Sensory Design as a Practice

A Neuro-Inclusive Approach to Implementing Multi-Sensory Design Across Scales | Part 3

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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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.

CONTENTS

Sensory design is not a room you retreat to.

It is the environment you never have to escape.

PART 1: THE CONTEXT

1.1 Why Now? | Sensory rooms have proliferated faster than the questions they raise, producing a standardized, equipment-driven model that serves some users well and others barely at all.

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.

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.

READ PART 1

PART 2: THE REFRAME

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 neuroinclusive 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.

READ PART 2

PART 3: THE RESPONSE

P. 10 **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.

P. 24 **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 3

The Response

Putting sensory design into practice, at every phase

A framework is only as good as the process that delivers it. This section moves from what to build to how to build it, and who needs to be present when those decisions are made. For this approach to be truly neuro-inclusive, neurodivergent people should not be considered as end-users of this process, but participants in it.

3.1 — Designing With, Not For

3.2 — Until Next Time

3.1 —— DESIGNING WITH, NOT FOR

Choosing people *at every phase of design*

Building codes, accessibility standards, and performance metrics have evolved to address physical safety and mobility, but they have not kept pace with how people perceive, process, and regulate within space. Sensory design recalibrates our approach to expand the sensory tolerance and ensure human performance.

Although we provide sensory design strategies and spaces, this document's intent is not to be prescriptive but highlight research and design opportunities that can support neuroinclusive places and policies. The greatest impact occurs when we holistically embed sensory considerations into the design practice. From pursuit to occupancy, there are tools to fill research gaps, deepen our integration of sensory design, and ultimately better support neurodivergent people.

The Co-Design Cycle

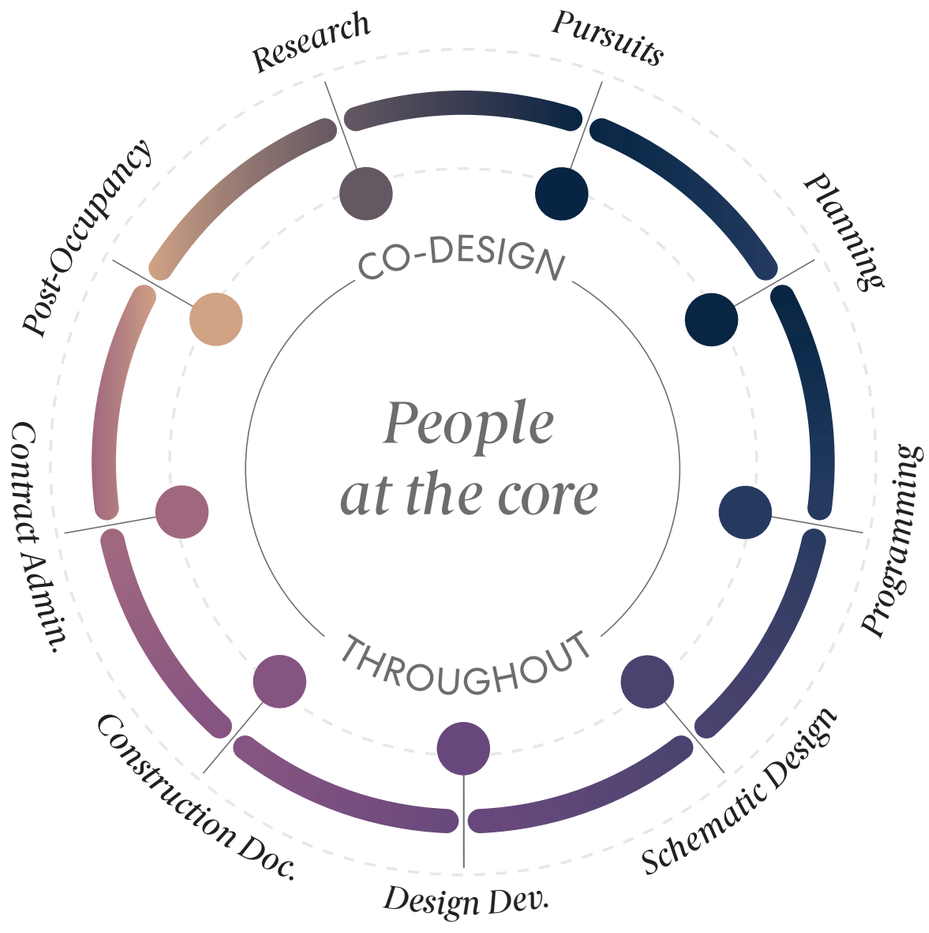

Figure 3: The Co-Design Cycle keeps people at the core of every project phase, from research and pursuits through post-occupancy. Users don't simply experience the result, but are active participants in shaping its development.

3.1 —— DESIGNING WITH, NOT FOR

Research

Grounding design in research and real user needs, rather than assumptions, leads to an environment that truly supports neurodivergent individuals. By integrating expert user insights within the research phase, teams can create spaces that positively benefit social, emotional, cognitive, and sensory wellbeing.

Collaborate with experts such as occupational therapists, clinicians and educators who are embedded in neurodiverse spaces daily.

Share out findings openly. Collective learning strengthens knowledge and drives continuous growth for everyone involved.

Evaluate impact on neurodivergent identities to reveal sensory, emotional well-being, and cognitive design considerations.

Define environments that clearly address and balance hyper- and hypo- sensory needs through intentional and responsive design strategies.

Clarify the exposure, outcomes, and neurotypes you are investigating. Engage neurodivergent researchers to reduce biases.

Pursuits

Neurodiversity should be treated as a core value, embedded in human-centered design. Pursuits should demonstrate repeatable processes, ask targeted questions early, and build trust through transparency.

Demonstrate process, not just outcomes by clearly articulating how your team will embed neuro-inclusive thinking at every stage of the project. In pursuits this means outlining a repeatable, intentional methodology, and being explicit about what neurotypes you are hoping to serve.

Ask purposeful questions early. Use targeted inquiry during pursuits to uncover sensory, cognitive, and behavioral needs that go beyond standard programming assumptions.

Be transparent. Acknowledge where there are knowledge gaps and express a willingness to learn to build a strong foundation of trust with clients.

3.1 — DESIGNING WITH, NOT FOR

PLANNING

Planning

Draw upon lived experiences through co-creation, pre-occupancy surveys, observations, and interviews to generate evidence-based design insights. This will reveal patterns in sensory comfort and spatial preferences.

Leverage user insights as experts in their own lived experiences. Design becomes more effective through co-creation.

Conduct a pre-occupancy survey to ground design decisions within lived experiences. This establishes the foundation for a thoughtful, evidence-based design approach.

Qualitative Methods: Use shadowing and observation to understand barriers or adaptations to navigation, comfort, and use in real time. Systematic surveys or semi-structured interviews can provide insight into specific needs (Finnigan, 2024). By asking targeted, repeatable questions about sensory comfort, focus, stress and spatial preferences, surveys can reveal patterns across larger user groups.

MUSC, Shawn Jenkins Children's Hospital:
Charleston, South Carolina

3.1 —— DESIGNING WITH, NOT FOR

Programming

Establish a clear, evidence-based foundation for design decisions before they become costly or difficult to change. By identifying sensory stressors early teams can define requirements that support comfort, clarity, and usability for neurodivergent users.

Sensory impact assessments can reveal hidden barriers in the built environment. These elements may not violate code, but they can significantly impact comfort and usability for neurodivergent individuals or people with sensory sensitivities.

Zoning and adjacency can be used to organize spaces with clarity. Buffers between quiet spaces, clustering high-stimulation functions together, and placing intentional thresholds can help people better predict, prepare, and recover from sensory inputs.

Site analysis to identify sensory stressors such as noise, lighting, and textures to inform design strategies that support comfort and well-being.

Schematic Design

Integrating neuro-inclusive principles during the schematic design phase ensures that decisions around zoning, adjacencies, circulation, and sensory conditions proactively support diverse user needs rather than retroactive fixes.

Provide choice, flexibility, and variety to support individual autonomy and sensory regulation. This helps to reduce stress and cognitive load by allowing users to remain in control.

Wayfinding Audits: Assess how intuitive, predictable, or legible a building's navigation is for someone with differences in spatial processing or anxiety, such as the Cooperative Research Centre for Construction Innovation's Wayfinding Audit Template (CRC Construction Innovation, 2007).

Adopt multi-sensory design frameworks to create sensory positive spaces. Frameworks, when used as guidelines rather than checklists, support and strengthen the inclusive design process.

Experience Prototyping: Simulate how a space will feel before it is built, using virtual reality, physical mockups, or temporary installations to gather sensory feedback. This helps us understand how different sensory profiles respond to light, sound, spatial scale, texture, and movement—allowing us to identify potential triggers, reduce unintended sensory stressors and refine environments to better support regulation, comfort, and personal autonomy.

3.1 —— DESIGNING WITH, NOT FOR

Design Development

Translate early concepts into detailed, coordinated design solutions that directly shape user experience. At this stage focus is on ensuring that neuro-inclusive design strategies get imbedded in technical drawings and specifications.

Iterative testing strengthens neuro-inclusive design by turning assumptions into verified, user-informed decisions. Rather than relying on a single solution, ideas can be tested, feedback obtained, and design refined.

Refine sensory strategies to preserve the original design intent and align with supporting research,

Validate with users. Review designs with users and experts to confirm that decisions align with lived experiences and intended neuro-inclusive outcomes.

Coordinate building systems. Work with consultants to align mechanical, electrical and plumbing systems with neuro-inclusive goals.

Construction Documents

Ensure that neuro-inclusive design intent is maintained through drawing, documentation, and detailing so that inclusive strategies can be fully realized, not lost in interpretation.

Sensory audits look beyond code implications to assess real experiential conditions (Grant, 2025). It includes on-site observations, user feedback, environmental measurements, and mapping exercises.

Detail thresholds and transitions. Provide explicit drawings for zoning, buffers, and wayfinding elements to maintain spatial clarity and predictability.

Reinforce design intent through documentation to capture neuro-inclusive strategies. Notes, diagrams, drawings, narratives, and specifications work together to describe these strategies to contractors.

3.1 —— DESIGNING WITH, NOT FOR

Contract Administration

Advocate for neuro-inclusive design by reinforcing intent, reviewing submittals, monitoring installation, evaluating substitutions carefully, and communicating clearly to ensure critical features are accurately implemented during construction.

Prioritize neuro-inclusive design during value engineering by identifying and clearly communicating which elements are essential toward neuro-inclusive goals. These should be framed as performance and well-being requirements as opposed to optional features.

Mock-ups and field testing validate design intents. These tools support accurate installation of critical neuro-inclusive elements, reduce risk of misinterpretations during construction, and allow users to experience the space early and provide meaningful feedback.

Educate contractors as many of the most critical neuro-inclusive design strategies are performance based and experiential, not immediately obvious in drawings or specs. Without clear understanding and communication, these features are at risk of being misinterpreted, downgraded, or removed during construction.

Post-Occupancy

Evaluate performance and continuously improve outcomes based on real user experience. This phase not only validates that design intent is achieved, but refined over time.

Sensory mapping: A tool to help individuals predict and determine the best ways for them to navigate a space using an annotated layout that identifies areas with high and low sensory thresholds, which helps individuals navigate environments safely and comfortably (Cieslik, 2024). This helps individuals understand and anticipate zones of stimuli in a safe and comfortable environment.

Post Occupancy Evaluation (POE) measures how well the space supports sensory and cognitive needs, and confirms if the design intent delivers its intended sensory outcomes.

Fine tune building systems such as lighting levels, acoustics and thermal comfort to ensure that they operate as intended.

Validate user control and accessibility in conjunction with fine tuning building systems to ensure that occupants can easily use building system controls.

Document lessons learned. Capture what worked and what didn’t work to translate back into internal best practices for neuro-inclusive design.

3.1 —— DESIGNING WITH, NOT FOR

Policies *and partnerships*

Architecture alone cannot deliver neuro-inclusion. Sensory-friendly environments depend equally on the organizational policies and cultural commitments that govern how spaces are used, scheduled, and maintained. Design and policy must move together.

01 **Integrate early**

Embedding neurodiversity considerations at the policy and planning stage ensures that sensory and cognitive needs are treated as foundational design criteria, not optional enhancements.

02 **Advocate beyond design**

Architecture by itself cannot support neuro-inclusion without aligned operational and organizational policies. Sensory-friendly environments are reinforced by procedures that govern lighting use, noise management, space scheduling, occupancy density, and behavioral norms.

03 **Embed across every phase**

Neuro-inclusive design requires continuity across all phases of the design process, from pre-design charettes to programming and concept development through construction and post-occupancy evaluation.

RESOURCES

Dive *deeper*

Picking up this document is a first step. We encourage readers to explore our citations, engage with our community partners, and continue building a holistic understanding of neuroinclusive design.

In the United States, the Autism and Developmental Disabilities Monitoring (ADDM) Network offers professional training.

ADDM Network ↗

Internationally, Neurodiversity Hub provides CPD-certified courses.

Neurodiversity Hub ↗

At the individual level, continued education on disability justice builds empathy, allyship, and more informed practice. Explore the Knowledge Repository on PRECEDE.

PRECEDE ↗

Remember, you can engage local grassroots organizations to understand your specific community's needs.

3.2 —— UNTIL NEXT TIME

Why one room *was just the beginning.*

Sensory rooms have played an important role in advancing awareness of neurodivergent needs within the built environment. However, they are not sufficient as a primary strategy for neuro-inclusion. When relied upon in isolation, sensory rooms unintentionally constrain how designers think about sensory inclusion if treated as the primary solution.

SENSORY ROOMS IN ISOLATION...

01. **Reflect a narrow sensory profile**

Prioritizing visual and auditory stimulation while overlooking proprioception, vestibular processing, and interoception.

02. **Unintentionally exclude**

Environments built around visual stimulation offer limited benefit to those who are blind, low vision, or visually overstimulated.

03. **Isolate support rather than embed it**

Requiring users to leave their activities to self-regulate reinforces the idea that sensory needs are exceptional, not expected.

04. **Place the burden on the individual**

Users must recognize their need, navigate to the space, and enter without stigma. The building bears none of that responsibility.

05. **Oversimplify sensory experience**

A limited set of stimuli and equipment cannot account for the full range of how people process and regulate.

06. **Cap design's potential**

Sensory rooms undermine architecture’s role in shaping light, acoustics, circulation, and materiality. By narrowing the definition of sensory support, they limit innovation and prevent exploration of building-scale and urban-scale strategies.

07. **Do not count for continuous experiences**

Sensory needs unfold throughout daily movement. A single room cannot address transitions, circulation, or the ongoing nature of sensory life.

08. **Are an amenity, not a commitment**

Added late, placed in leftover space, framed as optional. Inclusion requires more than a room tucked in where space allowed.

WHAT COMES NEXT

Imagine a child who could simply listen.

A patient who could simply heal.

An employee who could simply work.

A family who could simply be there.

This is what architecture already delivers for some people. Sensory design is the practice of delivering it for everyone: not in one room, but in every room, from the very first line drawn. This is version one. **The work continues.**

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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For the full list of citations:

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