions.

Haworth research investigates links between workspace design and human behavior, health and performance, and the quality of the user experience. We share and apply what we learn to inform product development and help our customers shape their work environments. To learn more about this topic or other research resources Haworth can provide, visit www.haworth.com.

© 2017 Haworth, Inc. All rights reserved. Published 2017.