HAWORTH

Understanding Neurodiversity and the Sensory Spectrum

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Introduction

Cultivating a workplace that is built on trust and belonging means understanding and supporting people with a variety of backgrounds and experiences. Diverse hiring practices can unlock a wide range of talent and knowledge that might otherwise be overlooked.

Hiring for diversity, however, is just the beginning. Once an individual is employed, the employee's environment and the policies that support them should be equitable and inclusive, and should provide opportunities for all to thrive. Companies that understand this and do it well can better attract and retain top talent.

One such sub-group that can greatly impact creativity and innovation within organizations are those classified as neurodivergent.

> The neurodivergent population are those differing in mental or neurological function from what is considered typical or normal.

According to Harvard Business Review, neurodiverse teams boost productivity by over 30%.[1] If companies desire to create an equitable and inclusive workplace, it's important to understand the needs of the neurodivergent population to best support the way they prefer to work.

Working in the office can be challenging for most people, but it can be particularly difficult for those who are neurodivergent and/or have sensory sensitivities. There are many potential sensory triggers hidden throughout the workplace that can easily derail a sensitive individual's day. If the workplace does not feel supportive, this can lead to emotional masking. This refers to the practice of concealing or suppressing aspects of one's neurodivergent traits or conditions to fit in with the norms of the workplace or society.[2]

This can be particularly challenging in work environments that prioritize neurotypical social skills, communication, and multitasking abilities.

Masking can also have negative effects on mental health and well-being, as it requires a significant amount of cognitive and emotional energy to constantly suppress one's natural tendencies.[3]

Neurodivergent masking happens for several reasons:
- Fear of stigma
- Social expectations
- Misunderstanding about neurodiversity
- Lack of accommodations

To create a comfortable environment for neurodivergent individuals, it is important for companies to understand the needs of this population and address them in a way that can be helpful without calling unwanted attention to them.

In order to improve our understanding of how neurodivergence impacts workplace experiences, we'll begin by exploring the sensory spectrum and sensory processing.

What is the Sensory Spectrum?

Someone who is neurodivergent can behave, think, and learn differently compared to those who are neurotypical.[4] It is estimated that 15-20% of the world's population exhibits some form of neurodiversity.[5,6,7] Neurodiverse conditions include but are not limited to: Autism (ASD), Attention Deficit/Hyperactivity Disorder (ADHD), Dyslexia, Tourette's Syndrome, Obsessive Compulsive Disorder (OCD), and Anxiety.[8]

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1. Austin, 2017.
2. InclusionHub, 2023.
3. InclusionHub, 2023.
4. Exceptional Individuals, 2023.
5. Doyle, 2020.
6. CDC, 2022.
7. CDC, 2021.
8. Exceptional Individuals, 2023.

Those who are neurodivergent can also have Sensory Processing Disorder (SPD). With SPD, the brain doesn't process sensory inputs correctly, and this can affect learning, coordination, behavior, and language. SPD can also lead to stress, anxiety, or even depression.[9] Further, an estimated 30% of the population is thought to have Sensory Processing Sensitivity (SPS) and be highly sensitive,[10] but does not necessarily identify as neurodivergent. SPS is a personal disposition toward sensitivity to subtle stimuli and being easily over-aroused by external stimuli.[11] SPD and SPS have some key differences, but both can cause individuals to experience their environment differently than neurotypical individuals, with reactions often being negative.

The ways people with SPD and SPS can respond to their environment are varied and complex. Some individuals can be over-responsive (hypersensitive) and may respond in intense ways to sensory information. Others can be under-responsive (hyposensitive) and may be unaware of information gathered from senses, which can lead to delay in responding. Yet a third type are those who are Sensory Craving and may be driven to seek out sensory stimulation.[12]

Since there are many ways individuals can respond to external stimuli, the workplace is rife with circumstances that might initiate negative responses. These unpleasant sensory experiences at work can be stressful, and those who are neurodivergent can have a particularly difficult time recovering from them. We learned from previous research that providing individuals with the right workplace resources can help reduce their stress and improve performance; this is especially true for those who have sensory sensitivities.[13]

There will always be elements that are out of an employer's control, but we believe it is possible to integrate sensory modulation opportunities into the workplace and provide a variety of choices to support individuals' unique sensory needs.

We can begin to understand what the spaces should provide by learning about the eight sensory systems in our bodies,[14] and the potential reactions of those who are hypersensitive or hyposensitive.

The Eight Senses

The extent to which coworking spaces are tailored to their membership communities means that—with the exception of some common practices—there are no hard and fast rules as to how a space might be designed or run. However, there are a number of overarching principles that are transferable to the wider workplace.[15]

Vestibular
Balance and Movement
Provides information about where our body is in space, and whether we or our surroundings are moving; tells us about speed and direction of movement.

Proprioceptive
Muscles and Joints
Provides information about where a certain body part is and how it's moving.

Interoceptive
Internal Body Sensations
Provides information about the body's internal state; how we feel and understand what's happening inside ourselves and how we regulate emotional response.

> Think of the entire sensory system as a highway, with the different "sensory lanes" feeding into your brain. If a person is dysregulated in these senses, a traffic jam can result in the brain, making it difficult to process sensory information.

The remaining five senses are considered "far" senses and depend on the vestibular, proprioceptive, and interoceptive senses to process and receive all the sensory information these additional senses take in.[16]

Visual
Sight
Provides information about objects and persons; helps us define boundaries as we move through time and space.

Auditory
Hearing
Provides information about sounds in the environment (loud, soft, high, low, near, far).

Tactile
Touch
Provides information about the environment and object qualities (touch, pressure, texture, hard, soft, sharp, dull, heat, cold, pain).

9. Lionetti, 2018.
10. Galiana-Simal, 2020.
11. Johnson, 2020.
12. Hethmon, 2020.
13. Galiana-Simal, 2020.
14. He's Extraordinary, 2023.
15. Hethmon, 2020.
16. Heller, 2015.

Olfactory
Smell
Provides information about different types of smell (musty, acrid, putrid, flowery, pungent).

Gustatory
Taste
Provides information about different types of taste (sweet, sour, bitter, salty, spicy).

Workplace Opportunities for Sensory Support

The workplace should be as supportive to neurodivergent individuals as possible, and at its most fundamental level, should fulfill physical requirements of the worker.[17] In the case of those with sensory sensitivities, meeting these needs can have a greater impact compared to the general worker population.[18]

If an individual's physical needs are met and harmful sensory triggers are avoided, then the person can focus on meeting their emotional and cognitive needs throughout the workplace experience.

Vestibular, Proprioception, and Interoception

The vestibular system is influenced by one's own interoceptive awareness[19] and relies upon proprioceptive input to respond to changes in gravitational balance.[20,21]

People with vestibular sensitivities often have issues with attention. They partake in self-soothing behaviors to provide input into their vestibular system that they are not getting from outside sources.

Proprioception is the awareness of what the body is doing, even if one's eyes are closed. When people have proprioceptive challenges, the brain is struggling to interpret and give meaning to sensory input.[22] In the workplace, under-responsiveness could cause challenges because it can result in the inability to sit still and the desire to seek out movement like jumping, swinging, and running.

Interoceptive sensitivity affects self-awareness, problem-solving, social understanding, and flexible thinking, to name a few. Those who lack interoceptive awareness can struggle with focus and attention and can have extreme anxiety over minor dilemmas.[23]

Taken together, these three senses play a critical role in guiding the body through the physical world and the interpretation of sensory stimuli.

Additionally, vestibular, proprioception, and interoception are all linked to emotional regulation and can affect how individuals experience many aspects of life and work.[24]

When viewed in the context of the workplace, it's important to provide opportunities to support these three senses because if they are dysregulated, it can have a compound effect on other experiences.

First consider the legibility of the space. Legibility is "a measure of the ease of navigating through interior spaces and the ability of the space to represent its own utility."[25]

> An organized space that is easy to navigate can alleviate the stress put upon the vestibular and proprioceptive systems as they strive to make sense of the environment.

Legibility tenants include signage, architectural differentiation, wayfinding, and the use of colors and patterns. Abrupt changes in colors and patterns that are difficult to interpret should be avoided. Even changes in flooring patterns, textures, or colors can result in confusion for sensitive individuals. Consider utilizing technology to create a real-time "sensory map" that can show what is happening in any given space so users can best select the area they want to work in to support their needs. A sensory map can include information on air quality, temperature, noise levels, and lighting. It can also include information on the general "vibe" of the space. Is it calm and quiet, or more active and brighter?

Next, the space should afford users the opportunity to safely navigate throughout the environment. Since balance can be affected by poor vestibular and proprioceptive input, designing spaces with soft edges and curves can reduce the potential for injury if a person bumps into an object or wall.

Designing an activity-based office can also support sensory sensitivities. Activity-based planning is characterized by providing task-oriented spaces in which employees can work and restore.[26] Employees should be encouraged to move throughout the office and choose the space that best works

17. Novotny, 2023.
18. Johnson, 2020.
19. Berthoz, 2000.
20. He's Extraordinary, 2023.
21. Aspell, 2013.
22. He's Extraordinary, 2023.
23. He's Extraordinary, 2023.
24. Heller, 2015.
25. Novotny, 2023.
26. Novotny, 2023.

for them to support the activity they are doing. Activities can include individual focus work, taking a break, or connecting with coworkers. Consider those who are hyposensitive; giving them the ability to move around to different spaces throughout the day can aid in expelling excess of energy.

Tools to support movement can also be found in workplace objects that we might not immediately think of. Different types of seating that allow for a variety of postures and motions, like a stool that allows for "perching" or standing, or even the ability to slightly rock or swing in a seat, can help regulate the vestibular system. A rocking chair in an individual restorative space can be an excellent restorative destination.

Research has also shown that "heavy work" can help balance the proprioceptive system.[27] Heavy work involves pushing, pulling, and/or carrying of objects to help stimulate the senses. An on-site fitness center can be a way to support these types of activities in a controlled environment.

In addition to movement, mindfulness training is now being adopted to help individuals better process and cope with emotions,[28] and providing a quiet space in the workplace that is free from visual and auditory distractions can help support this activity. However, emotional regulation strategies should be flexible and adaptable to the situation the individual is experiencing, making an activity-based workplace with a choice of spaces and tools beneficial. Opportunities to engage in mindfulness practices can be supported by the ability to take a walk, connect with nature, read, or listen to music.

Visual

The ability for individuals to control their visual environment can have two key advantages. Firstly, it can enable sensitive individuals to define comfortable boundaries, mitigating potential discomfort or overstimulation. Secondly, it provides opportunities to minimize visual distractions that may more readily disrupt cognitive flow for neurodivergent individuals. This can be done by adding adjustable screens at the individual workpoint that provide blocking from the center and periphery of the vision field.

Individuals with sensory sensitivities can have trouble with executive functioning like keeping order and a schedule. The simple act of writing down a note and pinning it to a tackable screen for later retrieval can help alleviate anxieties and streamline their workday.

Visual reminders are also helpful to trigger thoughts and behaviors that might otherwise get lost in the sensory shuffle. An analog calendar that is visible at the workpoint can help keep individuals on track.

Sometimes, visual distractions in the open office environment become too much, and in those instances enclosed rooms that give the user the ability to shut away visual distractions should also be provided.

Another workplace pain point can be the lighting. Those who have visual sensitivities often dislike bright lights and sunlight, so having spaces within the building where either brightness of lights is minimized, or there is a way for the user to control the brightness level and color temperature can help reduce light sensitivity. Close attention should also be paid to the type of light fixture; some with hyper-sensitivity to lights can sense the flickering of LED and fluorescent fixtures that could be imperceptible to a neurotypical person.

Those who are hypo-sensitive to light could benefit from areas that have brighter colors, visually stimulating images, or opportunities for stimulation using color-changing lights that they can control.

Auditory

The auditory system responds 1,000x faster than the visual system,[29] and auditory distractions can quickly derail people when doing focus work.

Office acoustics are a frustration for many, and can be even more detrimental to those who are over-responsive to noise. Those who are over-responsive to sound react more strongly to background noises that a neurotypical worker would filter out. Many people compensate by wearing individual headphones. Another option should be to designate a quiet work zone that is free from disruptions. Spaces other than the assigned workpoint should also be available to give sensitive individuals the ability to remove themselves from loud environments. The room should be acoustically sound, and could allow user control over sound—like user-selected white noise, biophilic sound masking, music, or silence.

On the other hand, there are those who are under-responsive to noise, and if they are not stimulated enough by their environment, they will make their own noises by speaking loudly, tapping, or humming. This could be distracting for others in the workplace. Much like helping those who are hyper-sensitive, this hypo-sensitive group can benefit from spaces where they can make noise and not disrupt others around them, or where they can control the sound and volume to suit their sensory input needs.

Tactile

Those who have tactile sensitivities may not be able to differentiate between soft touch and hard touch. A person who is hyper-sensitive may over-respond and be easily

27. Heller, 2015.
28. Aron, 1997.
29. He's Extraordinary, 2023.

startled if tapped on the shoulder by a coworker trying to get their attention. Conversely, someone who is hypo-sensitive might not feel the touch at all because a tap doesn't provide enough stimulation to get their attention.[30]

Some opportunities for sensory modulation can be provided at the individual workpoint, like the use of fidget toys or texture strips affixed to the worksurface. The employee could also be given a choice of textiles for their task chair to ensure it is a texture they are comfortable with. Other individuals struggle with tactile discrimination, which makes it hard to be sure where their body is in space, and how they interrelate.[31] Using a weighted lap blanket can help provide this sense of place.

In addition to the individual workpoint, alternative spaces could be created with different tactile experiences to address different levels of responsiveness (bumpy, smooth, fuzzy, etc.).

Olfactory & Gustatory

Perhaps the most challenging of the senses to address in the workplace are smell and taste. Those who are over-responsive to smells can smell things others don't or interpret a smell that others think is neutral or pleasant as unpleasant. Conversely, those who are under-responsive like strong scents.[32]

In the workplace, consider creating zones that are "scent free" where people cannot wear strong perfumes, colognes, and other heavily scented products. Workplace policies can help as well, like not allowing microwaves or other personal food prep in work areas. A ventilation system that can quickly and effectively recirculate air and remove smells can help provide quality indoor air that is free from smells.

The gustatory sense is strongly connected to the olfactory sense and similar interventions should be considered. If the company provides employees with meal options, considering choices for those with food taste and texture sensitivities can help as well.

Additional Considerations

The key component to any of the recommended ways to support sensory sensitivities is user control and choice. At the very least, the workplace should strive to be a place where sensory needs are met, and employees feel safe and cared for. If an employee recognizes a sensory trigger, they should be able to find a space within the workplace that has the tools they need to regulate. This could occur at their individual workpoint, or a variety of other spaces within the building. Since sensory needs can vary greatly among individuals, it's important to create an environment that has the flexibility to support multiple needs.

In addition to the physical workspace, there is also much that can be done in the form of general awareness, training for all employees, flexible work schedules, and self-advocacy.

Company policies around work location can help support those with sensory sensitivities. If being in an office five days a week results in an undue amount of stress from all the sensory triggers, a hybrid policy that allows working from home could help alleviate stress that comes from working in the office.

Neurodiversity initiatives should be implemented as a part of a broader effort towards diversity, equity, and inclusion, but the rights of the neurodivergent are also covered under the law in the United States. According to the American with Disabilities Act (ADA) of 1990, neurodivergence may be considered a disability because it falls under the category of "mental impairment." therefore companies are legally obligated to provide reasonable accommodations if requested by neurodiverse employees.

Regardless of the company motivations, any steps that are taken to create supportive workplaces for the neurodiverse and those with sensory sensitivities should be done with thoughtfulness and sensitivity to make sure the intent is understood and adopted by all.

If organizations work to support this population, it can only enhance the work experience for all by creating a workplace that addresses a variety of needs and activities.

30. he's-extraordinary, 2023.
31. Heller, 2015.
32. He's Extraordinary, 2023.

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