



Sensory Design as a Practice

A Neuro-Inclusive Approach to Implementing
Multi-Sensory Design Across Scales | Part 1

Perkins&Will

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Neuro-inclusion is a global effort. One we are committed to expanding through deeper international and intersectional perspectives.

Acknowledgements

We welcome your feedback, questions, and insights. To connect or learn more, reach out to primary author **Larissa Sattler** and Director of Human Experience Research **Erika Eitland** at Perkins&Will.

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Authors:

- **Larissa Sattler**, (she/her), AIA, LEED GA, LFA
- **Erika Eitland**, (she/her), MPH, ScD
- **Jacob Williams**, (he/him), MGXD
- **Kristina Marchand**, (she/her), E. Todd Wheeler Healthcare Fellow, LEED GA
- **Samuel Orlando**, (he/him) LEED GA
- **Danielle Baez**, (she/her), MUP

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WHO WE ARE DESIGNING FOR

Neurodiversity is *not one thing.*

Neurodiversity describes the infinite variation in neurocognitive styles within our species (Walker, 2021). It is not a synonym for autism. The identities below represent a range of neurotypes, each are distinct, with a unique relationship to space, sensation, and the built environment.

Neurodivergent identities include, but are not limited to...

Acquired Neurodivergence (Stroke, Post Traumatic Stress Disorder, etc.) • Attention Deficit Hyperactivity Disorder (ADHD) • Autism • Developmental Coordination Disorder (DCD) / Dyspraxia • Dyscalculia • Dyslexia • Learning Disability • Sensory Processing Disorder • Synesthesia • Tourette Syndrome

These identities may influence...

Sensory processing • Attention and focus • Spatial navigation • Motor coordination • Emotional regulation • Verbal and written communication • Social interaction • Memory and sequencing

Imagine

Imagine every room entered, every corridor navigated, every public space occupied demanding a continuous, exhausting negotiation between the nervous system and the environment.

The flicker of fluorescent light.

The roar of an HVAC unit mistaken for silence.

The scratch of a chair on a hard floor that nobody else seems to hear.

These are not inconveniences. They are a constant, invisible tax paid by neurodivergent people in focus, in energy, in dignity every single minute of every single day.

And it was built that way. Not out of malice, but out of omission. For generations, the neurodivergent experience was simply not in the brief.

Now imagine if it were.

Imagine a child who could simply listen to their teacher without summoning extraordinary willpower to filter out the acoustic and visual chaos around them. A patient healing in a hospital room that doesn't assault their senses at their most vulnerable. An employee who doesn't spend half their cognitive bandwidth surviving the open-plan office before they've written a single word. A family moving through a museum together, not managing a countdown to the nearest quiet room, but just being there. Curious. Present. Belonging.

Architects and designers shape how the world may feel. That power is also a responsibility. Yet, as we know more, we must do more to support the people that occupy these spaces. A single sensory room, however well-intentioned, is not inclusion. It is an afterthought rendered in drywall. An acknowledgment that the rest of the building was not made for everyone.

The neurodivergent community does not need a designated refuge from our architecture. They need architecture that was designed with them in mind from the very first line drawn.

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Sensory design is not a room you retreat to.

It is the environment you never have to escape.

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P. 12 1.2 Understanding the Research Gaps | Before we can design confidently for the senses, we must confront what we don't yet know: the evidence base is narrower than assumed, and core questions about what we measure, who we include, and what actually works remain open.

P. 14 1.3 Learning from Workplace Policies | For some industries, workplace policy has advanced toward neuro-inclusion, but those commitments remain incomplete when the buildings people inhabit every day have not kept pace.

PART 2: THE REFRAME (FORTHCOMING)

2.1 From Sensory Rooms to a Sensory Design Practice | The sensory room model advanced awareness of sensory needs but places the burden of adaptation on the individual, leaving critical questions about stigma, access, and consistency largely unaddressed by a single-room approach.

2.2 Design Smarter by Curating Strategies for Sensory Impact | A single sensory intervention is not enough. This section offers a curated spectrum of design strategies across six environmental categories, mapped to all eight senses, to help practitioners embed neuro-inclusive choice throughout the built environment.

2.3 A Constellation of Sensory Spaces | No single space can do everything — but the right combination can. This section catalogs indoor, outdoor, and specialist spaces that support regulation, rest, and focus, presented not as fixed typologies but as a starting constellation most powerful when deployed together.

PART 3: THE RESPONSE (FORTHCOMING)

3.1 Designing With, Not For | Neuro-inclusive design is only as good as the process that delivers it. This section moves through every phase of the design process, offering tools, methods, and mindsets to ensure neurodivergent people are present as co-designers, not recipients.

3.2 Until Next Time | One room was never going to be enough, and now we know why. This concludes the case against a single-room model, naming what comes next, and leaving design practitioners and decision makers with a clear-eyed understanding of what genuine sensory commitment looks like in practice.

PART 1

The Context

Why does this problem exist, and why does it matter right now?

The sections that follow establish the conditions that brought us here: why a familiar model has outpaced the questions it should have prompted, where the evidence base falls short of what neuro-inclusive practice requires, and what organizational commitment has already achieved that design can extend.

1.1 — Why Now?

1.2 — Understanding the Research Gaps

1.3 — Learning from Workplace Policies

1.1 — WHY NOW?

A familiar formula outpaced *a critical question.*

The rapid proliferation of standardized, equipment-driven sensory rooms has, in many cases, outpaced critical evaluation of how well these spaces support diverse sensory experiences (Grace, 2019). This pattern reveals a concerning trend in sensory room design.

Search “sensory room” online and a familiar formula quickly emerges: dark, enclosed spaces illuminated by blue and purple lighting, bubble tubes, fiber-optic strands, and soft seating. While this model can be effective for some users, it reflects a narrow sensory profile rather than the full range of sensory needs (McCabe, 2025). For individuals who are blind or have low vision, environments built primarily around visual stimulation may offer limited benefits. In these cases, the presence of a sensory room does not equate to meaningful access.

A sensory room is a singular accommodation. When sensory rooms are conceived as isolated interventions that prioritize one neurocognitive experience, they risk excluding others by implicitly defining a singular “correct” mode of regulation. These spaces typically assume that reduced stimulation, lighting, and acoustics are universally beneficial. However, this overlooks the vast breadth of human experience amongst neurodivergent and disabled individuals. Others

may depend on movement, social interaction, rhythmic sound, or dynamic environments rather than sensory suppression.

The U.S. Department of Labor defines an accommodation as a modification or adjustment that enables participation. To some, they have been called "productivity enhancers." In practice, this meant ramps, accessible restrooms, assistive technology, service animal policies, large-print materials, and clear signage (Office of Disability Employment Policy, n.d.). None of these accommodations work in isolation. They form a network to make accessibility a reality.

Sensory design is no different. A single sensory room, disconnected from the broader environment, is not a network but a single node, which cannot deliver inclusion.

We would never expect a wheelchair user to navigate a building where only one room was accessible, why do we accept that standard for neurodivergent people?

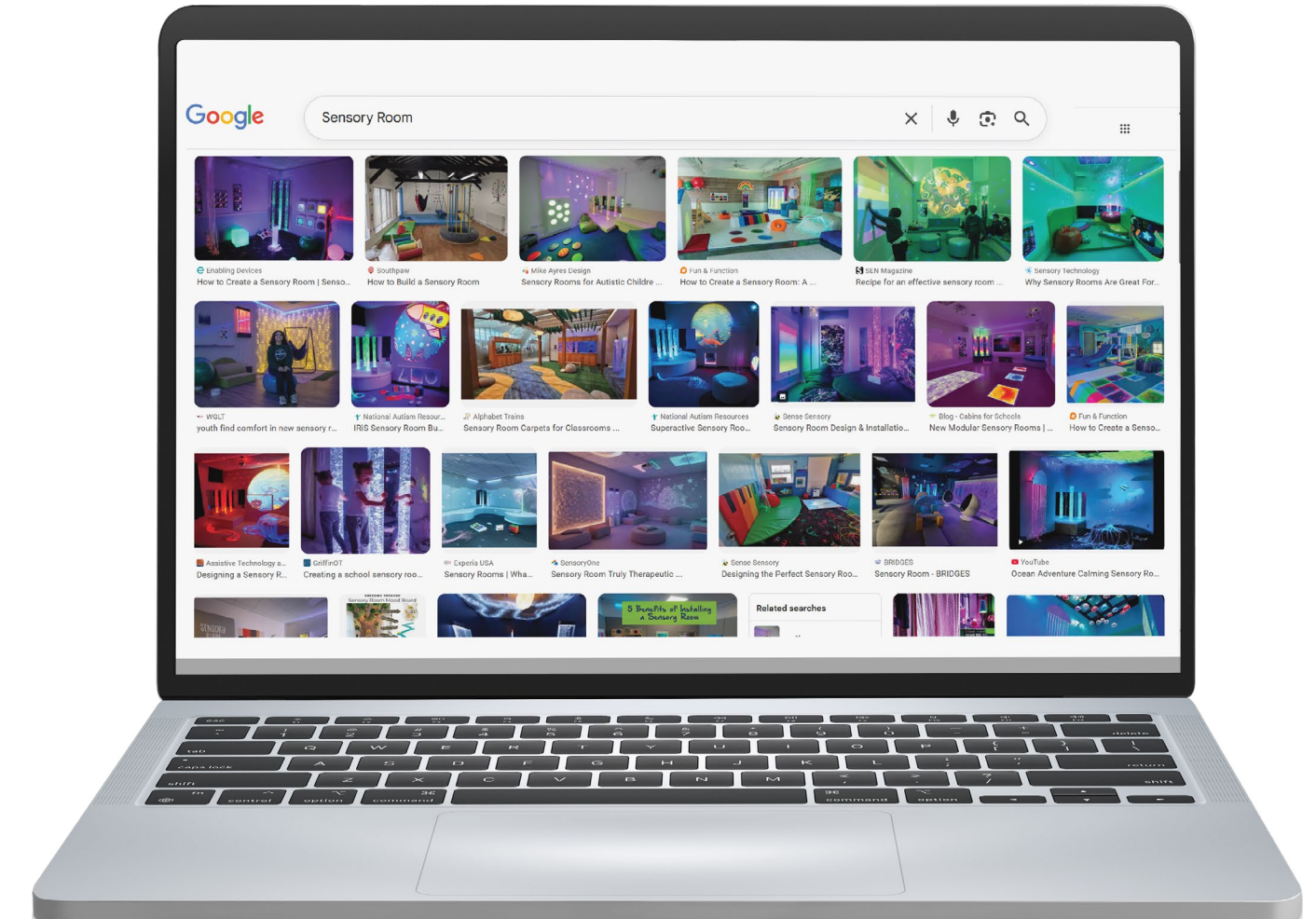


Figure 1: Conventional sensory room design often looks like choosing from a prescribed kit of equipment, not because its efficacy has been proven, but because it is easy to replicate.

We would never expect a wheelchair user to navigate a building where only one room was accessible, why do we accept that standard for neurodivergent people?

1.2 — UNDERSTANDING THE RESEARCH GAPS

The design community is building on *an incomplete research foundation.*

The following research gaps emerged from a review of available literature on sensory environments and neurodivergent populations in the built environment. These gaps do not suggest that sensory design is ineffective, but rather the field has not yet built the evidence base its own ambitions require.

01. Environmental Context

What happens beyond the room?

The available reviews consistently examine sensory interventions as discrete, bounded spaces rather than as properties of a distributed built environment. No review identified in this literature frames the broader building—its acoustics, lighting, materiality, and spatial organization as a system—as the unit of intervention. Studies in this field have focused almost exclusively on closed and dedicated spaces, with no studies concentrating on the redesign of the urban or building-wide environment (Tola et al., 2021; Wang et al., 2026; Marzi et al., 2025; Zaniboni & Toftum, 2023). A 2026 scoping review of sensory stimuli in the built environment for autistic people found that studies on how built environments can support appropriate sensory

conditions remain limited, with few studies focusing on the integration of multiple sensory modalities (Wang et al., 2026). The singular sensory room has become the assumed solution by default in absence of comparative evidence while the broader question has not been studied.

02. Intersectionality

Whose experience does the evidence reflect?

The research that should inform inclusive design has itself excluded the people it claims to serve. The available literature skews heavily toward autism as the primary condition of study, with intellectual disability and ADHD receiving substantially less attention, and specific learning disorders, anxiety disorders, dyspraxia, and Tourette syndrome remaining

largely unexplored in built environment contexts (Marzi et al., 2025). Geographic representation is similarly narrow—most studies originate from Europe, the United States, China, and India, leaving Africa, South America, and Southeast Asia substantially absent (Marzi et al., 2025). Current recommendations on indoor well-being for neurodivergent people mainly target children and are not based on systematic comfort studies (Zaniboni, & Toftum, 2023). Race, socioeconomic status, and gender diversity are almost never reported as participant characteristics, and studies examining gender and autism have predominantly centered White women, narrowing understanding of the autistic experience before it has been fully explored (Mallipeddi & VanDaalen, 2022). When the evidence base excludes most of the world and most neurodivergent conditions, the buildings that evidence produces will do the same.

03. Outcome Measurement

What are we actually measuring?

A systematic review of multisensory environments for autistic people found the available research insufficient, with sample sizes too small to reliably assess impact on either adults or children (Leonardi et al., 2025). A parallel systematic review of indoor comfort across neurodivergent conditions found that only four studies in the entire literature provide quantitative thresholds that could guide design recommendations, and that most

studies lack sufficient methodological detail to allow replication (Marzi et al., 2025). Where outcomes are measured, the constructs vary—"readiness," "engagement," "well-being"—and are rarely operationally defined, making cross-study comparison impossible.

04. The Length of Impact

How far do the benefits reach?

Sensory interventions are consistently evaluated at the moment of use, but rarely investigate their effects far beyond it. The most rigorous study identified—a 2025 pilot randomized controlled trial—measured outcomes immediately following a single 30-minute session and explicitly called for larger studies in clinical populations (Otsuka et al., 2025). A scoping review of sensory interventions in long-term care screened over 5,000 papers and concluded the evidence base was too preliminary to support systematic review (Backman et al., 2021). Some qualitative evidence suggests that sensory strategies learned in clinical settings may transfer to home and community environments (Doroud et al., 2024; Forsyth & Trevarrow, 2018; Sutton et al., 2013), but no study systematically follows participants over time using standardized outcome measures to assess whether effects persist, accumulate, or shift baseline sensory tolerance. Without longitudinal evidence, we cannot distinguish sensory amenities from holistic sensory infrastructure.

1.3 — LEARNING FROM WORKPLACE POLICIES

What policy demands, *design delivers.*

Sensory design can lead to more neuro-inclusive environments or respond to intentional neuro-inclusive policies. Workplace policy and hiring practices have advanced creating opportunities for designers to build upon this growing commitment.

Workplaces already advancing neuro-inclusive policies

Microsoft

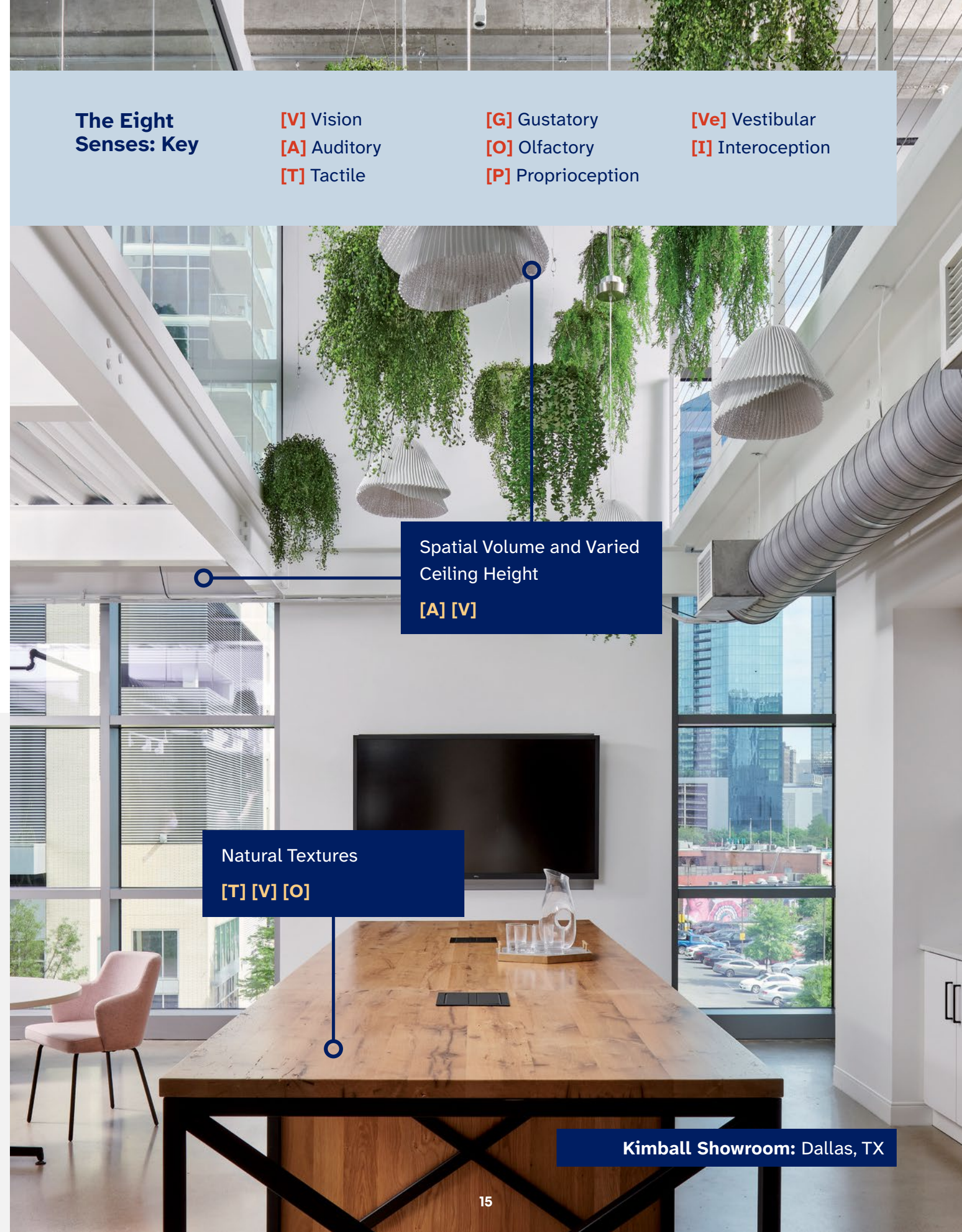
Microsoft replaced high-pressure interviews with written responses, extended time, and structured preparation — reducing reliance on eye contact and social masking (Austin & Pisano, HBR 2017).

Google Cloud

Google trained 500 managers through the Stanford Neurodiversity Project and redesigned their offices to include adjustable lighting, curtains, and quiet areas in response to sensory overload (Green, 2023).

EY

EY established 23 Neurodiverse Centers of Excellence across 10 countries — supporting workers with autism, dyslexia, ADHD, and other cognitive differences — reporting a 92% retention rate and over \$1 billion in value creation (Burleigh, 2024).



The Eight Senses: Key

[V] Vision

[A] Auditory

[T] Tactile

[G] Gustatory

[O] Olfactory

[P] Proprioception

[Ve] Vestibular

[I] Interoception

Spatial Volume and Varied Ceiling Height

[A] [V]

Natural Textures

[T] [V] [O]

Kimball Showroom: Dallas, TX

1.3 — LEARNING FROM WORKPLACE POLICIES

Designing for neurodiversity means more than designing for autism.

A Promising Direction...

As neurodiversity becomes more visible within labor forces, workplace inclusivity is increasingly shaped by both policy reform and architecture. Non-profit organizations such as Neurodiversity in the Workplace (NITW) have played a critical role in this shift, partnering with companies to develop neuro-inclusive hiring practices and HR policies that challenge conventional norms and set precedent across industries (Neuroinclusion is the Future of Work, n.d.). The alignment between organizational reform and design practice signals a broader cultural movement toward recognizing neurodiversity as a sustained, systemic responsibility.

Leading software companies, SAP and Microsoft have restructured their hiring pipelines entirely, replacing standard interviews with formats that let candidates demonstrate their actual abilities. SAP, whose program boasts a 90% retention rate, brings

candidates in for a week-long simulation of day-to-day work, established a 'soft skills' module to ease the transition into professional norms, and pairs every new hire with a team of mentors and coaches, and encourages workplace adjustments such as flexible schedules (Microsoft, n.d.) (Neuroinclusion at SAP, n.d.). Other common workplace practices include tailoring job descriptions to be more visual and less text-heavy, allowing phone interviews instead of video, flexible work hours, quiet spaces, job-sharing options, noise-canceling headphones, note-taking software, and the ability to record meetings all aim to accommodate a wide range of cognitive needs. This shift is reflected in policy frameworks too. The Chartered Institute of Personnel and Development (CIPD), one of the world's leading HR standards bodies, has published a formal neuro-inclusion guide that organizations globally are now adopting as a baseline (CIPD, 2024).

The Eight Senses: Key

[V] Vision

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[O] Olfactory

[P] Proprioception

[Ve] Vestibular

[I] Interoception



Kimball Showroom: Dallas, Tx

...With Persistent Gaps

These multi-faceted approaches embrace the complexity and reality of neurodivergent workers by not relying on a singular solution but creating a network of support over time. However, there are limitations to these policies as they are biased towards specific neurotypes. Often centering autism, ADHD,

and dyslexia, there is a need to respond to the larger neurodiverse community including conditions such as sensory processing disorder or Tourette syndrome. These policies are not generalizable to all workplaces or environments, making it harder to implement policies in retail, manufacturing or healthcare.

The Series

In Part 1, we established the context. Sensory rooms opened the conversation, but the evidence underpinning their efficacy is thinner than the field assumes, and while policies in workplaces have built momentum for sensory design as a practice, they still leave much of the building, and neurotypes, underrepresented. This begs the question, “How can we go from a single sensory room, to a neuro-inclusive building?”

In Part 2, we will reframe from concept to application, exploring how sensory design can be distributed across an environment rather than confined to a single room. Here, we will examine how a constellation of varied, interconnected spaces can collectively support a wider range of sensory needs.



PART 1

THIS DOCUMENT

The Context

Why does this problem exist, and why does it matter right now?



PART 2

The Reframe

From a room to a practice—what sensory design actually looks like



PART 3

The Response

Putting sensory design into practice, at every phase

APPENDIX — GLOSSARY

When we use these terms, *here is what we mean*

If we are to make meaningful strides in sensory design, then precise language matters. In common usage, "neurodivergent" is sometimes treated as a synonym for autistic but this conflation obscures the full range of neurocognitive profiles that neurodiversity encompasses (e.g., ADHD, dyspraxia, Tourette syndrome).

This has real consequences for how research, policy, and design respond to people's needs.

The Human Spectrum

Neurodiversity / Neurodiverse

A group of people is neurodiverse. This describes the infinite variation in neurocognitive styles within our species (Walker, 2021).

Neurotype

Describes an individual's unique cognitive strengths and weaknesses. We are all born with a neurocognitive profile influenced by genetics and lifetime developmental changes (Inclusive Minds Foundation, n.d.).

Neurotypical

Refers to individuals whose cognitive functioning, thinking, perceptions, and behaviors align with mythical societal standards. It is often seen as the opposite of neurodivergent (Walker, 2021).

Neurodivergence / Neurodivergent

Describes individuals whose brains function differently from societal norms. This encompasses various neurological conditions, including those present from birth (congenital) and those acquired later in life (neurodegenerative) (Ramirez, 2023; Therapist Neurodiversity Collective, 2022).

The Design Response

Neuro-inclusion

The development of an environment where neurodivergent and neurotypical individuals can thrive, feel safe, and are included. A particular attention is paid toward the spectrum of sensory experiences (Morris, 2025).

Sensory Design

An environment that supports and intentionally enriches multiple human senses at multiple scales.

Sensory Room

A space that is purposefully designed to offer a controlled sensory experience to support emotional regulation, cognitive well-being, and reduce stress. It strategically activates and/or calms specific sensory inputs for those individuals who may need support self-regulating (NHS, 2020).

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