

## Autism-Specific Housing Design for Adults: What the Research Shows

### ADA gap

ADA addresses mobility and sensory impairments tied to physical disability, but not the neurological sensory processing differences that characterize autism. The field of autism-specific housing design is relatively young but growing, with a body of peer-reviewed work now focused specifically on adults.

### The Core Challenge: Spectrum Means No Universal Solution

Each individual has unique challenges, abilities, and preferences — what works for one may not work for another. Some autistic adults are hypersensitive to inputs like sounds, smells, fabrics, and light, while others have low sensitivity and seek ways to boost sensory input. Still others have a combination of both. [Autism Spectrum News](#)

This is confirmed in a landmark Springer study on residential design: sensory preferences incorporated in design based on particular examples of sensory symptoms within the autism spectrum do not necessarily match the preferences of the actual users — differences relate especially to noise and temperature perception, the size of shared rooms, and visual stimulation in private units. [Springer](#)

### Key Research Frameworks

**1. The ASPECTSS™ Design Index (Dr. Magda Mostafa)** The most cited autism-specific architectural framework. The ASPECTSS Design Index explains the importance of: **Acoustics, Spatial Sequencing, Escape spaces, Compartmentalization, Transition Spaces, Sensory Zoning, and Safety.** Originally tested in schools but now applied to adult housing.

- Full index: [autism.archi/aspectss](https://autism.archi/aspectss)

**2. Ahrentzen & Steele — "Advancing Full Spectrum Housing"** The most rigorous adult-focused U.S. design guide. Arizona State University researchers drew on existing literature and interviews with exemplary housing programs to derive 10 design goals and 16 design guidelines covering: **floor plan strategies, outdoor spaces, kitchens, bedrooms, sensory rooms, bathrooms, technology, visual cues, ventilation, lighting, materials, acoustics, and appliances.** <https://autismhousingpathways.org/autism-friendly-design/>

**3. Brand — "Living in the Community: Housing Design for Adults with Autism"** A 2010 British collaboration between the Kingwood Trust and the Helen Hamlyn Centre of the Royal College of Art. Researchers reviewed literature, consulted autistic biographies, interviewed autistic adults and professionals, and visited supported residences. They identified four design themes: Growth

and Development, Triggers, Robustness, and Support

Tools. <https://autismhousingpathways.org/autism-friendly-design/>

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## Design Features by Sensory Domain

### Acoustics (most-researched domain)

Acoustics is acknowledged as one of the most influential features of the sensory environment on autistic behavior. Mostafa found that attention spans could be tripled and self-stimulatory behavior reduced 60% in **acoustically controlled environments**.

Specific residential interventions include:

- Solid core doors with high Sound Transmission Class (STC) ratings, filling gaps between jambs and frames with foam insulation, and sound-absorbing panels built from acoustic insulation and wood framing. In echoey rooms, upholstered furniture and thick rugs help — but construction-level solutions (insulation in interior walls, double- or triple-paned windows, extra drywall layers, subfloor insulation) are needed to control sound transmission between rooms. <https://embrace-autism.com/autism-friendly-home-design/>
- Installing anti-trauma and **sound-absorbing flooring, carpeting and wood furniture**; soundproofing walls and roofs; using double-glazed windows; and reducing rattles and noise from ventilation systems. [PubMed Central](#)
- Designing closets between bedrooms to act as a sound buffer. [Sensory Friendly](#)

### Lighting

Thoughtful placement of windows and blinds, and installation of **dimnable lights**, allows users to manage sensory overstimulation caused by light. [PubMed](#)

Controllable lighting such as dimmable fixtures and glare-reducing window treatments helps manage visual sensitivities. **Fluorescent lighting should be avoided due to its flicker and hum**. <https://www.allaboutaba.com/blog/autism-friendly-housing-design-features>

Autism-friendly lighting avoids fluorescent lights and includes adjustability — different levels of brightness in each room, along with access to natural light. Orienting the building to maximize morning natural light in bedrooms and afternoon light in living areas is a specific strategy. <https://www.sensoryfriendly.net/autism-friendly-home-modifications-and-sensory-friendly-design-for-adults/>

Smart lighting systems offer an additional benefit: lighting presets can be set automatically for different times of day, helping trigger daily routines. <https://embrace-autism.com/autism-friendly-home-design/>

### **Temperature & Ventilation**

Factors including temperature and ventilation can change the way autistic individuals interact with their environment. [Sage Journals](#) The Springer case study specifically found that temperature perception was one of the most prominent areas where architects' design assumptions diverged from residents' actual experiences.

Individual room-level air conditioning with quiet operation is recommended, as well as ensuring spaces are well ventilated and avoiding strong smells. Dedicated individual HVAC controls per room (rather than centralized thermostats) emerge repeatedly in practice guides.

### **Color & Visual Environment**

Subdued, muted color palettes — especially in green-blue shades — are calming and reduce visual overstimulation. <https://www.allaboutaba.com/blog/autism-friendly-housing-design-features>

Designers should rely on tone (lightness/darkness) rather than bright colors to indicate the location of light switches and outlets, and choose materials that contain low or no Volatile Organic Compounds (VOCs). <https://todayshomeowner.com/blog/home-design-autism-spectrum-disorder/>

Glare and reflective surfaces cause stress, anxiety, and lack of concentration. Reducing hard, shiny, and reflective surfaces in an interior scheme helps ease visual distraction.

<https://www.danfloor.co.uk/autism-design-principles/>

### **Spatial Layout, Zoning & Predictability**

Three major spatial criteria dominate the research: (i) sensory quality — minimizing stimuli; (ii) intelligibility — simple layouts that aid orientation; and (iii) transition spaces — providing adequate buffering between spaces with different sensory qualities. [PubMed Central](#)

Each space should include a single, clearly defined function and sensory quality. The separation between compartments can be through furniture arrangement, differences in floor covering, differences in level, or variances in lighting — sensory qualities define function and reduce ambiguity. <https://www.autism.archi/aspectss>

Quiet/retreat spaces are among the most consistently recommended features: providing spaces that allow for retreat is extremely useful for autistic adults to prevent or face sensory overload. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8003767/>

### **Materials & Tactile Surfaces**

Carpets absorb sound and have exceptionally low VOC levels. Soft floor finishes reduce harm from proprioceptive-seeking behaviors like throwing oneself to the floor. Interior design should address smell, touch, taste, and sound on an equal basis with sight — in many autistic people, sight may not be the dominant sense. <https://www.danfloor.co.uk/autism-design-principles/>

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### **Real Built Examples (Adult Housing)**

**Sweetwater Spectrum Community — Sonoma, California** The most documented U.S. example. This community for 16 residents integrates autism spectrum-specific design, universal design, and sustainable design strategies. It provides permanent homes for residents throughout their lives, with supportive services tailored to and evolving with individual needs at each phase of life. [Terrain.org](https://terrain.org)

The campus includes five homes (20 residents total), a community center with exercise studio, media room, and library, built to LEED Gold specifications with solar panels, energy-efficient HVAC, and stormwater management. [Sweetwater Spectrum](https://sweetwaterspectrum.org)

Autism-specific design strategies promote serene, legible spaces that create a safe, nurturing environment, with practical sustainable design strategies promoting health and wellness. [https://www.architectmagazine.com/project-gallery/sweetwater-spectrum-community\\_1](https://www.architectmagazine.com/project-gallery/sweetwater-spectrum-community_1)

- Architect's page: [lmsarch.com/sweetwater](https://lmsarch.com/sweetwater)
- AIA Top Ten writeup: [aiatopten.org/node/369](https://aiatopten.org/node/369)
- ArchDaily: [archdaily.com/446972](https://archdaily.com/446972)
- Organization: [sweetwaterspectrum.org](https://sweetwaterspectrum.org)

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### **Peer-Reviewed Articles (Adult-Focused or Inclusive)**

## Article

## Where

**Built Environment Design and People with ASD: A Scoping Review** (Berto et al., 2021) — defines sensory quality, intelligibility, and predictability as the three core design domains

[PMC8003767](#)(open access)

**Detail Matters: Exploring Sensory Preferences in Housing Design for Autistic People** (Nguyen, d'Auria & Heylighen, 2020) — case study of a residential facility for adults, finds architect assumptions diverge from residents' actual thermal and acoustic experiences

[Springer](#)

**Considerations of the Built Environment for Autistic Individuals** (Black et al., 2022, *Autism* journal) — adult-inclusive literature review covering temperature, color, sound, layout

[PubMed](#)

**Insights into Sensory and Relaxation Preferences to Inform the Design of Calming Spaces for Autistic Adults** (2024, *Autism in Adulthood*) — 96-adult survey on sensory preferences and essential features of calming/retreat rooms

[Liebertpub](#)

**Developing a Taxonomy for Sensory-Informed Architectural Design** (2025) — proposes a four-theme classification system integrating spatial and sensory design qualities

[Taylor & Francis](#)

**How Well Environmental Design Can Be Suited to People with ASD: An NLP Analysis** (PMC, 2022)

[PMC9103321](#)(open access)

**Mostafa, M. "Housing Adaptation for Adults with Autistic Spectrum Disorder"** (Open House International, 2010) — the foundational paper applying ASPECTSS to adult residential contexts

Available via  
[ResearchGate](#)

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## Key Practitioner & Design Resource Websites

- **Autism Housing Pathways** — the most comprehensive practitioner resource, compiling all major design guides and frameworks: [autismhousingpathways.org/autism-friendly-design](https://autismhousingpathways.org/autism-friendly-design)
- **Madison House Autism Foundation** — housing advocacy and design guidance, including budget-conscious modifications: [madisonhouseautism.org](https://madisonhouseautism.org)

- **Embrace Autism** — first-person adult autistic perspective on home modifications, written by an autistic adult after diagnosis: [embrace-autism.com/autism-friendly-home-design](https://embrace-autism.com/autism-friendly-home-design)
  - **Sensory Friendly Solutions** — apartment case study designed by and for sensory-sensitive adults: [sensoryfriendly.net](https://sensoryfriendly.net)
  - **Autism Spectrum News — Inclusive Housing (2024)**: [autismspectrumnews.org](https://autismspectrumnews.org)
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### **A Critical Caveat the Research Consistently Makes**

Architects' primary design strategies relate to the built environment's sensory aspects — but in autistic residents' lived experience, not only sensory perception is essential. **Functional and intangible aspects of space are important too: how a space works and what space means to them.** This challenges existing design guidelines and broadens understanding of the role of the built environment. [Springer](#)

The consistent recommendation across the literature is co-design: involving autistic adults in the design process rather than applying checklists derived from clinical descriptions alone. As the principle in the advocacy community goes — *nothing about us, without us*.