AUID
ASSOCIATION OF UNIVERSITY INTERIOR DESIGNERS

Sensory Processing

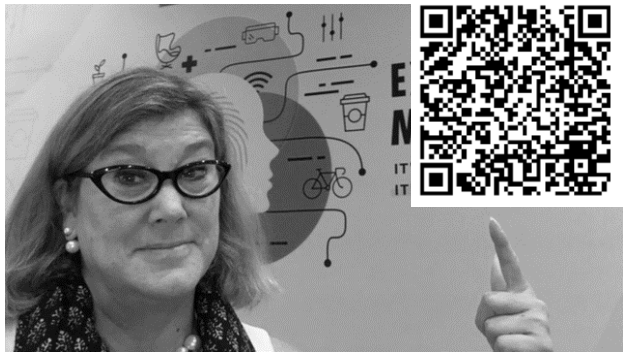
Cognitive Well-being & Neuroinclusion

HOK

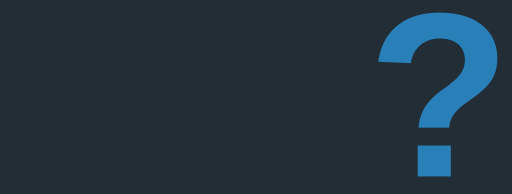
workplace evangelist

kay sargent

thought leadership
+ provocateur



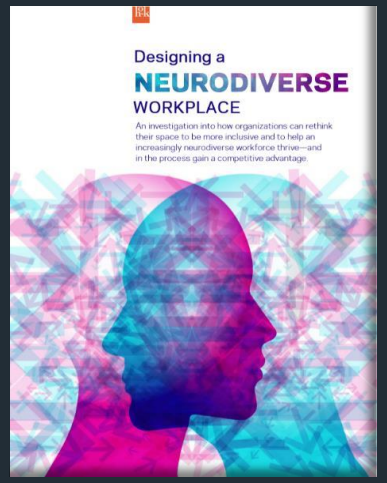
PASSIONATE
future-caster



It started with a simple question…

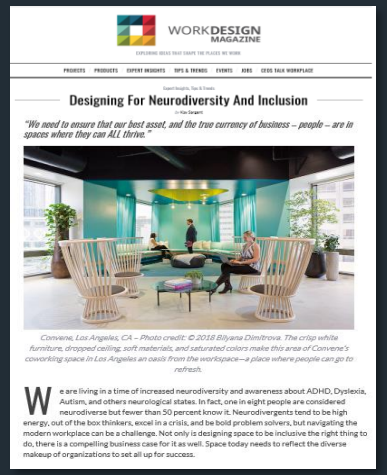
How do we accommodate neurodivergents in the workplace?

Neuro-inclusion Research

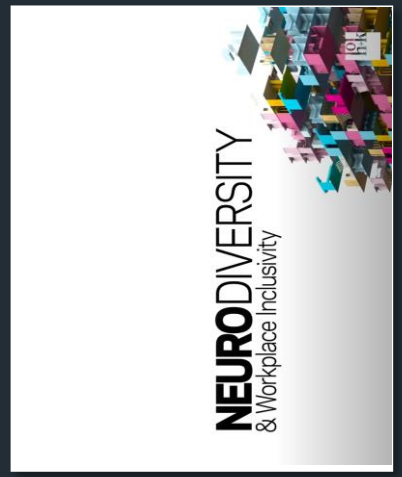


https://www.hok.com/ideas/publications/hok-designing-a-neurodiverse-workplace/

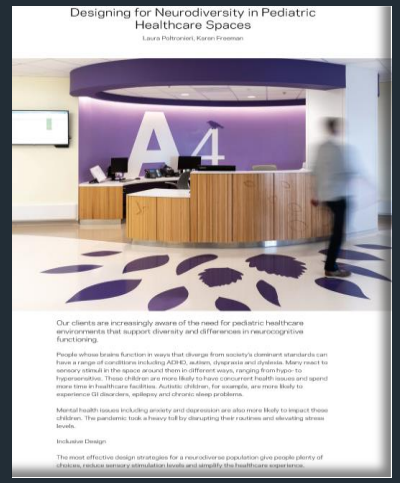
https://www.hok.com/ideas/publications/trends-affecting-neurodiversity-toward-2030/



https://www.workdesign.com/2019/12/designing-for-neurodiversity-and-inclusion/



https://www.youtube.com/watch?v=KoGdEqZIn8M



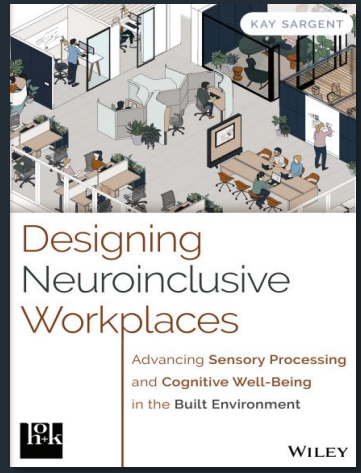
https://www.hok.com/ideas/publications/designing-for-neurodiversity-in-pediatric-healthcare-spaces

http://tarkett-8435814.hs-sites.com/neurodiversity-1

http://www.hokforward.com/read/inclusive-design-for-complex-buildings/

https://www.youtube.com/watch?v=Gy9EZNGPwT0&t=6s

https://bit.ly/3XL1nGQ



Designing Neuroinclusive Workplaces: Advancing Sensory Processing and Cognitive Well-Being in the Built Environment: Sargent, Kay: 9781394309337: Amazon.com: Books

HOK is not a licensed healthcare provider and any recommendations discussed herein are based on HOK's experience and training related to specific projects and elements of design and are not meant to be an endorsement or a solution for every possible situation.

We are not the same.

Some impairments look like this:

Others look like this:

Some are **temporary**, some are **permanent**,
and some are **situational**.

70% of disabilities are invisible.

SOURCE: https://news.microsoft.com/source/features/diversity-inclusion/leaders-who-revealed-disabilities-found-unexpected-rewards/#:~:text=She%20says%20most%20disabilities%20are,about%20disability%20important%20for%20everyone.

Everyone’s brain function differently.

While the functioning of neurotypical individuals falls within set norms, neurodivergents, or neurominorities, fall outside of those parameters.

- Autism Spectrum Disorder (ASD)
- Attention Deficit Hyperactivity Disorder (ADHD)
- Dyslexia
- Dyspraxia
- Dyscalculia
- Dysgraphia
- Asperger’s
- Tourette’s Syndrome

Neurodiversity

1 in 5 people

are considered neurodivergent…

but fewer than 50% even know it.


Agatha Christie


Steve Jobs

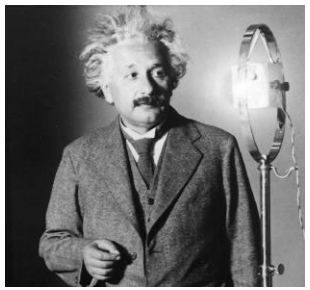
Cher


Tim Burton

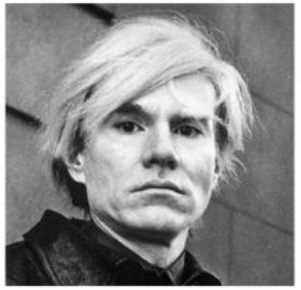

Mozart


Richard Branson

Simone Biles


Albert Einstein


Jennifer Aniston


Andy Warhol


Emma Watson


Bill Gates


Elon Musk


Anthony Hopkins

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SOURCE: Neurodiversity at Work; https://pubmed.ncbi.nlm.nih.gov/32996572/

We are freshwater fish in salt water.

Put us in fresh water and
we function just fine.

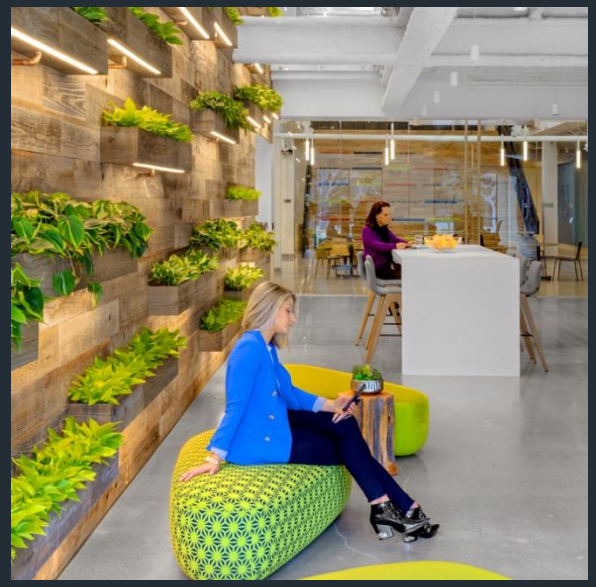
Put us in salt water and we struggle to survive.

- An Autistic student

Since the pandemic, the world has shifted.

Now everyone has a heightened sensitivity to their surroundings.

Sensory Thresholds



HYPERSENSITIVE

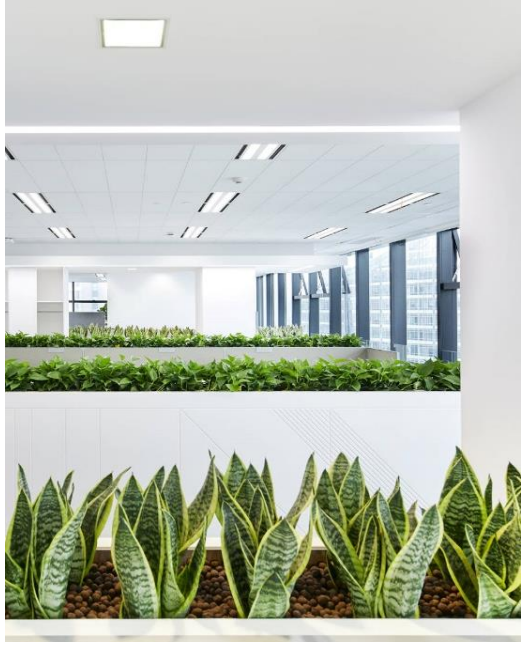
- Prefer less sensory stimuli
- Organic, simple patterns
- Light, neutral colors
- Clean, orderly spaces
- Little to no background noise
- Personal space boundaries

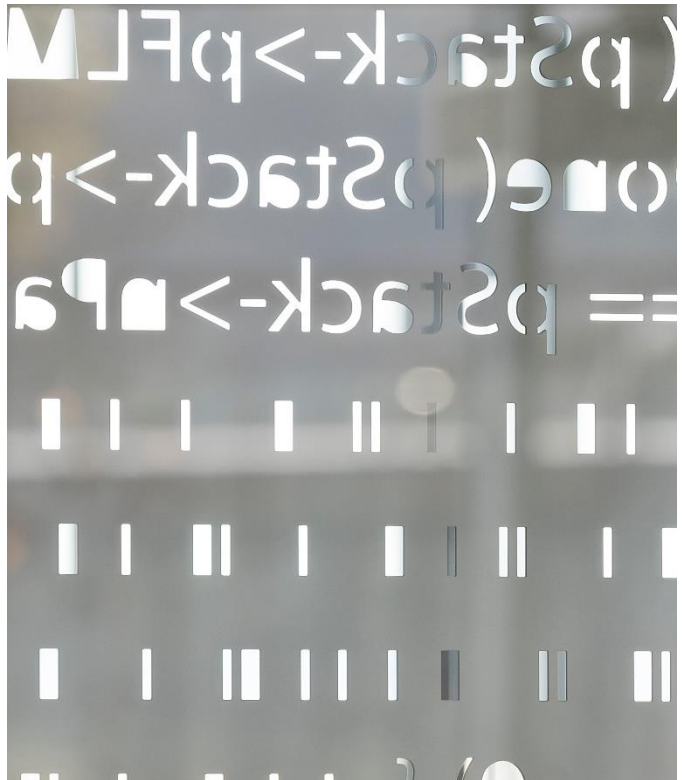
NEUROTYPICAL

HYPOSENSITIVE

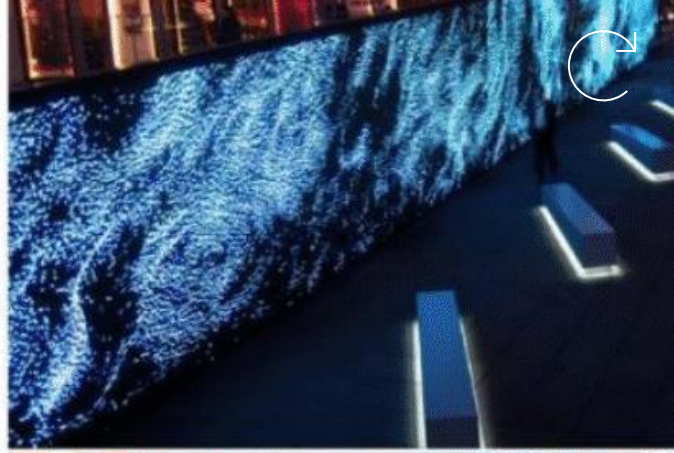
- Prefer more sensory stimuli
- Layering of textures and planes
- Saturated, contrasting colors
- Plenty of visual interest
- Background chatter and/or music
- Space to move/fidget

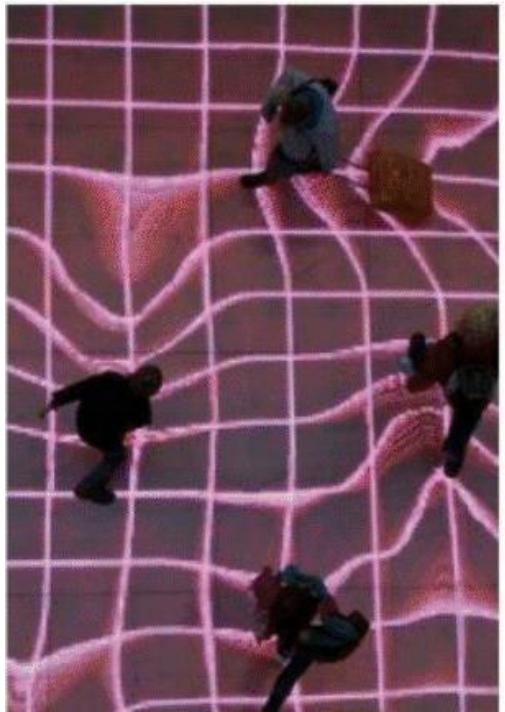
For hypersensitive…

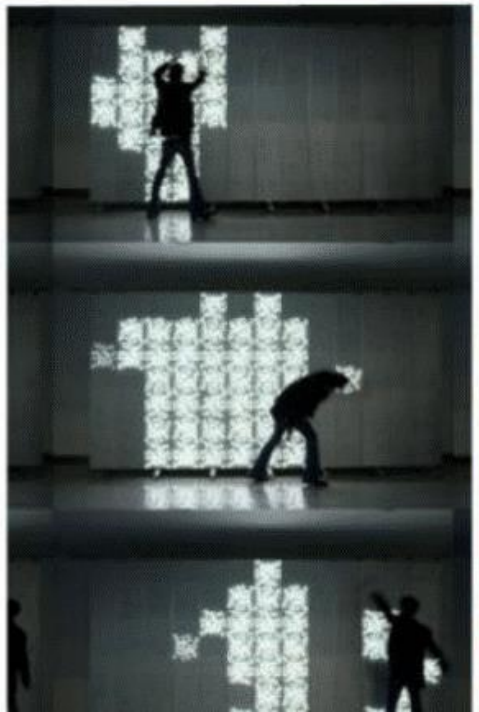


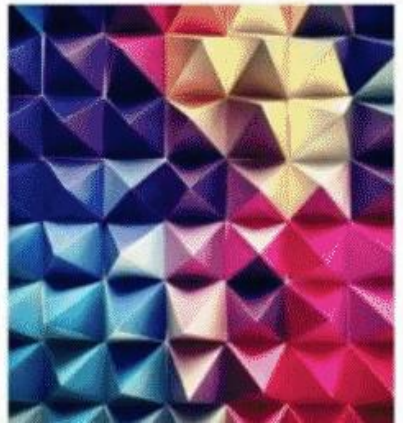


For hyposensitive…









Sense

AUDITORY

VISUAL

TACTILE

OLFACTORY
(Smell)

GUSTATION
(Taste)

INTEROCEPTIVE
(Internal sensations)

PROPRIOCEPTIVE
(Body position)

VESTIBULAR
(Balance and coordination)

Sensory Distractions

(sounds, smells, visual clutter)

Sensory Distractions

(sounds, smells, visual clutter)

Cognitive Distractions

(loss of focus, discomfort)

Sensory Distractions

(sounds, smells, visual clutter)

Cognitive Distractions

(loss of focus, discomfort)

Loss of Engagement and Productivity

(presenteeism, poor recall, stress, burnout, dissatisfaction)

“Autistic people are
canaries in the coal mine:
our needs aren't actually different
from typical people’s,
just more intense and specific.”

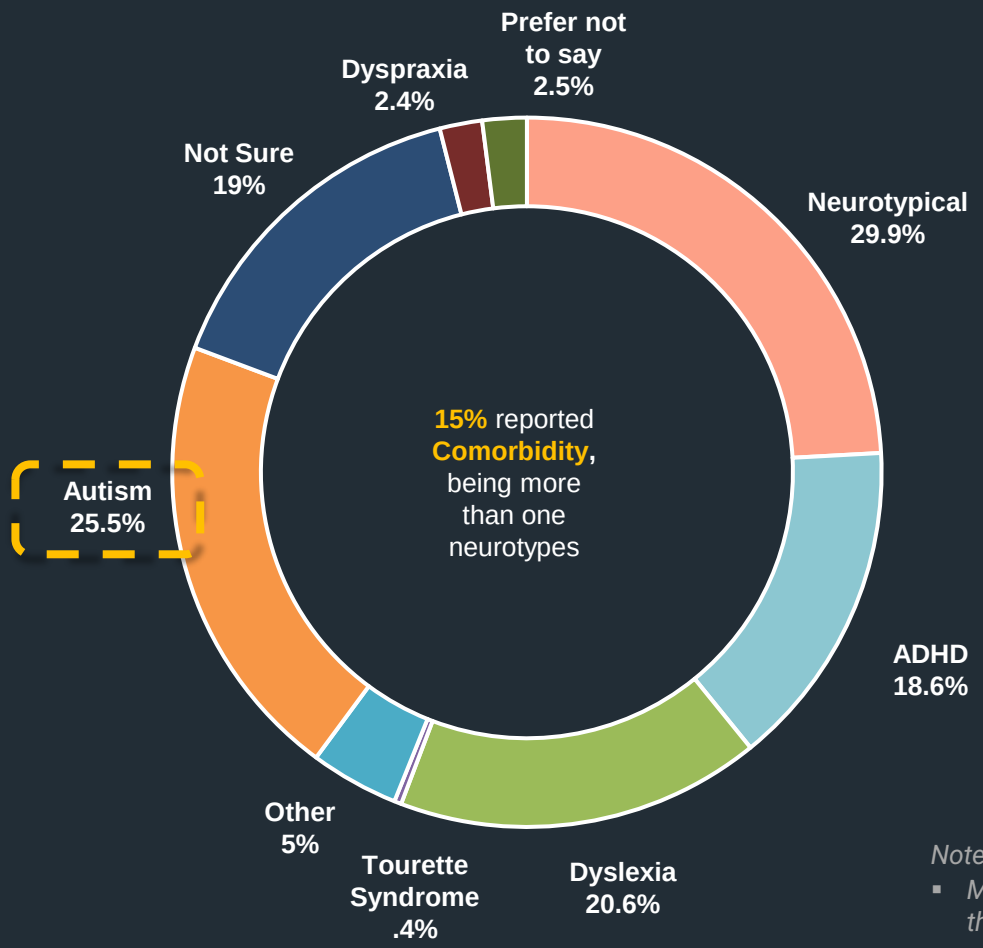
- Kirsten Lindsmith
blogger on autism

Survey says….

Neurotype of Respondents

Mixed Neurotype Scientific Population

Feb. – April 2024



Notes:

- *Many in the other category are noted they were currently being screened and are awaiting an official diagnosis.*

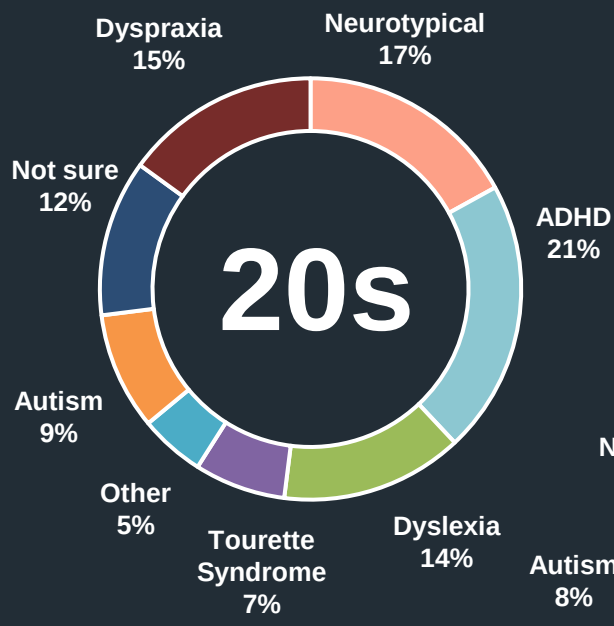
30%
Reported to be neurotypical.

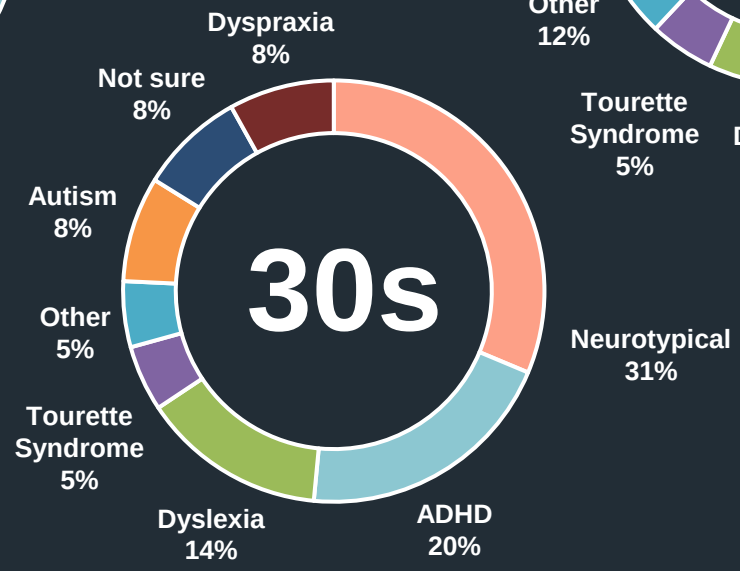
48%
Reported to be neurodivergent.
(accounting for comorbidities)

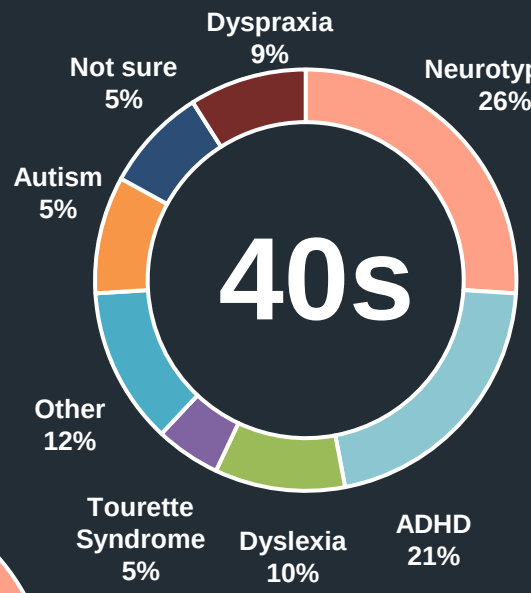
25%
Reported to be Autistic.

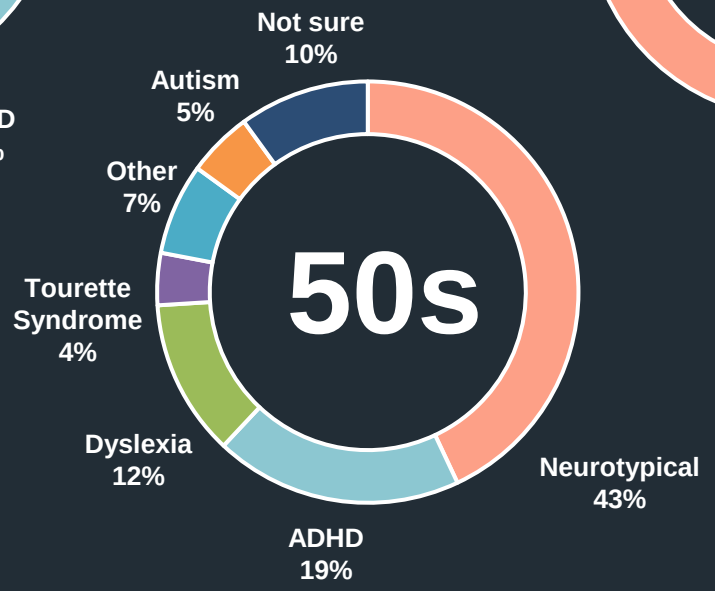
10x
the global average

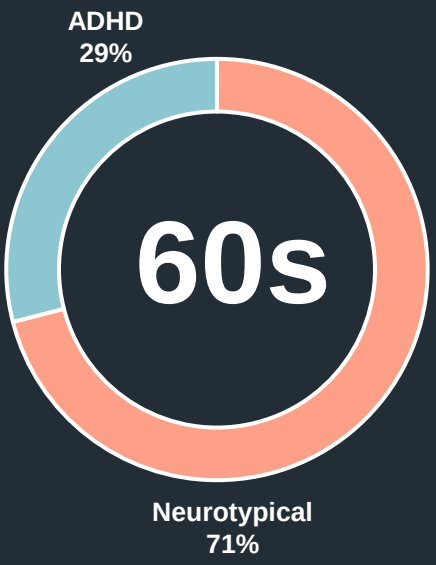
Neurodiversity and Age









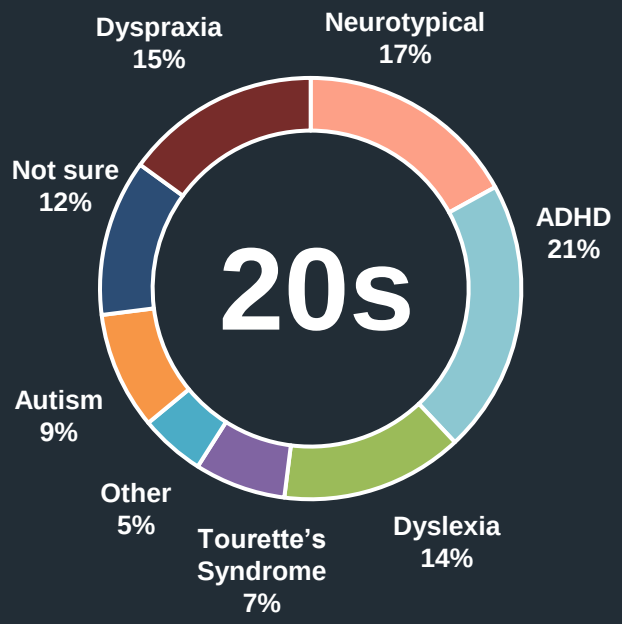


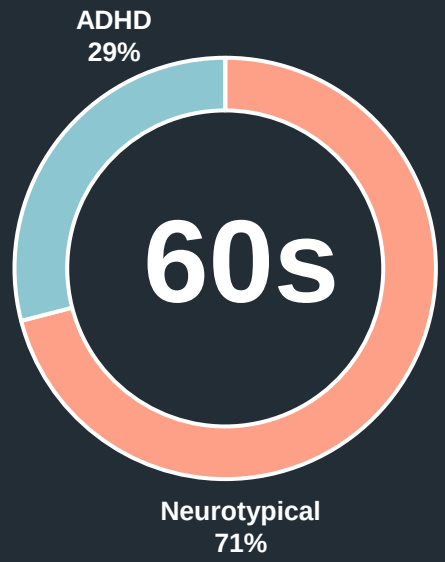
Mixed Neurotype Scientific Population

Feb. – April 2024

* SOURCE: https://www.healthline.com/health/autism/autism-masking

Neurodiversity and Age





The **younger generation** reported a much more diverse set of neurotypes.

For the **older generations**, far less.

Mixed Neurotype Scientific Population

Feb. – April 2024

* SOURCE: https://www.healthline.com/health/autism/autism-masking

”

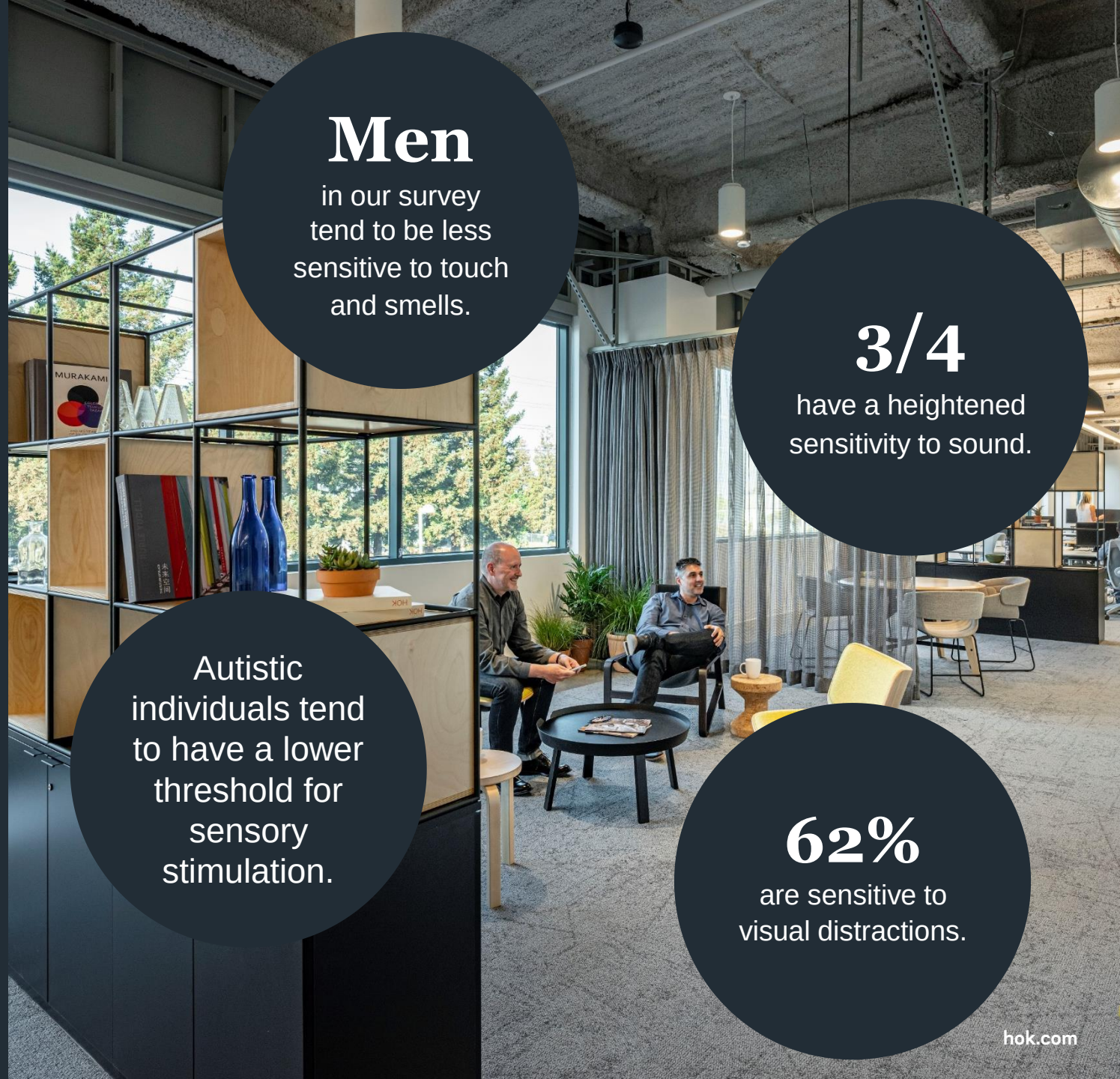
When you design for the extreme,

you benefit the mean.

Sensory Input

What sensory inputs are you hypersensitive or highly sensitive to?

- 77% AUDITORY
- 62% VISUAL
- 32% TACTILE
- 36% OLFACTORY | GUSTATION
- 25% PROPRIOCEPTIVE & VESTIBULAR
- 12% OTHER



Men
in our survey tend to be less sensitive to touch and smells.

3/4
have a heightened sensitivity to sound.

Autistic individuals tend to have a lower threshold for sensory stimulation.

62%
are sensitive to visual distractions.

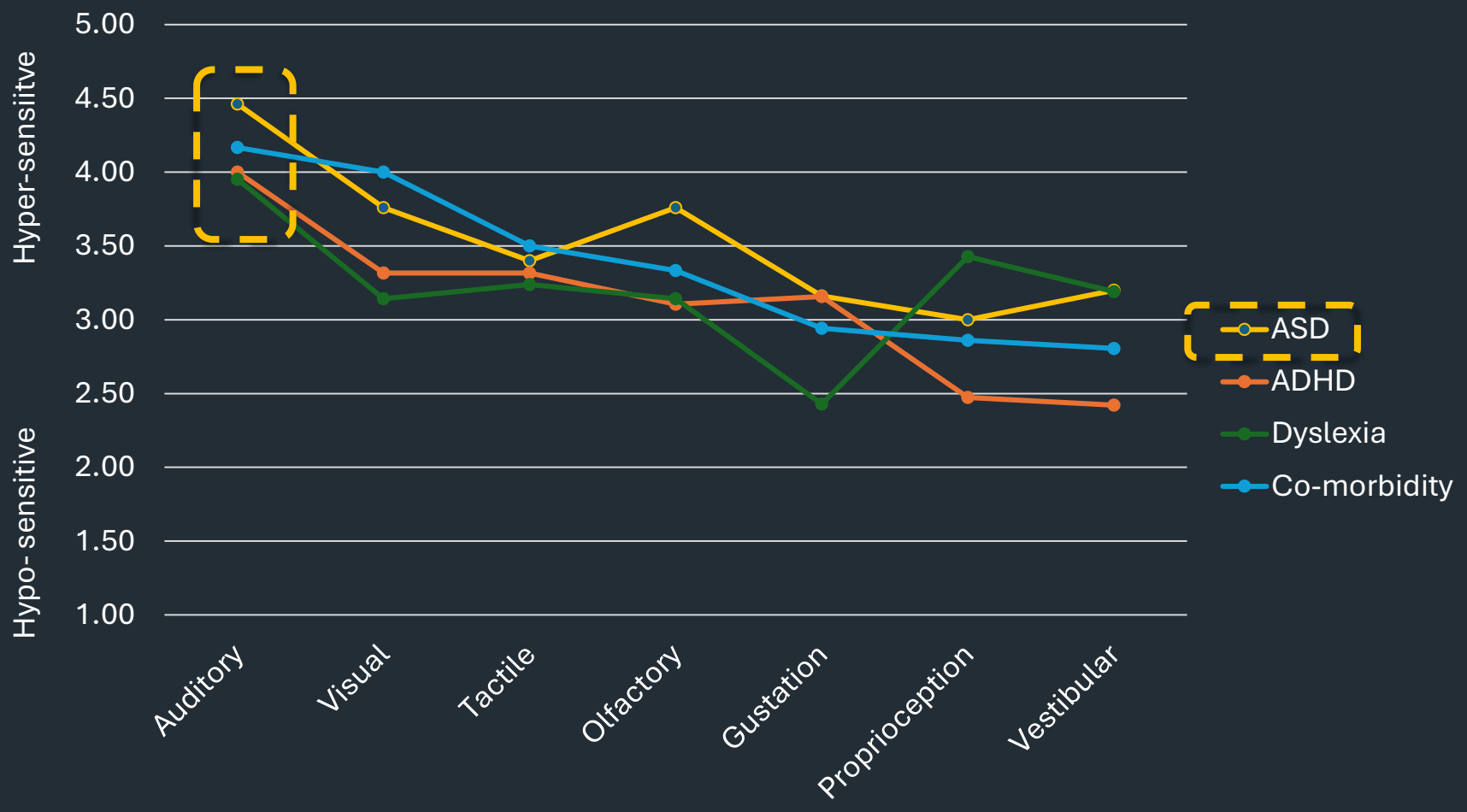
What sensory inputs are you hyposensitive or need more of?

- 30% AUDITORY
- 29% VISUAL
- 23% PROPRIOCEPTIVE
- 22% TACTILE
- 13% OLFACTORY/GUSTATION
- 12% OTHER

Sensory Input

Environmental Stimuli by Neurotype

What sensory inputs are you sensitive to?

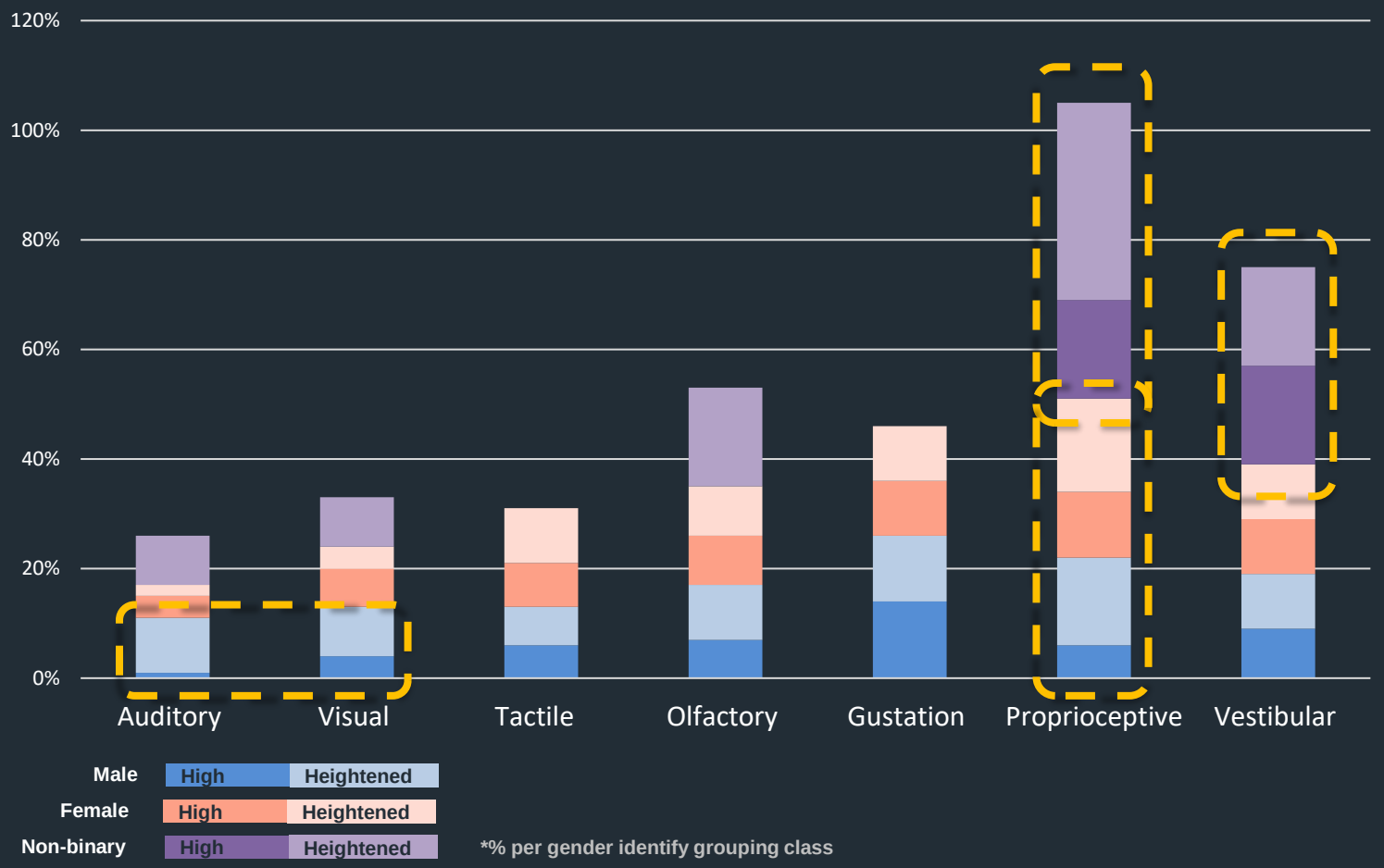


Neurodivergent respondents are most sensitive to **auditory** stimuli.

Autistic Individuals had a heightened sensitivity to stimuli in general.

Environmental Stimulation

By gender identify
hyposensitive or have a high or heightened sensitive:



*% per gender identify grouping class

Non-binary Individuals were the most **acutely** impacted by balance and coordination.

Men tend to be less bothered by auditory and visual stimulation.

Women tend to more sensitive to by body position in space than men.

Challenges

Design elements you find **challenging** in environments?

SOUND

66% Neurodivergent
54% Mixed Neurotype
55% Scientific Mixed Neurotype

TEMPERATURE

56% Neurodivergent
37% Mixed Neurotype
48% Scientific Mixed Neurotype

LIGHTS

56% Neurodivergent
33% Mixed Neurotype
27% Scientific Mixed Neurotype

NUMBER OF PEOPLE

53% Neurodivergent
35% Mixed Neurotype
40% Scientific Mixed Neurotype

PROXIMITY TO OTHERS

48% Neurodivergent
32% Mixed Neurotype
29% Scientific Mixed Neurotype

CONFINED OR IN CLOSED SPACE

40% Neurodivergent
29% Mixed Neurotype
25% Scientific Mixed Neurotype

LACK OF ENCLOSURE

36% Neurodivergent
17% Mixed Neurotype
21% Scientific Mixed Neurotype

PATTERNS

21% Neurodivergent
8% Mixed Neurotype
8% Scientific Mixed Neurotype

COLOR

16% Neurodivergent
6% Mixed Neurotype
7% Scientific Mixed Neurotype

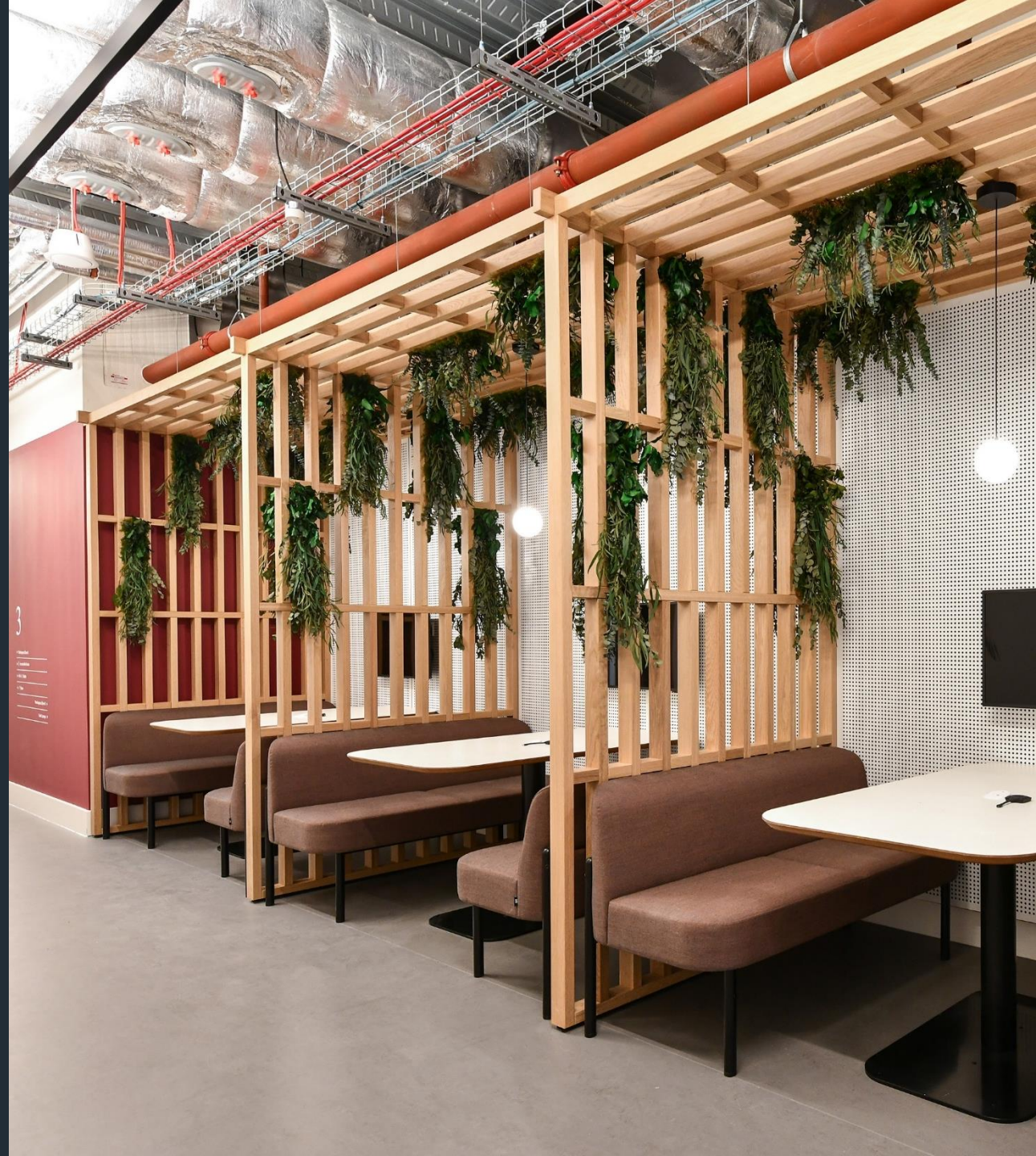
TEXTURE

12% Neurodivergent
6% Mixed Neurotype
3% Scientific Mixed Neurotype

Three-legged Stool

Top Design Strategies

1. Having the option to select where you will work
2. Spaces that allow you to move
3. Having a dedicated space you are assigned to
4. Access to natural daylight
5. Work points in low-traffic areas
6. Dedicated quiet rooms
7. Spaces that have areas to retreat to
8. Spaces with adjustable lighting levels or turn them off
9. Spaces that incorporate natural elements
10. Adjustable, ergonomic furniture
11. Reduce visual clutter
12. Screens to block and reduce noise and visual distractions
13. Spaces that enable visual connections and clear lines of sight



1. Awareness training to help staff understand neurodiversity among colleagues.

2. Flexible work policies that allow staff to work from home.

3. Flex hours so staff can work during off-hours with minimal distractions.

4. Noise-canceling headphones to reduce auditory distractions.

5. Ability to have intermittent breaks between tasks.

6. Having clear action points and assignments.

7. Ability to book meeting rooms for concentrative task.

Top 7 Operational Strategies

that are the most effective, as reported by respondents.

1. Use visual checklists to track progress.

2. If working in an open space, choose a low-traffic area.

3. Avoid getting stuck in a daily routine. Schedule breaks and make slight changes to your days.

4. Use visual timelines to track dates and break down assignments.

5. Break tasks up into manageable pieces.

6. Perform one task at a time. When possible, don't start a new task until you complete the current one.

7. Only attend critical meetings, as defined by your supervisor's interpretation, where you can maintain your focus.

8. Altered shift patterns/break times.

9. Give advance warning of any changes.

10. Regular meetings with the manager/buddy/mentor.

Top Individual Adjustments

which are the most effective, as reported by respondents.

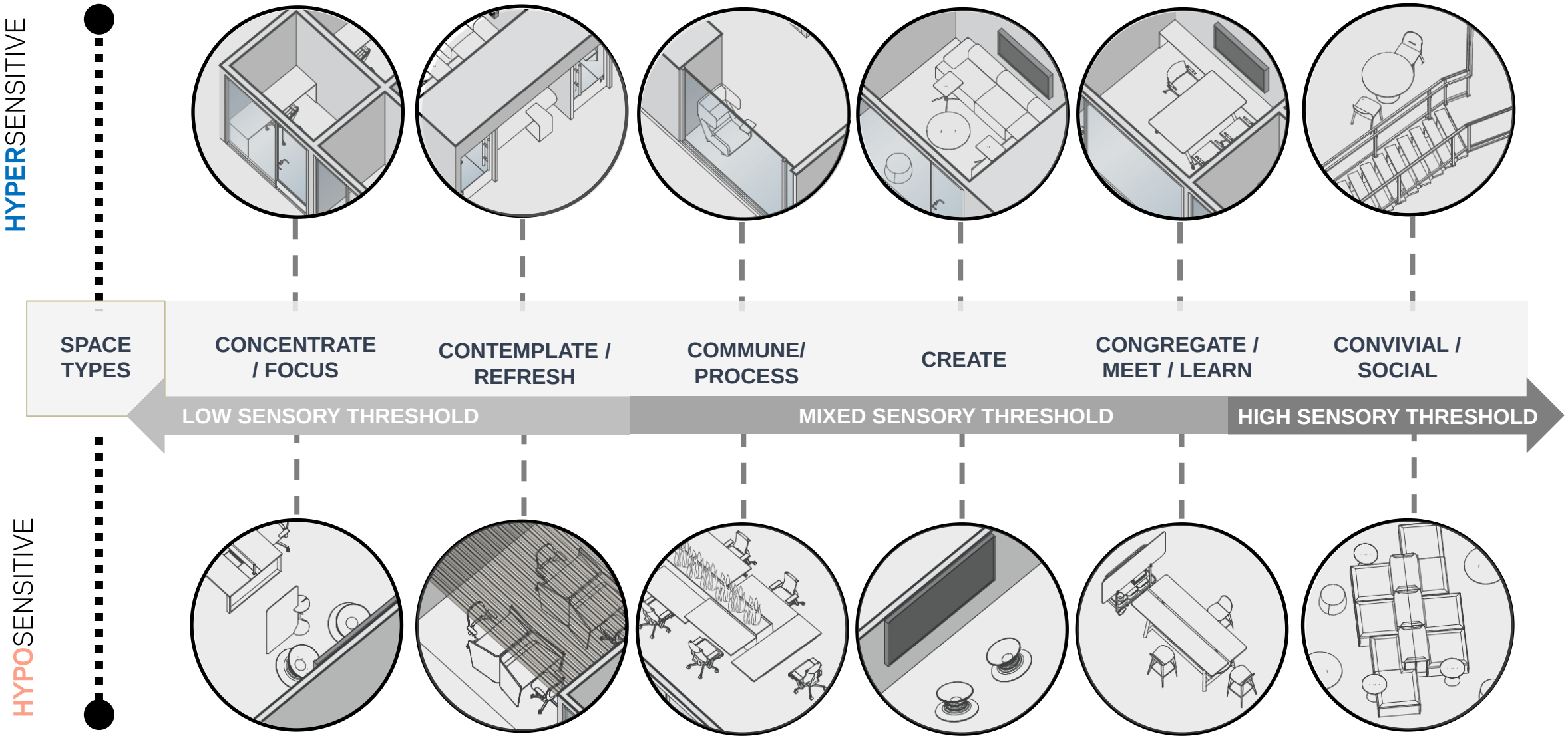
Designing for inclusion

Steps for Inclusion

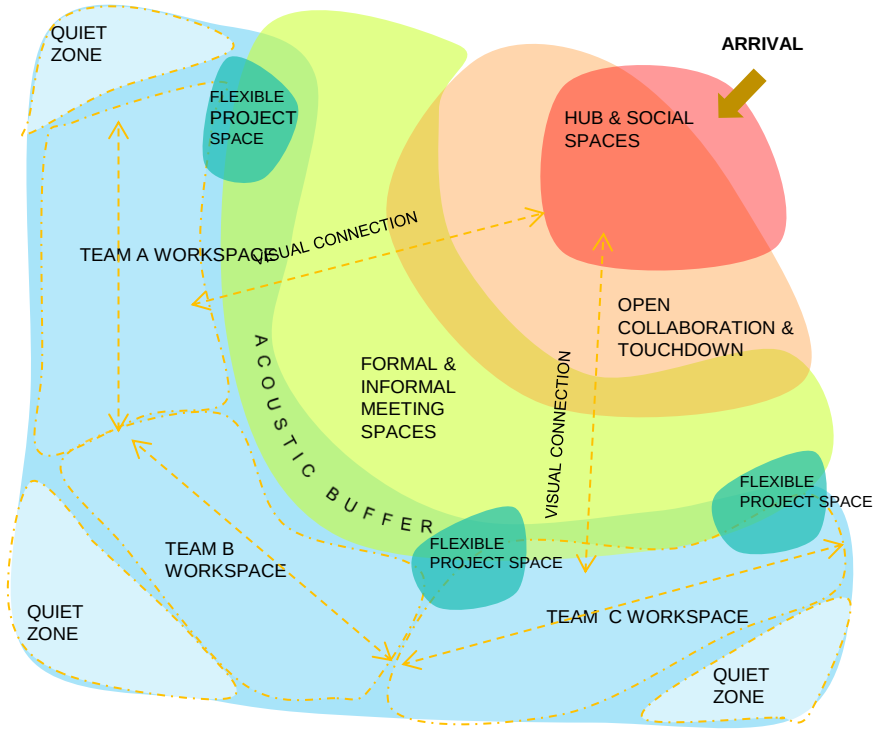
1. Consult with **professionals** early in the process to identify goals and opportunities for neuro-inclusion.
2. **Educate your teams**, including leadership and managers, on neurodiversity, the benefits, challenges and opportunities for neuro-inclusion.
3. Perform a **space audit** of existing spaces to gauge the current state of the portfolio, identify opportunities for improvement and determine a path forward.
4. Ensure leadership, **HR, CRE, IT, DEIA and ERGs** are all onboard and involved to ensure the success of the program.
5. Conduct **employee interviews** and pre-occupancy surveys to ask users in all groups about their experience with the built environment.
6. Develop a Kit of Parts that includes the 6 modalities of work and **hyper and hypo settings** for each. Percentages should be based on actual work functions and patterns of the groups.
7. Develop **planning concepts and spatial zoning** that prioritize the needs of the neurodiverse.
8. Incorporate **design strategies** based on research to address neuro-inclusive principles.

   Consider including in design guidelines and standards.
9. Leverage **journey mapping** to develop day in the life scenarios for various neurotypes for design confirmation and as a change management tool.
10. Conduct a **POE** 3 months after move-in to access the steps taken and to identify any opportunities for improvements or areas that need to be adjusted.

Modalities of Work / The 6Cs



Spatial Sequencing / Spatial Zoning



Workplace Active Zone

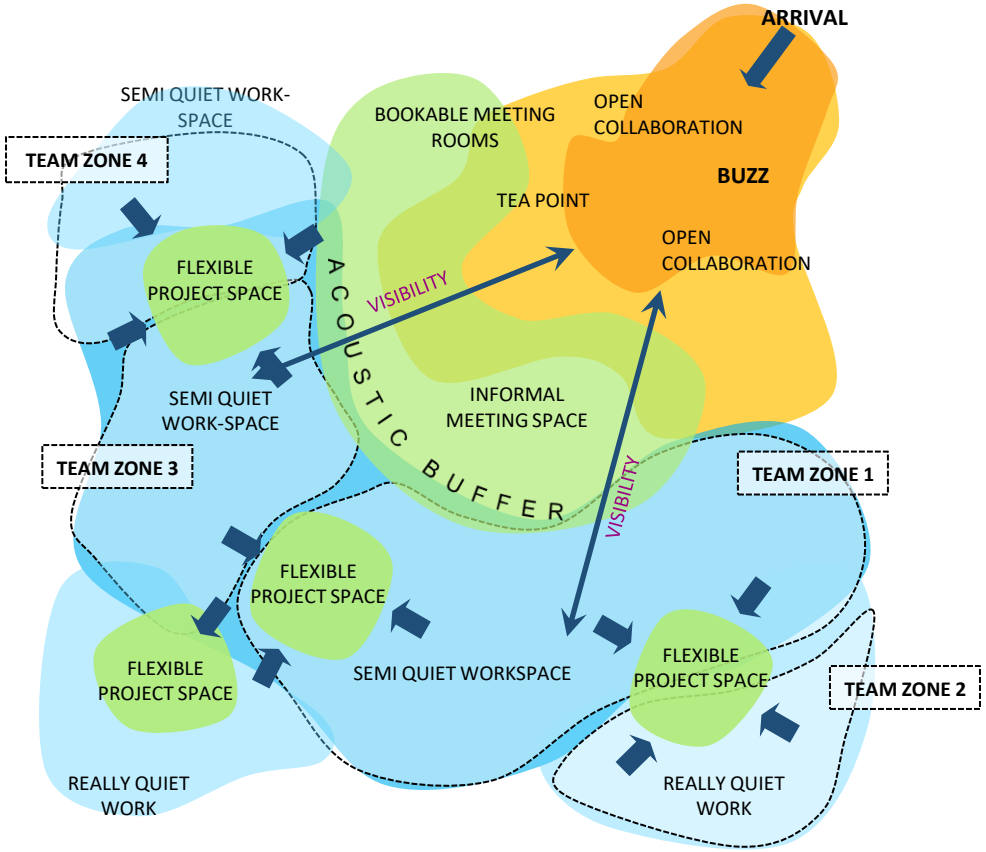
- Entry experience
- Large group collaboration
- Informal ad-hoc.

Neighborhood Active Zone

- Small group and creative collaboration
- Variety and choice of settings
- Open /permeable
- Enables intimate interactions

Team Neighborhood Zone

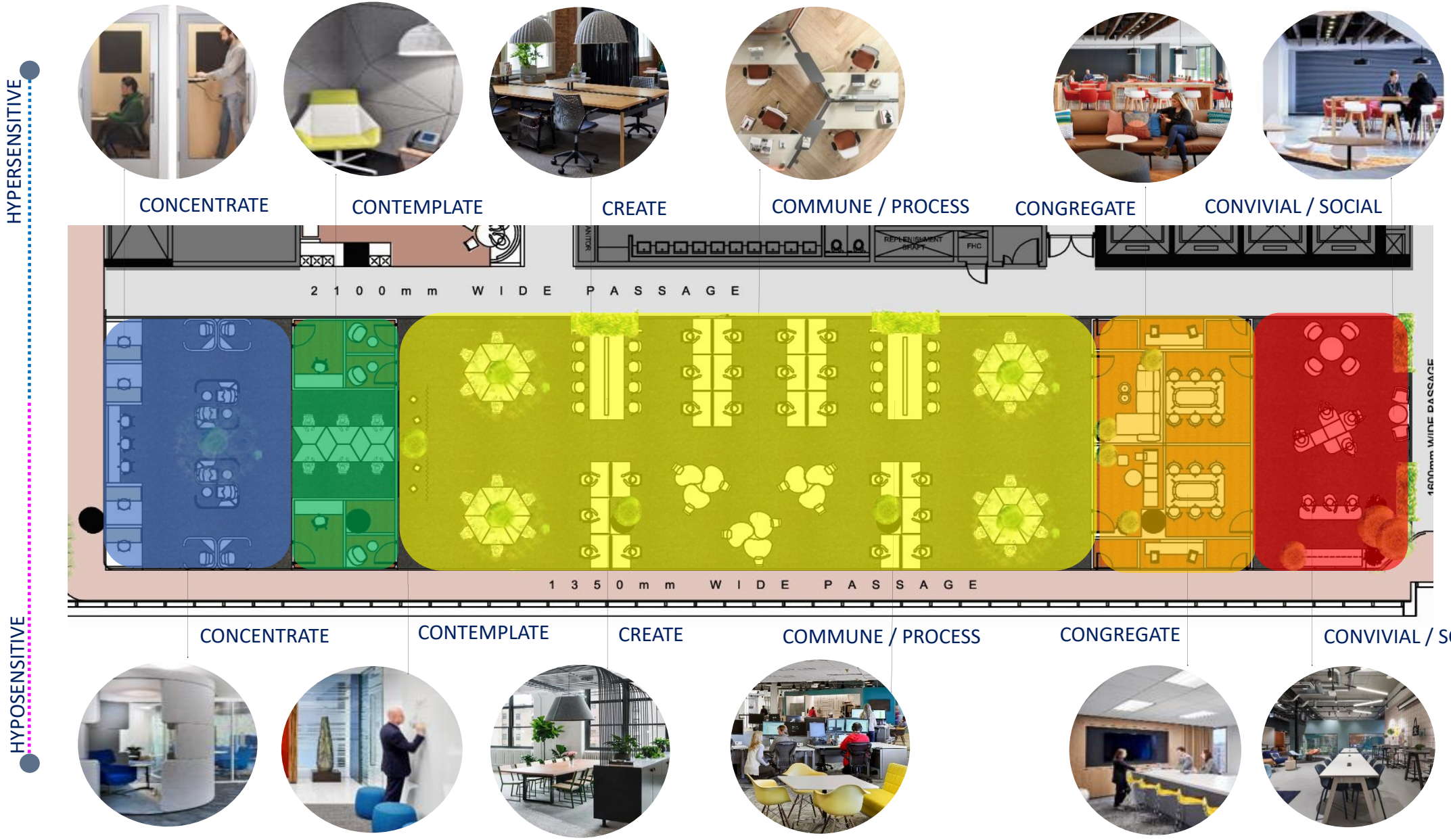
- Open setting
- Individual and collaborative
- 'Neighborhoods' enable customization, team expression & identity.



- Active
- Formal Collaborative
- Open Collaborative
- Work
- Quiet focus
- Utilities

Activity | Energy Level | Acoustics | Lighting

Modalities / Spatial Zoning



Design Considerations

Cognitive and Sensory Wellbeing Design Considerations

07 | SIGNAGE AND WAYFINDING									Priority Level		
Item		Current Condition	Score 1 = poor / 5 = ideal	Reasonable Modification		Action Required		Recommendations	Level of Impact	Cost Effective	Ease to Address
				Yes	No	Yes	No				
07.1 SUBSECTION General description of importance.											
7.1	**Display plans of the space** at the entranceways of spaces. Consider **interactive plans** when possible via media screen or mobile app.								P1	P2	P1
7.2	Design space that is **initiative to navigate** and has a sense of order.								P2	P2	P4
7.3	Provide clear signage that is **multi-lingual and multi-modal** (pictorial, verbal, tactile).								P2	P1	P2
7.4	Combine **text, colors with symbols** to aid in comprehension of signage.								P2	P1	P3
7.5	**Use color strategically** to help with orientation and wayfinding as an option, but not the only option as not all individuals see color the same and to accommodate individuals that are color blind.								P4	P1	P3
7.6	Use lighting strategically to help with **intuitive orientation and wayfinding**. Providing meaningful variations in lighting levels can help as people naturally tend to walk toward brighter spaces or paths.								P4	P1	P2
7.7	Use **distinct landmarks, focal points, and memorable spaces** to help occupants orient themselves. These can be staircases, artwork, or clear sightlines to daylighting and exterior views.								P3	P2	P2
7.8	Emphasize wayfinding cues and prompting through **repetition of signage** as well as consistency and clarity of message. Use a **rhythm of common elements** to generate a reassuring sense of order and thus assist the brain's innate positioning systems.								P3	P4	P2
7.9	Be cautious with using **repetition of identical spaces** or features to reduce confusion or disorientation.								P3	P3	P3

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Concentrative / Focus

Ideal to create separate spaces to meet the specific needs of hyper and hypo neurotypes.

Space that enables movement and hands-on interaction

Areas for doodling/drawing

Active spaces with fidget furniture that enables movement such as perch seats that rock or sway and option to stand

Spaces with tactile elements and texture

Views to the exterior for added visual stimulation

Semi-enclosed or shielded space

Personal space boundaries, while not being in confined space

Ability to self select background noise or music

Dropped ceiling

Enclosed or semi-enclosed space

Snug, personal space boundaries, in sync with human scale;

Strong acoustic controls to limit distractions

Nature sounds have a calming effect that helps people focus

More orderly space, clean desk policy

Images and design suggestions generated by HOK based on their understanding of cognitive and sensory well-being in the built environment and design principles.

HYPERSENSITIVE SPACE ATTRIBUTES

HYPOSENSITIVE SPACE ATTRIBUTES

GENERAL SPACE ATTRIBUTES

- Off the beaten path and limited visual distractions
- Circulation paths that discourage lingering
- Ergonomic seating and work surface adjustments provide control over space
- Adjustable lighting, dimmable
- Cool, light colors. Blues can help calm us down and help with analytical thinking
- Orderly, simple patterns, if any

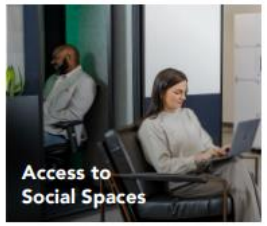
The Neurodivergent Workforce

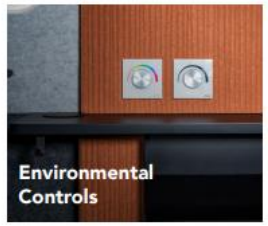
A workplace destination that increases productivity by eliminating distractions, while transforming community.

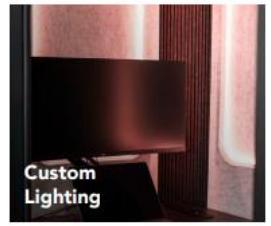
MeSpace is an innovative solution that offers unparalleled control over individual workspaces. is designed around the concept of a neighborhood, providing a **balance** between **social spac** and **privacy**. Inclusive by design, MeSpace caters to the diverse needs of every employee, **accommodating a full spectrum of neurotypes**. With highly flexible, personalized, and easil movable units, MeSpace provides on-demand work accommodations, empowering every employee to thrive in their ideal work environment.

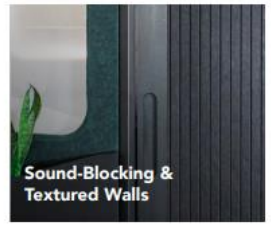
- Privacy on demand
- Caster movability
- User-customizable experience
- Device connectivity
- Full spectrum lighting

Features built for the Neurodiverse:







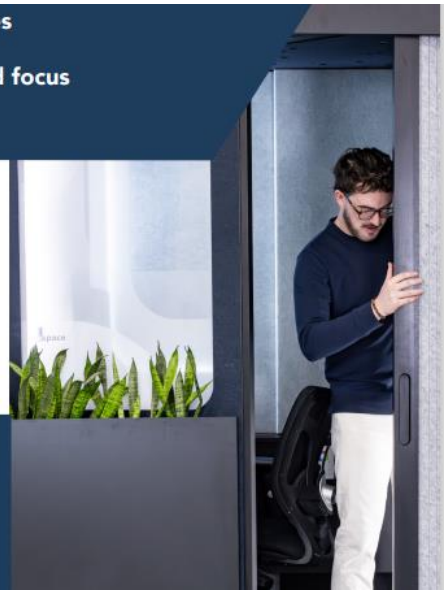


mespace

View MeSpaceDesigns.com

- Private, personal spaces
- Quiet, distraction-free
- Thrives in seclusion and focus

Sensory distractions are synonymous with a loss of productivity, and come in many forms.



← **Hypo**sensitive Neurotypes

- High-stimulus individuals
- Energy-filled spaces
- Enriched lights and colors

Biophilic Elements in Design

To balance today's high-tech world, designers are introducing biophilic elements that evoke a feeling of nature and are calming, refreshing and relaxing. Biophilic design strategies can reduce stress, enhance creativity and clarity of thought, improve well-being, boost health outcomes and expedite healing for the neurodivergent and neurotypical.

METAPHORIC RELATIONSHIPS WITH NATURE

BIOMORPHIC FORMS FROM NATURE

SIMULTANEOUS COMPLEXITY & ORDER

FRACTAL PATTERNS & NON-RHYTHMIC SENSORY STIMULI

NON-VISUAL/LOCAL NATURAL MATERIALS

DIRECT CONNECTION WITH NATURE

PHYSICAL/VISUAL

AUDITORY

OLFACTORY

EXPERIENCE CONNECTION WITH NATURE

EXPERIENCE NATURAL SYSTEMS

THERMAL AIRFLOW VARIABILITY

DYNAMIC & DIFFUSED LIGHT

MYSTERY/PERIL & EXCITEMENT

BLURRING EXTERIOR/INTERIOR

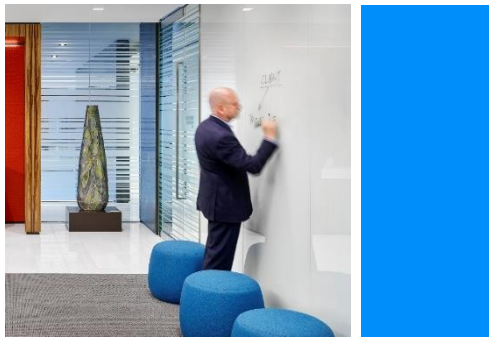
PROSPECT

REFUGE

Color in Design

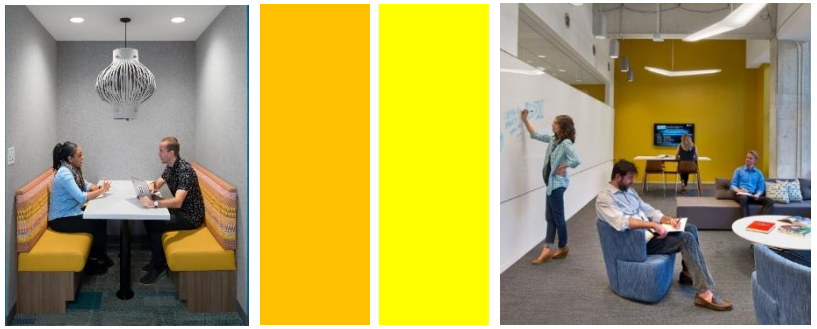
Color has a significant impact on individuals in the built environment. Color has the power to energize, restore, stimulate, calm and even encourage creativity. (Browning, 2014) In times of crisis and instability, such as a pandemic, there is an increased need for comfort and visual nourishment. Natural tones evoke a connection to nature and order and can convey qualities of comfort, calmness, and grounding.

CALMING COLORS

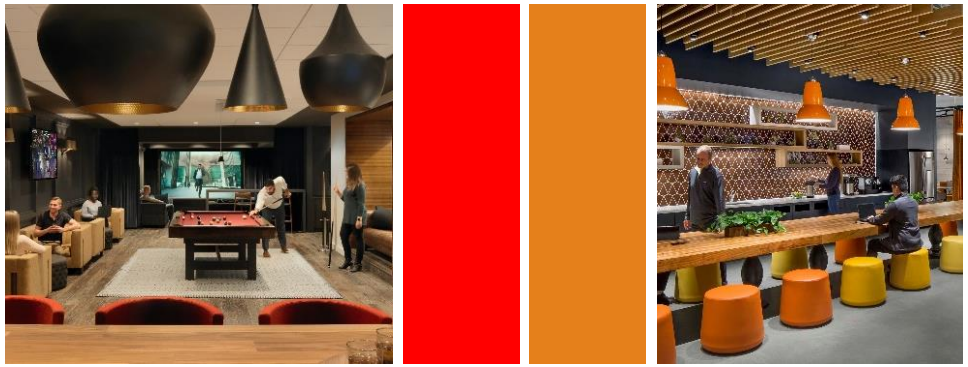


COLORS SUPPORTING ANALYTICS

REFRESH | NATURAL COLORS



CREATIVITY COLORS



ENERGIZING COLORS

WAYFINDING

Open ceiling creates a more spacious feel

Natural materials / biophillia

Option to sit or stand

More private settings mixed into social space

Open access connects floors

Panels for enhanced acoustics

Access to natural daylight and various lighting levels within space


Storage for personal ans team items
Biophilia / Natural elements
Pops of color
Option to seat or standing during brief engagements
Visual shielding
Clear flooring planes
Access to shielded, privacy space

Team Learning

Student Center

Common Space

Common Space

„Flipped“ Classroom

hok.com

Auditorium

HYPER-SENSITIVE HYPO-SENSITIVE HYPER AND HYPO

NATURAL MATERIALS, PLANTS

WIDE PASSAGEWAYS

CLEAR LINE OF SIGHT

SOFT SEATING ENCLAVE

HYPER-SENSITIVE

HYPO-SENSITIVE

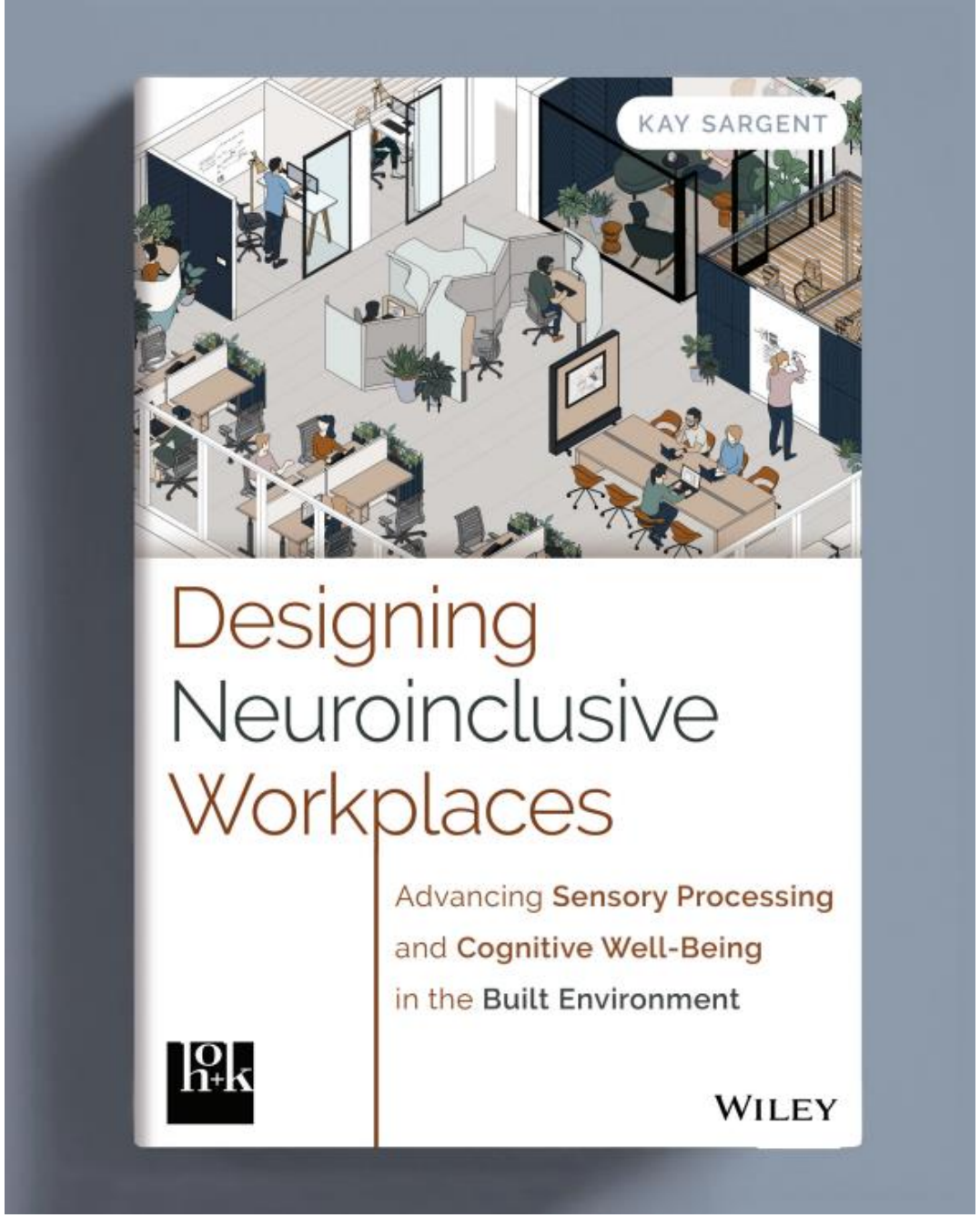
HYPER AND HYPO

There is a compelling human and business case to be made for ensuring we approach the design of workplaces to help address **mindfulness, health, safety, wellbeing** and **inclusivity.**

”

We are no longer designing environments.

We are designing the experience.”



Designing Neuroinclusive Workplaces: Advancing Sensory Processing and Cognitive Well-Being in the Built Environment 1st Edition

by Kay Sargent (Author)

Assist the growing neurodivergent population with strategic adjustments to physical spaces

Designing Neuroinclusive Workplaces: Advancing Sensory Processing and Cognitive Well-Being in the Built Environment explores how to employ strategic spatial zoning and sequencing, sensory zones, patterns, textures, colors, lighting, and soundscaping to create spaces that cater to the various sensory needs of neurodivergent individuals, who now make up 1/5 of the world's population. This group possesses unique strengths that can be harnessed if they are in environments designed to be welcoming and supportive of their needs.

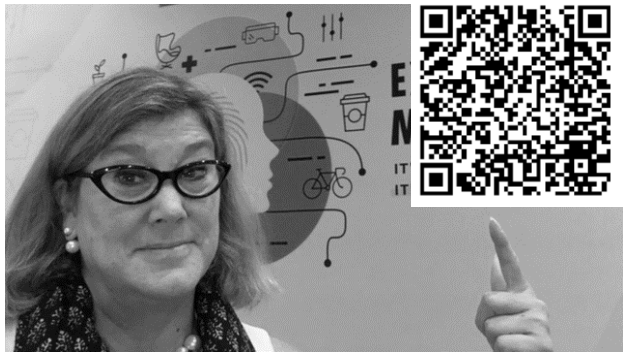
Written by Kay Sargent of HOK, a leader in the field of workplace design and architecture, this groundbreaking book argues that even minor adjustments to physical spaces can drive giant improvements in cognitive function, fulfillment, and belonging for both neurodivergent and neurotypical individuals.

Designing Neuroinclusive Workplaces: Advancing Sensory Processing and Cognitive Well-Being in the Built Environment: Sargent, Kay: 9781394309337: Amazon.com: Books

workplace evangelist

kay sargent

thought leadership
+ provocateur



PASSIONATE
future-caster