

# Designing for the Six Human Needs: A Behaviour-Centred Framework for Emotional Connection in Physical Spaces

**David Macphee**

Design Behaviour Consultant United Kingdom / China

## ABSTRACT

The conditions surrounding human behaviour are shifting in ways that directly affect how people experience interior spaces. This paper introduces a practical framework that adapts the Six Human Needs model for interior design and links it with research from environmental psychology and motivational theory. The Design Behaviour Interaction Model describes how human needs may shape emotional states, behavioural patterns, and the way people interpret physical environments. Methods combine thematic analysis of more than twenty design briefs, alongside structured observational analysis of user behaviour conducted over a three-year period across hospitality, workplace, and transitional environments (including cafés, restaurants, offices, and waiting areas), supported by a targeted review of psychological and acoustic literature. A case study of Penny Black Jazz Club illustrates how lighting, acoustics, materiality, proximity, and cultural cues can contribute to emotional clarity and strengthen connection, significance, and social ease. Observed patterns suggest increased focus, social warmth, and memory retention associated with specific environmental conditions. The paper argues that behaviour-centred design can reduce misalignment between designer and client and support the creation of environments that remain emotionally meaningful across generations.

**Keywords:** Behaviour-centred design, Human needs, Environmental psychology, Interior environments, Behavioural design, Spatial behaviour

## INTRODUCTION

Human behaviour is shifting in ways that directly affect how people experience interior spaces. Ageing populations, declining birth rates, and changing cultural expectations mean environments designed for one generation may not meet the emotional expectations of the next. In China, for example, projections suggest that between a quarter and two fifths of the population will be over sixty by mid-century (Rostovsky et al., 2023; WHO, 2025; United Nations, Department of Economic and Social Affairs, 2022).

Similar patterns appear across Europe and East Asia, where older adults form a growing share of everyday users of public and private environments. Design practice has not always kept pace. Many spaces perform well visually yet leave people feeling unsettled or disconnected. Environmental psychology shows that physical surroundings influence emotion, stress, attention, and social behaviour (Bower et al., 2019; Bower et al., 2022; Croffi et al., 2023),

but these insights are rarely translated into practical decision-making tools for designers.

Although this paper considers the future of interior design, it begins with something stable. Human needs for safety, connection, significance, growth, variety, and contribution remain consistent. What changes are the social and technological pressures around us, which make certain emotional needs harder to meet. Understanding this helps design move beyond style toward environments that provide emotional clarity and behavioural support.

## **WHY CURRENT APPROACHES FALL SHORT**

Existing design frameworks tend to focus on style, ergonomics, branding, or sensory comfort. These factors address visual expression and functional performance, but they do not fully account for the deeper behavioural patterns that shape how people move, speak, connect, and settle within a space. As a result, design decisions are often guided by visual preference or trend cycles that may not align with users' emotional needs.

A recurring challenge lies in the gap between how clients describe their intentions and how designers interpret them. Terms such as “luxury,” “welcoming,” or “high-end” carry subjective meanings. Clients often associate these words with emotional states such as comfort or freedom, while designers may interpret them through material or visual cues. This mismatch can produce environments that meet aesthetic expectations but fall short in emotional or behavioural alignment.

Design conversations often rely on self-reported preferences that may not reflect underlying motivations. Individuals are not always able to articulate the emotional drivers behind their responses to space, so stated preferences can differ from observed behaviour.

A further limitation is the tendency to overlook the client's emotional history, current state, and intended direction. Without this context, design decisions risk being shaped by the designer's own assumptions rather than the user's lived experience.

Psychology offers well-established models for understanding motivation, particularly around autonomy, competence, and relatedness [4,5]. However, these models are rarely operationalised into spatial decision-making processes. What remains missing is a practical bridge between psychological insight and spatial strategy.

In many contexts, additional forces further shape design priorities. Technology-driven environments may prioritise efficiency or immersion in ways that override emotional needs, while religious or symbolic settings may elevate significance, certainty, or belonging. Recognising these contextual layers highlights the need for a framework that can adapt across cultural and sector-specific conditions while remaining grounded in human behaviour.

## **METHODS**

This study adopts an exploratory case study methodology to examine how the Six Human Needs framework can be applied within interior environments. The primary case study is Penny Black Jazz Club, supported by observational

insights gathered over a three-year period across hospitality, workplace, and transitional environments.

Data collection combined three sources:

- (1) thematic analysis of more than twenty design briefs,
- (2) structured observational analysis of user behaviour in real environments, and
- (3) a targeted review of psychological and acoustic literature.

Observational analysis focused on repeated behavioural indicators, including pace of movement, eye focus, conversational tone, seating choice, and time spent in specific zones. Observations were conducted in natural settings, focusing on recurring patterns. To support consistency, behavioural cues were grouped into categories relating to orientation (how individuals position themselves in space), engagement (level of interaction with others or the environment), and dwell behaviour (duration and stability of presence). Observations were interpreted alongside inferred emotional states such as ease, hesitation, or engagement.

When multiple needs appeared simultaneously, priority was assigned based on the most consistent and dominant behavioural patterns observed over time. While this approach does not rely on formal quantitative instruments or inter-rater validation, it provides a structured qualitative method for translating behaviour into design-relevant signals.

As an exploratory study, the aim is to identify consistent behavioural patterns and relationships rather than establish statistical causation. Future research could incorporate mixed-method approaches, including environmental measurement (e.g. acoustic levels, lighting conditions) and validated affective scales, to further test and refine the model. Observations were conducted year-round over a three-year period, involving approximately 200–300 site visits across varied operational conditions, including live performances, rehearsals, and quiet daytime hours, allowing repeated exposure to consistent behavioural patterns.

## **THE SIX HUMAN NEEDS AS A BEHAVIOURAL LENS**

The Six Human Needs provide a practical framework for understanding why individuals respond differently to interior environments. The model identifies six core motivational drivers:

1. Certainty
2. Uncertainty
3. Significance
4. Connection
5. Growth
6. Contribution

These needs influence attention, emotional state, personal meaning, and observable micro-behaviours within space. They are not fixed traits, but dynamic priorities shaped by context, personal history, and cultural background. When understood as shifting hierarchies rather than static

categories, the model helps explain variation in how different individuals experience the same environment.

If each need is considered as a priority position, there are 6 factorial (720) possible arrangements, illustrating the diversity of behavioural responses designers encounter in practice.

The model originates from applied psychology and has been widely used in coaching and behavioural development contexts. The Six Human Needs framework was popularised within coaching practice by Tony Robbins and colleagues as a practical model for understanding human motivation and behavioural priorities (Robbins & Hansen, 2006). While it does not emerge from a single formal academic tradition, its structure parallels established motivational frameworks, including Self-Determination Theory (autonomy, competence, relatedness) (Ryan and Deci, 2000; Ryan and Deci, 2020) and broader hierarchical models of human motivation. This alignment supports its use as a practical interpretive tool within design contexts.

The value of the framework lies in guiding observation, structuring design conversations, and interpreting behavioural patterns. It provides a neutral language through which emotional needs can be identified, even when they are not explicitly expressed by users.

### HOW NEEDS SHAPE BEHAVIOUR IN SPACE

Human responses to interior environments follow identifiable behavioural patterns rather than occurring randomly. These patterns can be understood as a sequential process linking underlying needs to observable actions within space.

The process can be described as follows:

- A need becomes active
- It generates an emotional state
- The environment is interpreted through that state
- Behaviour follows
- The environment reinforces or redirects that behaviour

This sequence operates continuously and often below conscious awareness. When designers are able to identify the dominant need within a given context, they can shape environmental conditions to support more predictable behavioural outcomes.

**Table 1:** Behaviour mapping table.

Human Need	Cues / Emotional State	Behavioural Response
Certainty	Clear sightlines, consistent materials, stable lighting levels	Grounded movement, reduced hesitation, predictable circulation
Uncertainty	Contrast in lighting, variation in acoustics, dynamic spatial conditions	Exploration, curiosity, increased engagement with surroundings
Significance	Focal points, visible seating, stage lighting, elevated positions	Heightened attention, performative behaviour, sense of value

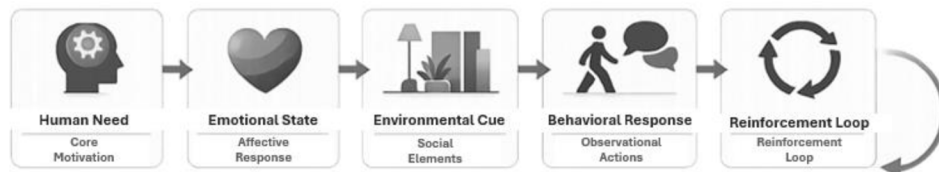
(Continued)

**Table 1:** Continued.

Human Need	Cues / Emotional State	Behavioural Response
Connection	Warm materials, close seating, shared tables, conversational acoustics	Social interaction, emotional openness, relationship building
Growth	Flexible layouts, layered spaces, elements of discovery	Exploration, learning behaviour, adaptive use of space
Contribution	Shared resources, collaborative zones, visible participation	Pro-social behaviour, cooperation, active involvement

## THE DESIGN BEHAVIOUR INTERACTION MODEL

To translate behavioural insight into practical design decisions, the Design Behaviour Interaction Model structures the relationship between human needs and spatial outcomes into five interconnected layers.



**Figure 1:** Design behaviour interactional model linking human needs to spatial outcomes.

These layers provide a framework for understanding how design elements influence perception, emotion, and behaviour within a space:

### 1. Human Need

The underlying motivational driver (e.g. certainty, connection, significance) active within a given context.

### 2. Emotional State

The affective condition generated by the active need, such as ease, tension, curiosity, or engagement.

### 3. Environmental Cue

The physical characteristics of the space, including lighting, materiality, acoustics, spatial layout, and visual hierarchy.

### 4. Behavioural Response

Observable actions within the environment, including movement patterns, interaction levels, dwell time, and spatial choices.

### 5. Reinforcement Loop

The ongoing interaction between behaviour and environment, where spatial conditions either stabilise or shift the user's emotional state and subsequent behaviour.

This layered structure allows designers to anticipate how specific design decisions may influence behaviour, and to adjust environmental conditions in response to observed user patterns.

### **Acoustic Considerations**

Acoustic behaviour plays a central role within this model. Research in aural architecture and environmental acoustics demonstrates that frequency, clarity, and balance influence emotional tone and cognitive performance (Algaroosh, 2021; Khaleghimoghaddam et al., 2025).

- Low frequencies provide a sense of grounding and stability
- Mid-range frequencies support speech clarity and social warmth
- Higher frequencies increase alertness and attention

These acoustic characteristics align with the Six Human Needs. Stable low frequencies support certainty, mid-range warmth supports connection and social ease, and controlled variation in higher frequencies introduces a degree of uncertainty that maintains engagement.

When integrated with lighting, spatial layout, and materiality, acoustic conditions contribute to the overall emotional rhythm of a space and influence how individuals move, interact, and remain within it.

## **CASE STUDY: PENNY BLACK JAZZ CLUB**

### **Context**

Penny Black Jazz Club is a small, atmospheric venue known for its warmth and authenticity. Its reputation grows primarily through word-of-mouth among musicians, who often describe how the room feels rather than how it looks. This made it a strong environment for studying behavioural design in practice.

### **Dominant Needs**

Three needs appeared consistently throughout the space:

**Connection:** emotional closeness between audience and performers

**Significance:** performers feel valued; guests feel part of something distinctive

**Uncertainty:** dynamic lighting, shifting acoustics, and varied performances maintain guest engagement

### **Spatial Strategies and Behaviour**

The spatial strategies at Penny Black combine lighting, layout, materiality, acoustics, and cultural cues to support the dominant emotional needs identified within the space. These conditions function as behavioural signals shaping orientation, interaction, and engagement.

### **Lighting**

creates focal clarity and emotional warmth, allowing performers and guests to maintain visual connection without overstimulation. This supports a sense

of certainty and shared attention, encouraging sustained engagement with the performance.

### **Layout and proximity**

establish a shared spatial orientation between audience and musicians, reducing social distance and supporting spontaneous interaction. Close seating arrangements increase conversational tone, eye contact, and social responsiveness during performances and intermissions.

### **Materiality**

provides grounding through darker natural finishes and firm floor surfaces, supporting stable movement patterns and predictable circulation between performance sets. These conditions reinforce a sense of familiarity and spatial confidence among returning guests.

### **Acoustics**

play a central role in shaping emotional rhythm within the space. Warm mid-range frequencies support speech clarity and social warmth, while stable low-frequency resonance provides depth and continuity. During performance breaks, background music is maintained at a moderate level and slower tempo. Research in hospitality environments indicates that slower tempos are associated with longer dwell time and more relaxed conversation patterns.

### **Cultural Cues**

such as the display of 118 curated images of influential jazz musicians create a visible sense of lineage and shared identity within the space. Guests frequently pause, take photographs, and discuss recognisable figures.

In at least two documented instances, individuals who first visited the venue as children later pursued formal music education and returned as performing musicians, suggesting a pattern of long-term cultural and emotional continuity associated with the environment.

A comparison with alternative design choices highlights the role of these cues. Higher ambient lighting or wider audience spacing would reduce the intimacy that supports connection. Softer flooring or heavier absorptive materials would diminish the mid-range warmth musicians rely on. Likewise, brighter or more reflective surfaces would increase visual noise and weaken the sense of significance. These contrasts show why the selected strategies produced the observed behavioural outcomes.

Similar behavioural observation principles have been applied in a secondary social environment within the author's office, where a community reading and gathering space has gradually evolved over approximately one year, providing an additional context for observing recurring interaction patterns.

## Behavioural Outcomes

### For musicians:

- Increased performance duration and expressive variation
- More frequent improvisational exchanges
- Visible confidence in stage presence

### For guests:

- Sustained visual attention during performances
- Increased social interaction between audience members
- High rate of repeat visits associated with positive emotional recall

These behaviours reflect the needs intentionally supported by the design. As a single-site case study, these findings are context-specific; broader trials across diverse environments would help refine the model's generalisability across cultures and sectors.

Musicians repeatedly reported that the spatial atmosphere and acoustic balance made the venue feel familiar and supportive, and several performers have returned specifically because of the environment.

## FUTURE DIRECTIONS

The Design Behaviour Interaction Model demonstrates potential for application across multiple sectors beyond hospitality environments. Early observations in workplace settings suggest that Growth and Contribution often emerge as dominant needs, indicating that adaptive layouts, shared surfaces, and flexible work zones may support more collaborative and balanced team behaviour.

Future research could examine how the framework performs in environments such as healthcare, education, transportation hubs, and digital-physical hybrid settings.

Further development may include simple environmental measures such as sound level ranges, lighting intensity, spatial density, and dwell time. These indicators would allow researchers and practitioners to test relationships between environmental conditions and behavioural outcomes in a more systematic way while maintaining the practical nature of the framework.

Cultural variability remains an important consideration in the application of behaviour-centred design. While individuals across societies share the same six fundamental human needs, the order of priority among these needs can vary. With six needs, there are 720 possible priority arrangements, reflecting the diversity of behavioural expression observed across cultures and contexts.

Emerging work is also exploring how behaviour-centred frameworks may apply to digital environments. Preliminary observations from a year-long social media experiment across Western and Chinese platforms suggest that algorithmic systems may respond to patterns aligned with human motivational needs. While early, these findings indicate potential for extending behavioural design principles beyond physical space into digital interaction contexts.

## CONCLUSION

Interior design can do more than arrange objects; it can shape behaviour and emotional experience. When design decisions are guided by human motivation rather than surface preference, environments become easier to navigate, more comfortable, and more meaningful.

The Six Human Needs provide a stable behavioural lens through which these interactions can be understood. While individual preferences, cultural context, and social conditions may vary, the underlying needs themselves remain consistent across time and place. Recognising this stability allows designers to move beyond style-driven decisions and toward environments that support predictable patterns of behaviour and emotional clarity.

Behaviour-centred design does not require complex theory or advanced technology. It begins with careful observation, practical interpretation, and a willingness to align spatial decisions with how people actually behave. When this alignment is achieved, environments become more intuitive and capable of supporting lasting connection.

## ACKNOWLEDGMENT

The author thanks the musicians and guests of Penny Black Jazz Club for their openness and participation during the observational study.

## REFERENCES

- Algargoosh, A. *Aural architecture as affect*. University of Michigan, 2021.
- Bower, I., et al. "Interior scale modulates neural networks involved in emotion regulation." *eNeuro*, 2022.
- Bower, I., Tucker, R., & Enticott, P. "Impact of built environment design on emotion." *Journal of Environmental Psychology*, 2019.
- Croffi, J., et al. "Wellbeing fostered by design." *Buildings and Cities*, 2023.
- Khaleghimoghaddam, N., et al. "Architectural acoustics, stress and focus." *Journal of Neurobiology*, 2025.
- Lobanov Rostovsky, S., et al. *Aging and health in China: A systematic review*. BMJ Global Health, 2023.
- Malcman, M., et al. "Background music and dining behaviour." *Frontiers in Psychology*, 2024.
- Robbins, T., & Hansen, J. (2006). *Awaken the Giant Within: How to Take Immediate Control of Your Mental, Emotional, Physical and Financial Destiny*. New York: Free Press.
- Ryan, R. M., & Deci, E. L. *Self Determination Theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press, 2020.
- Ryan, R. M., & Deci, E. L. "Self Determination Theory and the facilitation of intrinsic motivation, social development, and well being." *American Psychologist*, 2000.
- United Nations, Department of Economic and Social Affairs. *World Population Prospects 2022: Summary of Results*. UN DESA, 2022.
- World Health Organization. *Ageing and health – China*. WHO Country Office, accessed 2025.