sfsarchitecture

Design for Inclusion

Neurodiversity in Architecture

As designers, we have a responsibility to create beautiful, functional, and inclusive spaces where everyone can thrive — this includes people with diverse abilities and ways of experiencing the world.

Human brain function exists on a broad spectrum. While many people are considered "neurotypical," a significant portion of the population falls outside this definition. Those whose natural cognitive variation differs from the majority are considered "neurodiverse." This includes individuals with conditions such as attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), dyslexia, dyspraxia, dementia, or those affected by brain injuries or environmental factors.

Estimates suggest that up to 20% of people experience some form of neurodiversity, with the CDC reporting that 1 in 36 children in the U.S. has been identified with ASD.

By understanding the unique ways neurodiverse individuals perceive and interact with the world—their strengths, challenges, and perspectives—we can move beyond basic accommodations and design environments that enhance their quality of life, enrich their personal experiences, and foster deeper connections within their communities.

Key Considerations in Design for Inclusion

In creating supportive built environments, there are two key considerations that have the greatest impact on how individuals interact with their environment:
Controlling Sensory Stimulation and Spatial Organization.

The Thompson Center for Autism & Neurodevelopment at the University of Missouri
Opening in 2026

Controlling Sensory Stimulation

Neurodiverse individuals, particularly those with ASD, are often highly sensitive to their surroundings and can easily become over- or under-stimulated by sounds, lighting, textures, temperature, and even the perception of their body in space. By being intentional in the design of sensory environments, we can reduce the negative impact that undesirable stimulation has on them and can fine-tune their environment so that it positively affects their experience.

Acoustic Quality

The effect of sound has a profound impact on the quality of experience in any space. This is particularly evident for neurodiverse individuals. Unimpeded audio signals can significantly disrupt concentration and impede focus. Designers can provide a range of acoustic treatments with particular emphasis on reducing background noise, echo, and reverberation. The amount of acoustic control should vary based on the level of focus needed in the space (e.g. a circulation corridor may require less acoustic control than a classroom) and users should have some choice in finding an acoustic setting most appropriate for their activity, be it a small alcove fitted with acoustic wall panels, a high-backed upholstered chair, or a fully enclosed office or study space.

Visual Quality

Neurodiverse individuals often experience heightened sensitivity to their surroundings, making careful design of visual environments essential to their well-being. Indirect artificial lighting is a key element in creating comfortable and inclusive spaces, as it reduces glare and harsh shadows that can overwhelm or disorient. By pairing this with dimmable lighting and color temperature adjustment, spaces can adapt to individual needs, supporting a range of activities and moods. Warmer tones foster calm and relaxation, while cooler hues promote focus and alertness. Adjustable lighting systems provide users with greater control over their environments, empowering them to feel more at ease and engaged in their surroundings.

Daylighting further enhances these spaces by connecting occupants with the rhythms of nature, promoting a sense of balance and well-being. Strategically placed windows, skylights, and light shelves can introduce diffused daylight without creating excessive contrast or glare and allowing for occupants to respond naturally to the changing character of sunlight.

Intuitive signage and pathways with clear wayfinding signals reduce cognitive load and allow those who struggle with understanding text alternative ways of navigating space, while matte or low-reflective surfaces and the simple application of color and pattern prevent visual overstimulation.

Controlling Sensory Stimulation:
Thoughtful design of sensory environments helps balance over- and under-stimulation, fostering comfort, engagement, and well-being for neurodiverse individuals.

- **Acoustic Quality:** Providing a variety of acoustic treatments reduces background noise and reverberation, with flexible options like furniture, alcoves, or enclosed spaces allowing users to choose settings that suit their activities.
- **Visual Quality:** Features like indirect lighting, dimmable controls, and color temperature adjustments reduce glare and support different moods and activities, while natural daylighting and clear visual cues promote well-being and ease of navigation.
- **Tactile Quality:**
  A variety of textures, including natural materials like wood and stone, combined with tactile exploration opportunities and such as surfaces and vegetation provide sensory grounding and a comforting connection to the natural world.
- **Spatial Positioning/Proprioception:**
  Generous pathways, open spaces, and clear organization reduce disorientation and anxiety, while movement-friendly areas encourage physical expression and self-regulation that help build self confidence and autonomy.

Tactile Quality

For neurodiverse individuals, the tactile qualities of an environment play a critical role in creating spaces that are both stimulating and comforting. Opportunities for tactile exploration can encourage engagement and provide sensory grounding, which is particularly beneficial for those who experience heightened sensory needs. Thoughtfully designed surfaces, such as textured walls, sculptural elements, or flooring with subtle texture variation, can invite exploration and interaction without overwhelming the senses. These tactile features should be intentionally placed to enhance the spatial experience while building a sense of curiosity and discovery.

A variety of textures within the built environment also provides opportunities for sensory balance. Smooth, soft materials can offer moments of calm, while rougher or more textured surfaces introduce stimulating contrasts. When combined with natural materials such as wood and stone, these elements can evoke a sense of connection to the natural world. These materials contribute to a sense of authenticity and stability, which can help neurodiverse individuals feel more anchored and at ease.

Outdoor spaces can enrich the sensory experience by integrating surfaces and vegetation that feature a variety of colors and textures. Crunchy gravel, soft grasses, smooth leaves, and the rough bark of trees create a dynamic environment that invites touch and exploration. The inclusion of plants with diverse scents—such as lavender for calming effects or citrus for an energizing boost—can also provide neurodiverse individuals with sensory cues that help regulate mood and focus.

Spatial Positioning / Proprioception

Neurodiverse individuals often experience their physical environment differently due to variations in proprioception—the sense of their body's position and movement. For some, navigating tight, crowded spaces can cause disorientation or anxiety, while others may benefit from areas that encourage movement and sensory feedback. Designing environments with generous circulation pathways, open spaces, and clear spatial organization provides a sense of safety while allowing for intuitive navigation, reducing cognitive strain, and ensuring physical comfort. Incorporating features like non-slip flooring and strategically placed handrails enhances safety and supports individuals with differing levels of balance or coordination.

Spaces that encourage movement and offer physical engagement are also critical for supporting neurodiverse users. Movement-friendly areas such as indoor walking paths, outdoor courtyards, or multi-sensory play spaces provide opportunities for physical expression and regulation. These spaces should be designed with soft, durable materials and gentle transitions between zones to ensure safety. Incorporating elements like swing chairs, climbing features, or areas for pacing and repetitive movement can help individuals regulate their energy and focus.

Spatial Organization

Spatial organization plays a vital role in creating environments that are legible, functional, and supportive for neurodiverse individuals. By addressing an environment's spatial arrangement, sensory qualities, transitional areas, and their contribution to user safety, designers can ensure that spaces promote comfort, reduce anxiety, and encourage positive interactions.

Spatial Organization:
A building's organization can contribute to neurodiverse users' sense of well-being and safety.

- **Spatial Arrangement:** Design spaces to follow the natural flow of activities with familiar, repetitive elements to create predictability and comfort.
- **Organizing by Sensory Quality:** Arrange spaces by both function and sensory characteristics using consistent cues like lighting and materials to clarify each area's purpose.
- **Easing Sensory Shifts:** Use transitional zones and gradual sensory changes—through lighting, materials, or acoustics—to help users adapt between contrasting environments.
- **Ensuring Safe Environments:** Prioritize physical safety with features like rounded edges, soft surfaces, and slip-resistant flooring to minimize hazards. Mitigate risks from bolting or wandering by using design strategies such as indirect exit access, limited sightlines, and subtle spatial barriers.

Spatial Arrangement

Spaces should be organized to reflect the natural flow of activities, ensuring an intuitive progression from one function to another without drastic contrasts in use. Repetition and familiarity in design create a predictable environment, helping neurodiverse individuals feel at ease and in control.

Organizing by Sensory Quality

Spaces should be organized not only by their function but also by their sensory characteristics. Thoughtful compositions use elements like furniture arrangement, lighting, and materiality to signal the purpose of each space clearly. Applied consistently, this strategy minimizes ambiguity and enhances understanding of expected activities within each area.

Abrupt shifts in sensory input, such as moving directly from a noisy lobby to a quiet room, can overwhelm neurodiverse individuals. Grouping spaces with similar sensory characteristics together and incorporating transitional zones help users recalibrate and gradually adapt to new sensory environments.

Easing Sensory Shifts

Transitions between spaces are critical for creating balance in sensory experiences. Changes in materials, lighting, or acoustics signal a shift between environments, allowing users to adjust as they move between high- and low-stimulus areas. Transition spaces can also include sensory rooms or small spatial nodes designed for individuals to pause and recalibrate their senses before moving on.

Ensuring Safe Environments

Safety is a fundamental consideration for designers, particularly when designing for neurodiverse individuals who may react to triggers in their environment differently. Incorporating features that prevent physical harm, like rounded edges, soft surfaces, non-slip flooring, and hot water safety fittings ensure spaces are hazard-free and supportive for all.

Some neurodiverse individuals are prone to impulsive, aggressive, or unsafe behaviors, such as bolting or wandering. This can put them into situations where their well-being is at risk. To mitigate the risks from bolting or wandering, designers may consider indirect access to building exits, limiting sightlines to potential paths of escape, or adding subtle obstacles that allow caregivers or companions a moment to catch up and stop their movement.

Designing for neurodiversity is not just about meeting basic accessibility standards, it is an opportunity to create spaces that celebrate the unique perspectives and needs of all individuals.

By understanding how to control the sensory environment and how to be intentional with the arrangement of space, we can craft buildings that are inclusive, supportive, and enriching. These strategies ensure that neurodiverse users can navigate, engage, and thrive in spaces that respect their individuality and create connections with those around them.

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