

Competitive Assessment

iF/Then

Contents

- 3** Introduction
- 4** Methods
- 6** Intervention Services
- 18** Quality of Life Services
- 24** Digital Products
- 41** Physical Products
- 54** Analysis

Introduction

Sensory integration is experienced across the neurodiverse spectrum. Because of its widespread nature, there are many ways to address these needs ranging from professional to ad hoc. We've created a comprehensive list of interventions, services, technologies, and devices all working in some capacity to address sensory needs from various angles.

Method

Primary and secondary research lead to the identification of the following criteria as most valuable considerations for families hoping to address sensory needs.

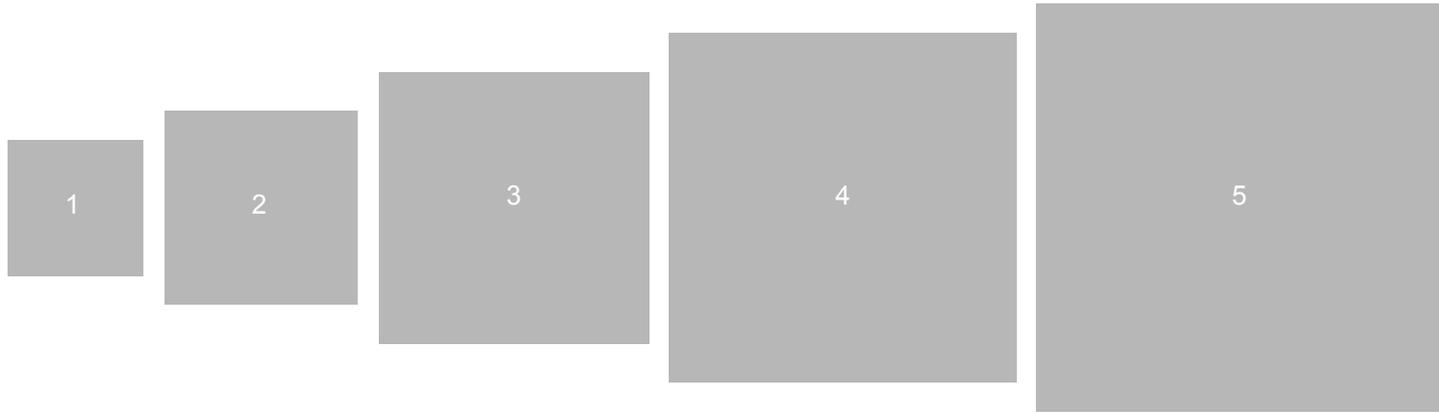
Adaptable - Can kids with a variety of sensory experiences can use it?

Usable - How easy is it to access and use item/service? How many resources (time, frequency) will this cost to engage in?

Enjoyable - How enjoyable is using it for the parent or kid?

Affordable - How expensive is this item?

Method



Each item was ranked on a scale of 1 to 5, which reflects the degree to which they addressed the 4 concepts (1= “not” to 5= “very”). These values were then assigned to a corresponding square in order to visualize the relationship between the concepts

Intervention Services



Intervention Services

Intervention services cover a wide range of validated therapies meant to address the health and wellbeing of children with sensory processing needs. These services are often considered first line approaches and occur in both school and home settings.

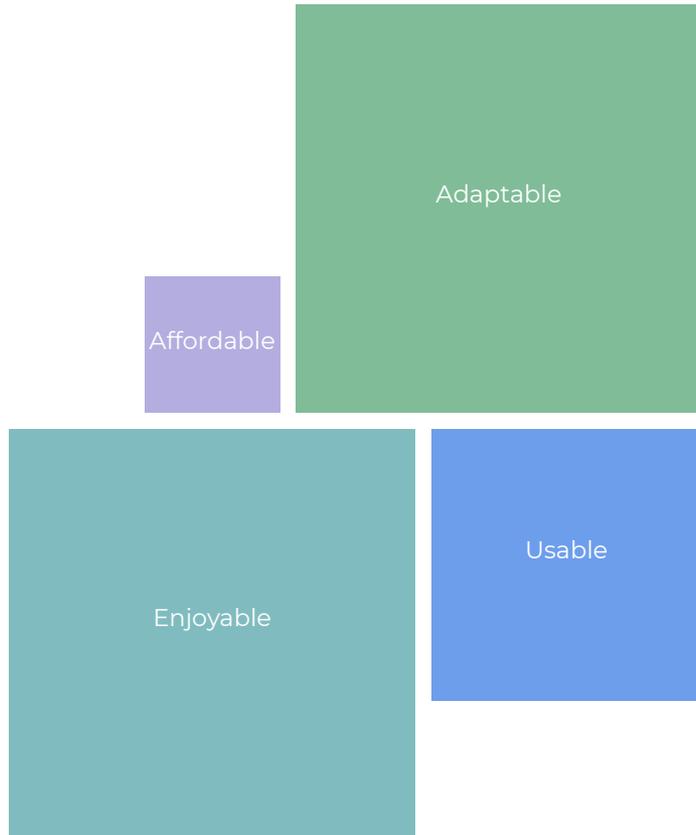
- 8** Animal based therapy
- 10** Occupational Therapy
- 12** Cognitive Behavioral Therapy
- 14** Aquatic Therapy
- 16** Physical Therapy

Animal Based Therapy

Children with autism receive a wide range of benefits from interacting with animals. Improved social skills, emotional bonding, cognitive skill development, and sensory benefits are just a few of the outcomes associated with interventions like trained service dogs and equine therapy.



Image Source: American Kennel Club



Animal Based Therapy

Adaptable

Animals are chosen specifically for their demeanor and ability to address the needs of the child.

Usable

Service animals require care and may add additional workload to parents. Animal based therapy can be hard to access in more rural areas.

Enjoyable

Interacting with well trained animals can be fun and rewarding for the entire family.

Affordable

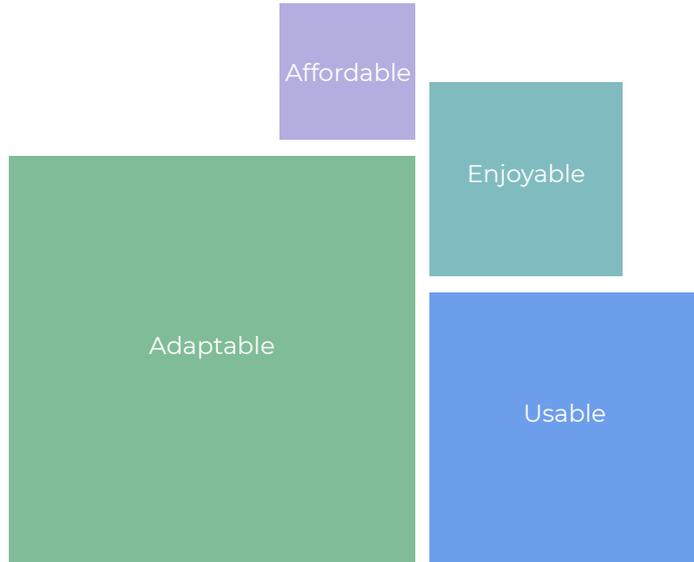
Trained service animals can cost tens of thousands of dollars and the waitlist is lengthy. Equine therapy can range anywhere from \$100-200 per session.

Occupational Therapy

Occupational therapists work to identify and treat issues of performance that result from sensory modulation, sensory integration, motor, and psychosocial deficits often seen in neurodiverse children. They often work in conjunction with parents, schools, and medical professionals to address these physical symptoms using techniques such as Applied Behavioral Analysis and Sensory Integration Therapy.



Occupational Therapy



Adaptable

Treatment plans are individualized for each child's specific needs and are refined and adjusted over time.

Usable

Appointment times for OTs are sparse, especially when occurring outside of the school setting.

Enjoyable

Therapists try to make doing the work fun and engaging but making progress can be challenging.

Affordable

Private occupational therapy can range from \$100-200 hourly but may be covered by private insurance.

Cognitive Behavioral Therapy

Cognitive behavioral therapy provides a way to identify and interrupt the negative cycles of thoughts or behaviors through awareness and skill building. This intervention provides a way to overcome the patterns that kids on the Autism Spectrum develop in response to sensory overload. Therapists often use incremental exposure to upsetting stimuli in order to help desensitize the child and increase tolerance to overwhelming sensory experiences.



Image Source: Clay Center for Young & Healthy Minds

Cognitive Behavioral Therapy

Adaptable

Treatment plans are individualized for each child's specific needs and are refined and adjusted over time.

Usable

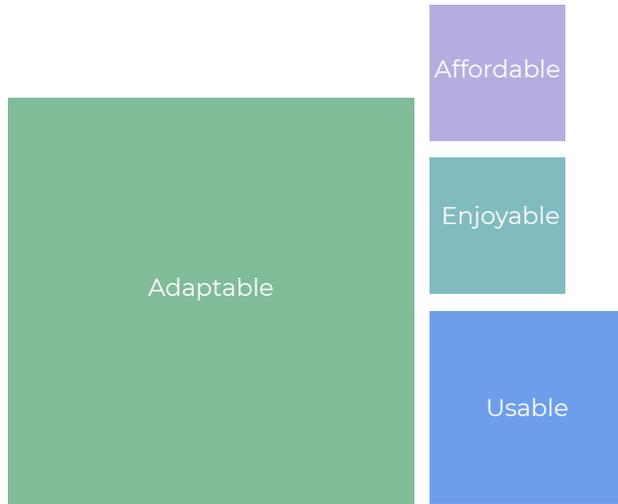
Appointment times for psychologists are sparse, especially when occurring outside of the school setting.

Enjoyable

Psychologists are actively engaging children in noxious behavior in order to address issues - sessions are often overwhelming and challenging.

Affordable

Therapy can range between \$100-200 hourly but may be covered by private insurance.

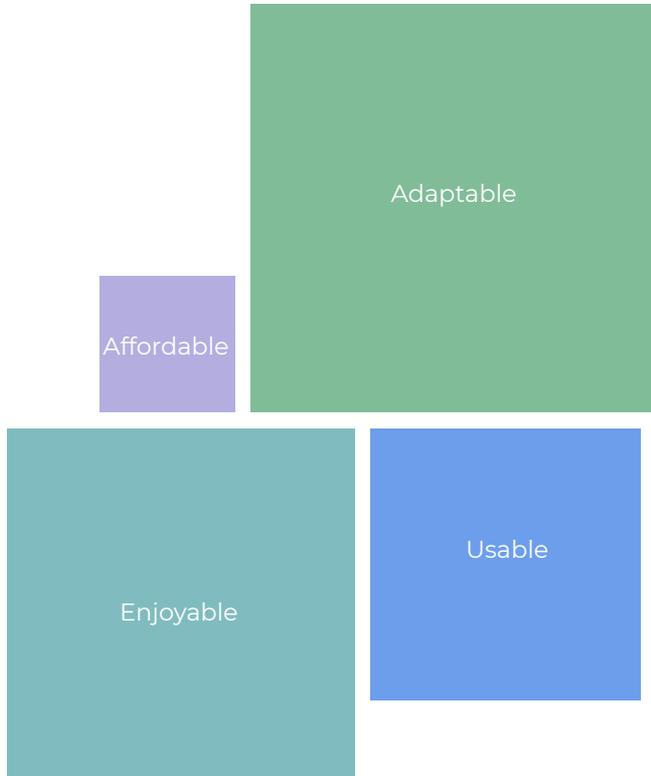


Aquatic Therapy

Aquatic therapy is a combination of recreational, physical, and occupational therapy conducted in a heated swimming pool. This therapy provides building strength and flexibility. More importantly for neurodiverse children, it also increases body awareness, sensory integration, motor coordination, and range of motion.



Image Source: Swim Angelfish



Aquatic Therapy

Adaptable

Treatment plans are individualized for each child's specific needs and are refined and adjusted over time.

Usable

Proximity to this type of therapy can be challenging due to the need for a large heated pool and trained professionals.

Enjoyable

This type of therapy is often relaxing and enjoyable for children over time, but initial fear or overstimulation by water can be a challenge.

Affordable

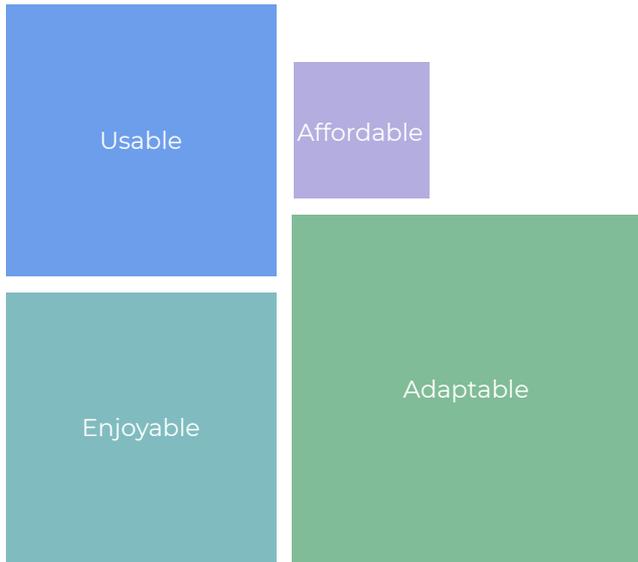
Treatment can range from \$55-75 for a half hour session and is not covered by insurance.

Physical Therapy

Physical therapy seeks to improve the ability to receive and correctly interpret sensory data that challenge children who are neurodiverse. Physical therapists often use techniques to over or under stimulate the vestibular, proprioceptive, and tactile senses by either lessening or amplifying the intensity of the sensory stimulation they receive.



Image Source: Pediatric Partners



Physical Therapy

Adaptable

Treatment plans are individualized for each child's specific needs and are refined and adjusted over time.

Usable

Appointment times for physical therapists can be challenging because it doesn't occur in the school setting.

Enjoyable

Physical therapists often use play to complete exercises that may be challenging for children.

Affordable

Therapy can range between \$100-200 hourly but may be covered by private insurance.

Quality of Life Services

Quality of Life Services

Families of children with sensory processing needs often feel they cannot participate in “normal” events. Sensory friendly services were created to help these families integrate into the community and provide fun, engaging, and inclusive experiences.

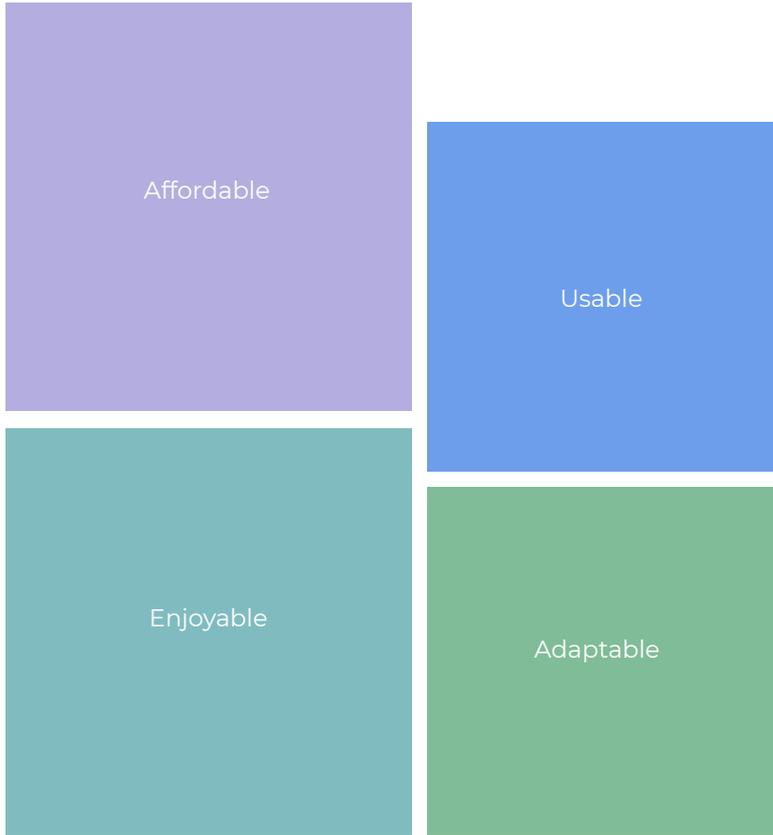
- 20** Sensory Friendly Entertainment
- 22** Sensory Friendly Spaces

Sensory Friendly Entertainment

Sensory friendly events provide special accommodations to families who often find events too difficult to attend with their neurodiverse children. Events like movie screenings, theater performances, and sporting events are modified to address the overwhelming sensory experiences. Additionally, these events provide additional support and community to families that often feel isolated and excluded.



Image Source: Terminal Today



Sensory Friendly Entertainment

Adaptable

Sensory experiences are specifically tailored and children receive additional tools (like sensory kits) to help accommodate their specific sensitivities.

Usable

Events are held with frequency across the country in easily accessible public places. Access in rural areas could be limiting.

Enjoyable

These events are family oriented and meant for maximum engagement for a variety of children.

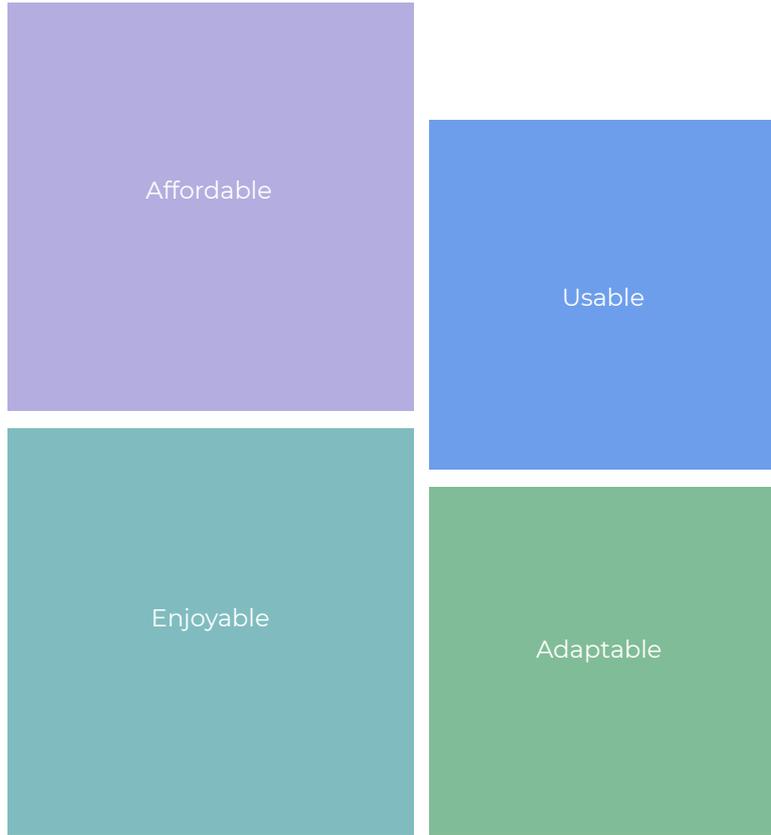
Affordable

Many of these events are free or cost adjusted to help support families who need these activities.

Sensory Friendly Spaces

These public environments offer a relaxing and interactive environment to help calm children with sensory needs who often feel overwhelmed in busy and unfamiliar surroundings. Spaces like airports, parks, gardens, gyms, and zoos provide support and infrastructure to directly address sensory needs in their specific setting.





Sensory Friendly Spaces

Adaptable

Sensory needs are designed for and addressed when constructing these spaces.

Usable

These spaces are accessible by design, but are more rare in rural communities.

Enjoyable

These spaces are meant to be relaxing and pleasant across the neurodiverse spectrum.

Affordable

Many of these spaces are free or low cost.

Digital Products



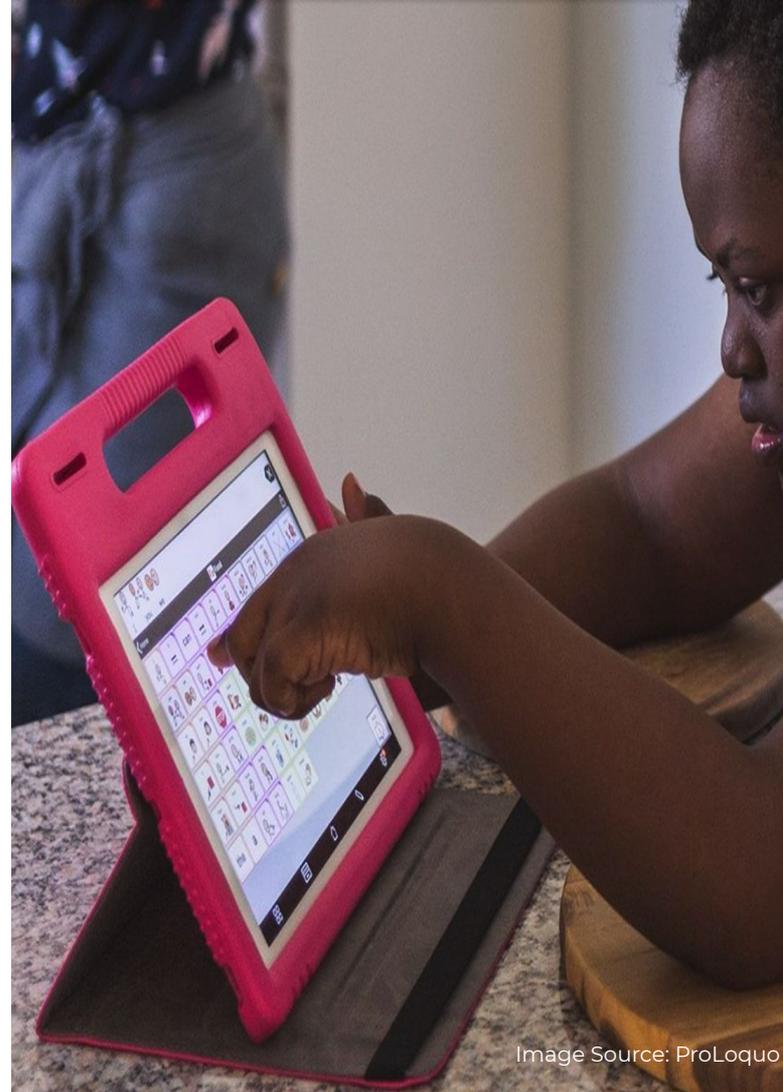
Mobile Digital Products

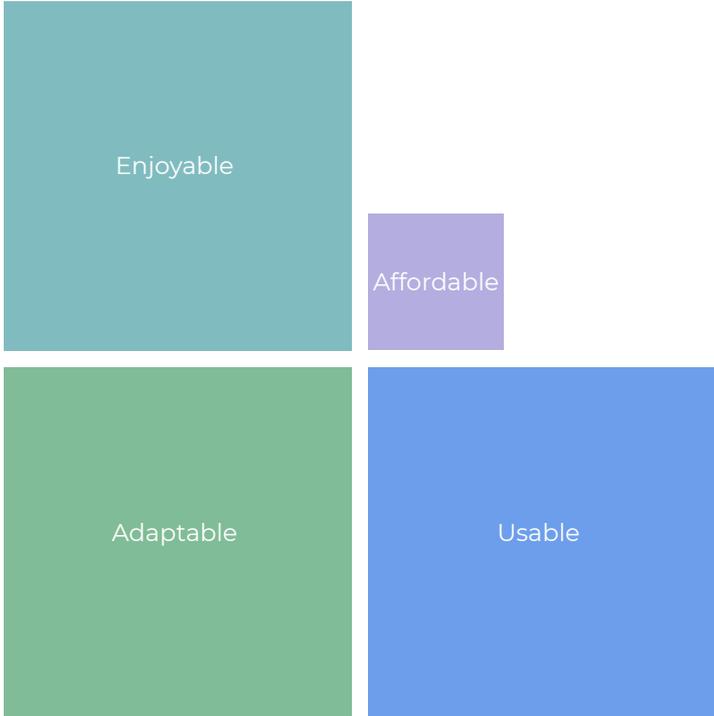
We use mobile digital products to refer to mobile applications or software applications (apps) designed to run on a mobile device such as a phone, tablet or watch. These mobile apps were selected because they were designed for both the wellbeing of children and to help children with sensory processing needs to reach their full potential.

- 26** ProLoquo
- 28** EASE Listening Therapy
- 30** Storybook Maker
- 32** Class Dojo
- 34** Visual Scheduler
- 36** Sensory Fish
- 38** Sensory Treat

ProLoquo

Some children with Autism are non-verbal, but not being able to speak isn't the same as having nothing to say. This symbol-based app is a communication tool that provides a voice for children who can not speak or whose speech is difficult to understand. Children gain access and control to many natural sounding text-to-speech voices by simply tapping the icon on the screen.





Proloquo

Adaptable

This is a tool for all children including those with special needs. The app is particularly effective for children who benefit from using visual narrative to complement auditory directions.

Usable

Proloquo does not require an internet connection to run. Children simply select the word they intent to express by clicking, however much time is spent hunting through the grid for icon-based words.

Enjoyable

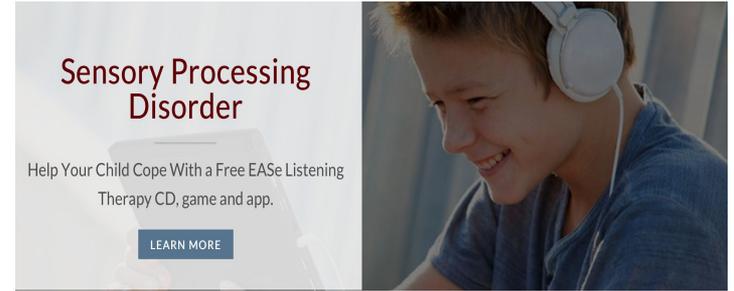
The app provides an avatar to appeal to children's interest and provides a delightful experience for children to become entertainers.

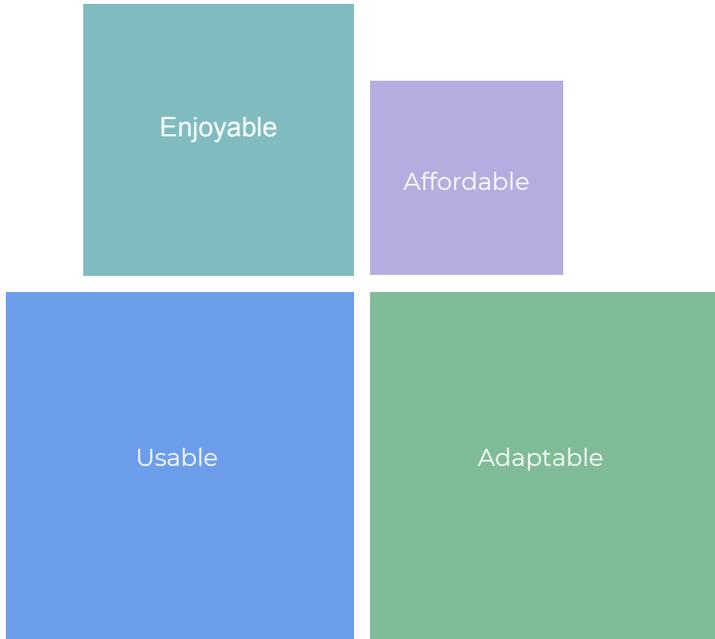
Affordable

Kid in story is moderately priced at \$8.99 it ranks as somewhat affordable .

EASe Listening Therapy

EASe listen therapy uses music to deliver short, intense burst of sound, creating a sensory palette of sonic experiences. Over time listening to these sounds, adjusted for personal responsiveness, can help a child with sensory processing needs learn to cope with typical environmental conditions. EASe was studied by researchers at Brenau University in 2012 and found effective in reducing auditory hypersensitivity.





EASE Listening Therapy

Adaptable

Listening sessions can be adjusted allowing for parents and children to map auditory sensory responsiveness to various listening modes.

Usable

Preset modules designed for children with ASD or sensory processing disorders have been preset. Answering two questions after each session, determines how the program continues.

Enjoyable

The current interface is outdated and doesn't share visual affinity with current listening platforms.

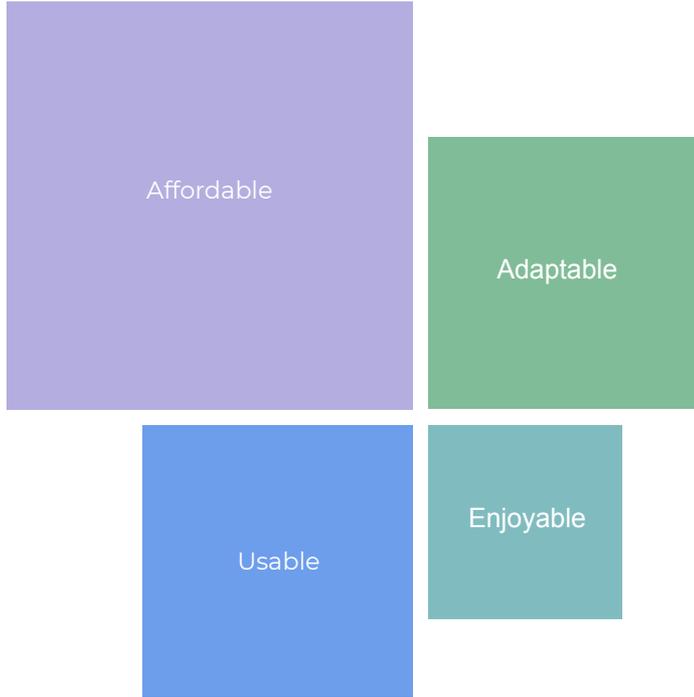
Affordable

Three subscriptions are offered: Legacy, Guided, and Pro. Current pricing is per 3 months and varies starting at \$11.99 and reaches to \$49.99. Additional modules can be purchased to supplement subscriptions.

Storybook Maker

Kid in Story is digital story author's desk that allows children to create and share customized story books by using their own images, text and narration. Parents of children with sensory processing needs can use this to create inventory of their child's interest and preferences as documented through story.





Storybook Maker

Adaptable

Since the app uses templates instead of allowing for an individual to create their own template, this reduces some of the autonomy which is well-related to sustainable enjoyment.

Usable

It uses intuitive templates that makes it easy and fun for young users to create engaging interactive stories.

Enjoyable

Children will enjoy seeing a photograph image of themselves alongside animated image. It could be a more enjoyable experience if children were able to create personal avatars.

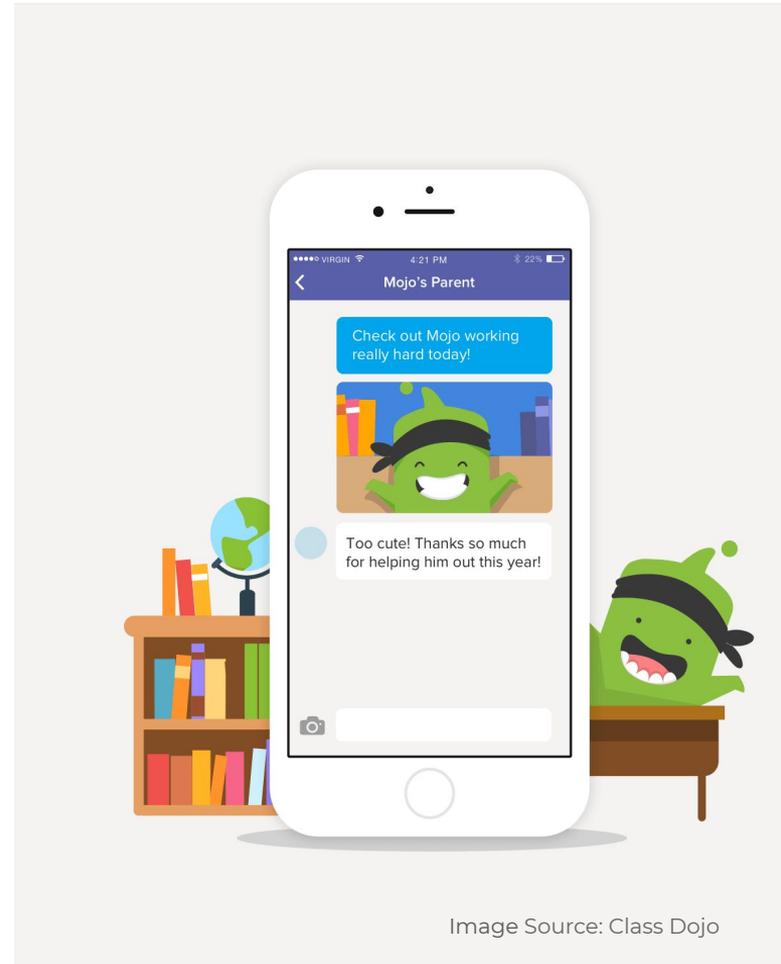
Affordable

Free application and allows the user to download on multiple devices.

Class Dojo

Having an effective and direct line of communication is critical for occupational therapy practitioners to collaborate with families and teachers when addressing the goals of children with sensory processing needs.

Class Dojo is a communication app that allows children, teachers, and parents to connect, support and develop a child's skills. Teachers can track targeted behavior and upload photos or videos.





ClassDojo

Adaptable

The program is customizable and a teacher can change the skills for which a student obtains feedback to adapt to the child's changing needs; however, it is not designed with sensory needs in mind.

Usable

It is available as a web application that can be used in any device with a web browser including native apps for iPhone and Android.

Enjoyable

The gamification style system engages kids through real-time feedback. Children can customize avatars and see their progress.

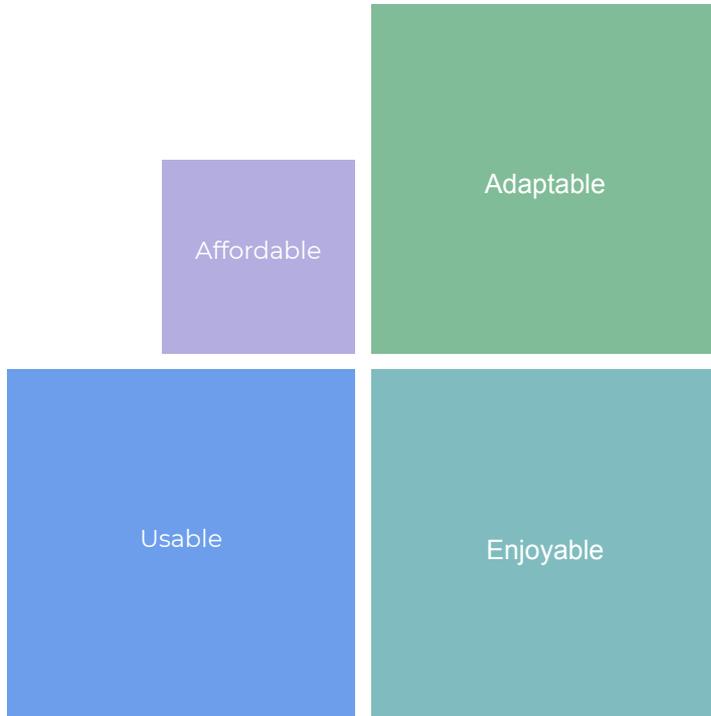
Affordable

The platform is free for children, parents and teachers alike.

Visual Schedule

Understanding and following a daily routine is a skill that contributes the well-being of children with Sensory Processing Disorders. This is a wearable picture-based scheduler designed that also works on an iPhone and iPad. A progress bar displays how much time has passed and when the event will end. Children can see and check the task related to the event allowing children to feel a sense of ease and relief.





Visual Schedule

Adaptable

The ability to create custom icons provide a child, parent, teacher or therapist flexibility in making schedules that reflect developmental changes and differentiate towards a wide-range of needs.

Usable

Once downloaded, the intuitive user interface makes it easy to create a picture-based schedule, but there are also 14 ready-made schedule icons. Unfortunately reviews indicate the app has not been consistently updated.

Enjoyable

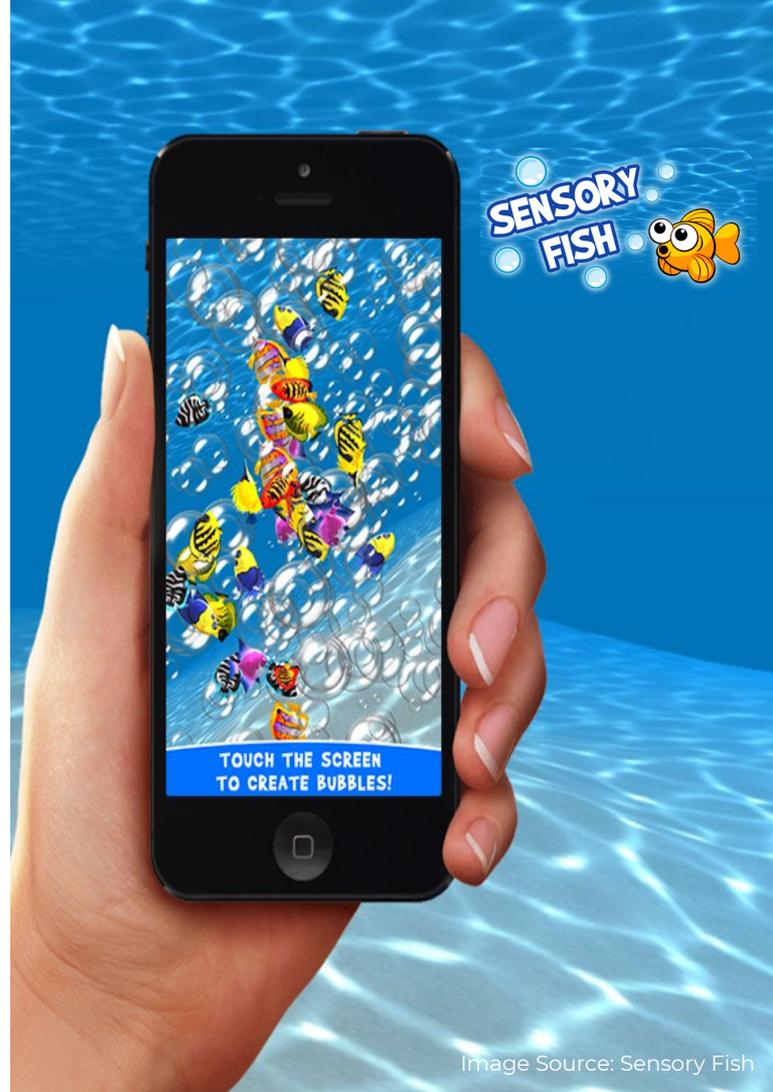
Some high-tech tools are used by adults to teach children, but this wearable is designed for a child to use independently.

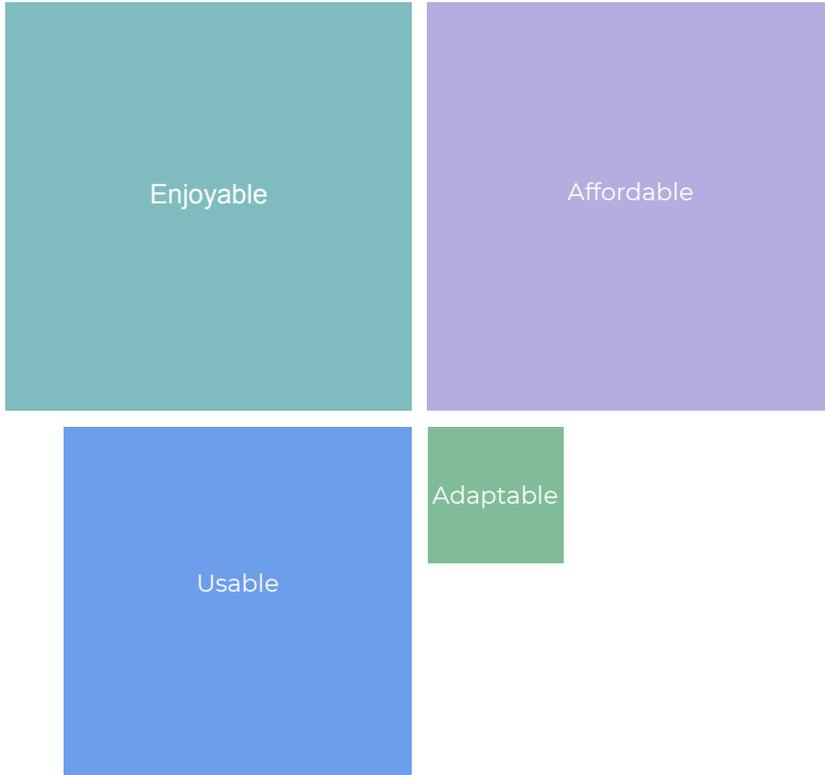
Affordable

The app cost \$12.99 and requires the purchase of an Apple watch, Iphone or Ipad.

Sensory Fish

This is a mobile entertainment app for parents to use with their infant or toddler. It features a visually stimulating underwater experience and claims to be an activity to promote sensory development. Children can drag their finger across the screen to create a pattern of bubbles or to cause vibration or sound effects.





Sensory Fish

Adaptable

Developmental changes are not addressed as this activity is solely designed for infants and toddlers. Also, children may abandon when novelty diminishes.

Usable

Once downloaded the application is at hand and ready to use on the go. Either a parent can touch to begin or a child. Some features may not be included in the free version.

Enjoyable

The combination of visual, tactile, and auditory effects makes this a delightful and engaging playtime activity.

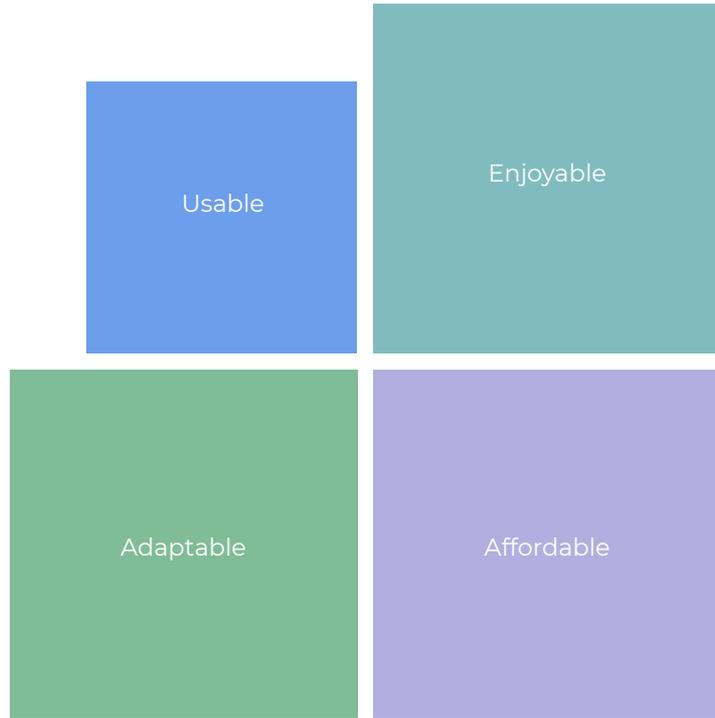
Affordable

A free version is available.

Sensory Treat

Sensory treat is an adherence tool that supports parents and therapist to work together in creating home activities for children with sensory processing difficulties. Therapist can monitor family engagement and families receive reminders with illustrated evidence-based activities and photos prompting them towards everyday routines and activities that reinforce their child's sensory processing goals.





Sensory Treat

Adaptable

Launched first as a sensory diet app for parents, practitioners can setup, monitor, and adjust goals to fit a child's changing needs.

Usable

Both the therapist and the family must use the app and it can be used on any device with a web-browser.

Enjoyable

From blowing bubbles to helping dad put clothes in the laundry these activities are designed to be playful and integrate well into a family's routine.

Affordable

Parents and teachers can purchase at \$4.99 a month. Alternatively, therapist can purchase monthly subscriptions at \$3.99 and allocate them to caregivers.

Physical Products



Physical Products

Because physical sensations are so often triggers for children with sensory processing needs, it makes sense that physical products would be effective aides. These products are aimed at removing unwanted items and supplementing with sensory friendly aspects. The physical products have a wide range in price, but are all pretty effective in helping children feel sensory relief.

- 42** Sensory Friendly Toys
- 44** Sensory Friendly Clothes
- 46** Sensory Friendly Home Goods
- 48** Sensory Swings
- 50** Sensory Kits
- 52** Headphones

Sensory Friendly Toys

Sensory friendly toys can be effective self-regulation tools. Stress balls, putty, and anything squishy and squeezable are helpful because they're soothing, calming, and enjoyable to fidget with. Fidget toys are used for calming, alerting, to promote focus and concentration, and increase tactile awareness, while keeping fingers busy.



Image Source: Snagglebox



Sensory Friendly Toys

Adaptable

The individual toys might best serve specific needs, but there is great variety in the types of toys offered, so the group as a whole is highly adaptable.

Usable

Since sensory toys are often small and discrete, they can be used in most settings. They are helpful at calming kids down without creating a social disturbance.

Enjoyable

Toys are fun for all kids, and just because these toys are sensory friendly, does not make them less fun. In fact, they are likely more enjoyable since they do not elicit sensory distress.

Affordable

Most sensory toys are very affordable and often come in multi-packs, which allows parents to easily purchase toys and be ready with extras if needed.

Sensory Friendly Clothes

Many children with sensory processing needs are especially sensitive to clothes, because they come in direct contact with so much of their body. Each child is unique in their sensitivities, but some items that can pose problems are textured fabric, seams, tags, buttons, and zippers. Sensory friendly clothes are soft and do not include the items above that can cause agitation. Additionally, weighted and pressure clothes can be soothing because they can help in grounding children.





Sensory Friendly Clothes

Adaptable

Most items try to take away as many sensitivities to ensure that they are effective for the most number of people.

Usable

These clothes are usually only available through specific sensory friendly stores, most of which are online. There are many online stores, so it is not difficult to find a site, but the clothing has to be shipped and cannot be purchased for immediate use.

Enjoyable

The sensory friendly clothes make the children much less stressed, but they might not be as fun or exciting as other clothes as they come in limited designs.

Affordable

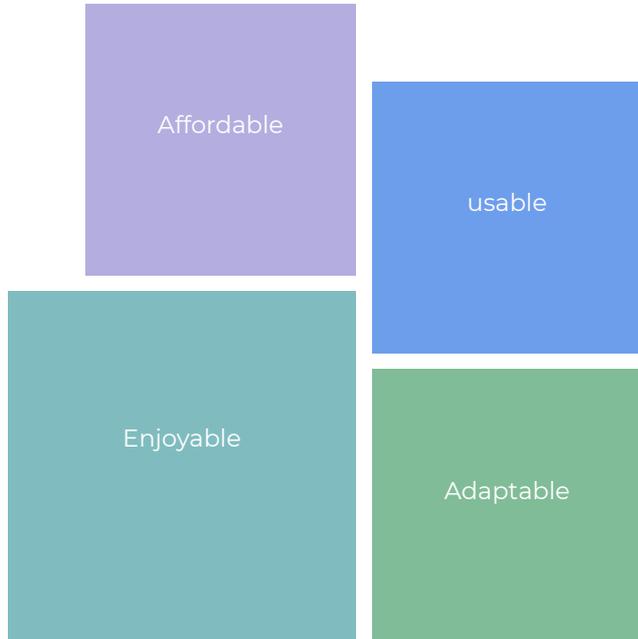
Sensory friendly clothes are not that much more expensive than normal clothes.

Sensory Friendly Home Goods

Target recently released a line of children's furniture designed for children with sensory sensitivity. The collection includes items for kids rooms like rugs, tents, and blankets. Furniture comes in muted colors and soft textures. Weighted blankets are some of the most common home accessories. Pellets are put into the blanket which provides firm but gentle pressure to the whole body.



Image Source: Target



Sensory Friendly Home Goods

Adaptable

Target has come out with 20 items in this collection, so people can buy whichever item might work best for them. But once purchased, the items cannot be adapted since they are just pieces of furniture.

Usable

The sensory furniture is made for children, so it does not take up much space. You can buy online, so people in any geographic location can purchase.

Enjoyable

The furniture and accessories look very approachable and fun, so I believe that they would be enjoyable for children.

Affordable

Most home goods are available online for less than \$100. This is a one-time purchase which will likely be heavily used, so it seems pretty affordable.

Sensory Swings

Many children with autism find rocking and swaying to be helpful in relaxing. For this reason, swings can be effective therapeutic tools. Swinging stimulates vestibular and proprioceptive senses to help them to feel more in control of their bodies. There are multiple types of swings available on the market and therapists recommend that children choose what swing feels best for their body.



Sensory Swings

Adaptable

Children should pick out their own swing. The swings have some adjustment mechanisms and can be altered for comfort, but only in limited ways.

Usable

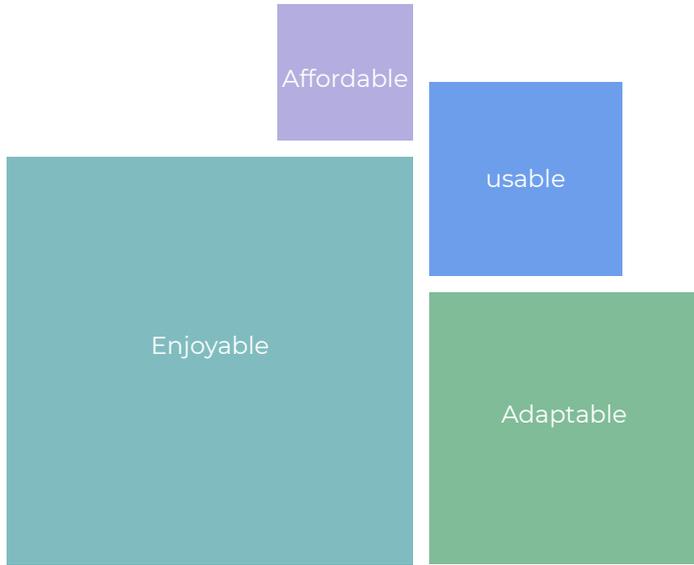
Swings need to be installed in houses and they take up quite a bit of room. Many people need to get someone to come install it for them because they cannot build it on their own.

Enjoyable

Swings are fun for most kids and these seem to be no exception. Some describe being in a sensory swing like getting a big hug.

Affordable

Many sensory swings are expensive (a couple hundred dollars) but cheaper options are increasingly becoming available



Sensory Kits

Some organizations are beginning to provide sensory kits for children with sensory needs. The Cincinnati Zoo has a kit that they can give out to any children who might need sensory assistance. This bag includes chew tubes, fidgets, pinwheels, noise cancelling headphones, sunglasses, and more. Also included are social stories and maps of the zoo which indicate areas that might be difficult (i.e. loud or smelly).



ZOO ACCESS

The Cincinnati Zoo & Botanical Garden, in partnership with Cincinnati Children's Hospital Medical Center, has been working to become the most welcoming, accessible, and inclusive Zoo for individuals with developmental disabilities and their families.

Many Zoo employees have undergone training provided by CCHMC's Leadership in Neurodevelopmental and related Disabilities (LEND) program to better engage with the developmental disability community. They can be identified by the blue strips on their employee badges.

In addition to teaching staff skills to promote inclusion, the Zoo offers adult-sized changing tables, sensory maps, a skip-the-line rides access pass, social narratives, visual supports, and sensory bags filled with oral motor chewy tubes, fidgets, noise cancelling headphones, sunglasses, etc.

A calming room and another family restroom that is sensory friendly will be ready in early 2019.



Image Source: Cincinnati Zoo



Sensory Kits

Adaptable

Since the kits contain multiple items, there is likely something that will be a fit for everyone.

Usable

While the kits are nice to have, they need to be carried around and might contain multiple items that the child does not need, which could be a burden.

Enjoyable

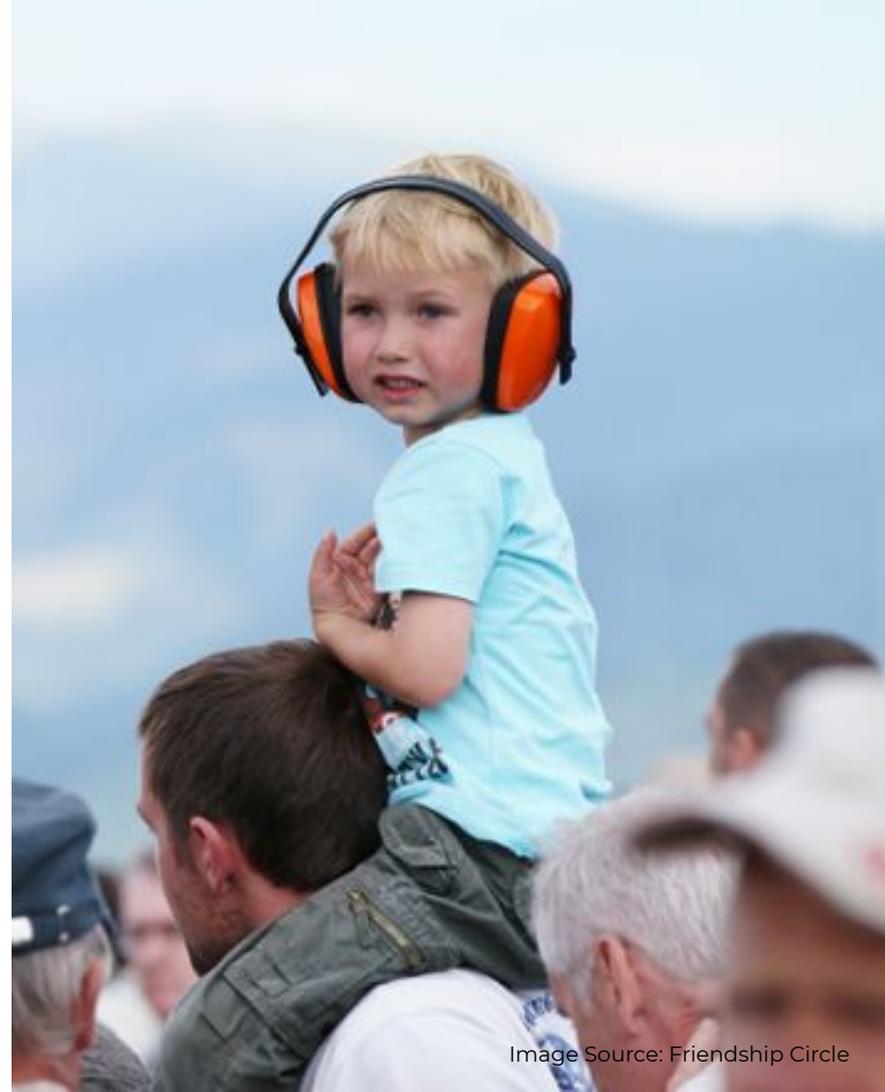
The kits feel like presents and they can make the experience of being in a public place more fun.

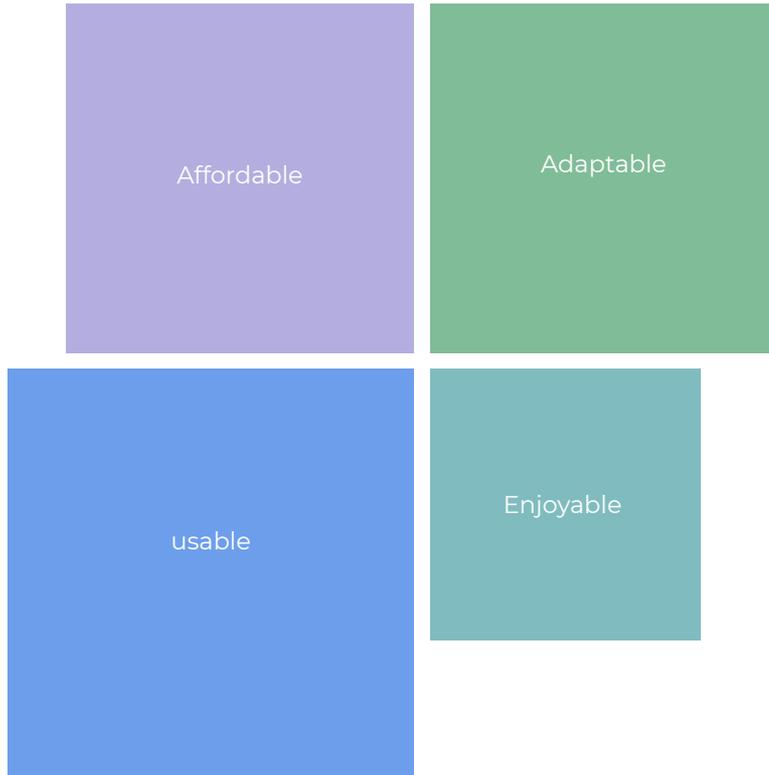
Affordable

Usually these kits are free.

Headphones

Noise reducing headphones can allow children with auditory sensitivity to be in loud environment without getting overstimulated. They lower the overall decibel rate of background noise, so the child can still hear someone talking to them but they block out background noise.





Headphones

Adaptable

Headphones come with different levels of noise cancelling and they are adjustable, fit wise, so they can be used by most children with auditory sensitivity.

Usable

They are highly usable in public space because they allow families to go out in public places that might have previously been off-limits to them.

Enjoyable

Many children with autism dislike having things on their heads, but the benefits of headphones outweigh this dislike. They allow the kids to have fun in public settings.

Affordable

Noise reducing headphones can vary greatly in price, from around \$10 to over \$100, but the cheapest ones are still effective and affordable.

Analysis



Usable

ClassDojo	Sensory Friendly Toys	Sensory friendly clothes	Sensory kits	Visual Schedule	CBT
Headphones	EASe	OT	Sensory friendly Home Goods		Story Book Maker App
Sensory Friendly Entertainment	ProLoquo				
Sensory Friendly Space	Sensory Fish	SIT	Animal-based therapy		Sensory swings
			Aquatic Therapy		

Enjoyable

Animal-based therapy	Sensory Friendly Space	ProLoquo	Sensory friendly Home Goods	Sensory friendly clothes	Sensory kits
ClassDojo	Sensory Friendly Toys	SensoryTreat	Headphones	PT	Story Book Maker App
Sensory Fish	Sensory swings				
Sensory Friendly Entertainment	Aquatic Therapy	EASe	SIT	CBT	

Adaptable

Animal-based therapy	Sensory Friendly Entertainment	EASe	Headphones	PT	ProLoquo	
Aquatic Therapy	Sensory Friendly Space				SIT	Visual Schedule
CBT	Sensory Friendly Toys	Sensory friendly clothes	Sensory swings	Story Book Maker App		
OT	Sensory kits	SensoryTreat				

Affordable

ClassDojo	Sensory Friendly Toys	Headphones	Sensory friendly clothes	SensoryTreat	
Sensory Fish	Sensory kits	Sensory friendly Home Goods	Visual Schedule		
			CBT	SIT	
Sensory Friendly Space	Story Book Maker App	EASe	OT		
		Sensory Friendly Entertainment	PT	Sensory swings	

Trends

- 1** Items ranked higher in enjoyment tend to be more expensive
- 2** Evidence based items tend to be highest in adaptability, but lack usability, affordability, and enjoyment
- 3** Portable items and public spaces are most affordable and usable

Design Recommendations

Design should be informed by evidence based practices.

Children with a wide range of sensory processing needs can get help from evidence based practices, but because they are currently inaccessible, these services are not fully utilized.

We want to use what has been proven to be effective (evidence-based) and integrate it with accessible design solutions.

This is not a replacement, but rather a supplement for traditional therapeutic approaches.

Design Recommendations

Low cost enjoyment.

Many of the most enjoyable items were ranked as the most expensive.

We want to mitigate the barrier to entry that cost creates for families while creating engaging and enjoyable design responses.

If parents need to replace or transition to a new intervention, cost should not prevent them from doing so.

Design Recommendations

Design should be adaptable and accessible to ensure sustained use.

Sensory processing needs fluctuate and parents often switch resources.

Solutions must be adaptable to help parents accommodate and address the ever changing needs of their child.

Avoid design solutions that limit variety, creativity, or extent of use.