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Deep Dive on Autistic Perception

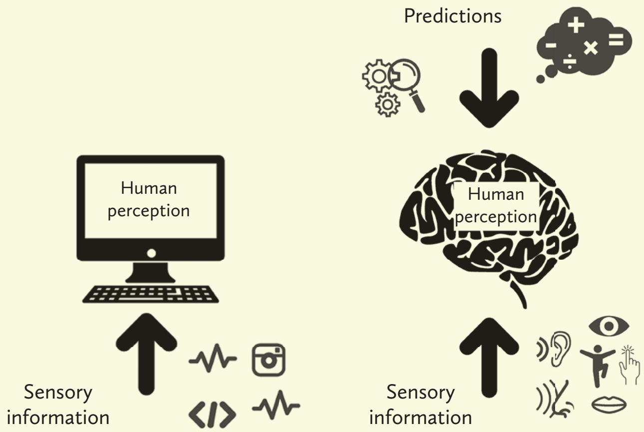
The Process of Human Perception

Before explaining what we currently think about Autistic sensory perception, it's important to understand a little bit about how all human perception works. We used to compare the human brain to a computer, with information coming in directly from the external world being processed and then categorized. We now know that the human brain functions quite differently to a computer.

Unlike computers that process information in a linear, unidirectional way, humans create perception through a process called 'predictive coding'. Without going into too much detail here, all this means is that our perception of the world is based both on external information we perceive from the environment through our senses and predictions we make based on our individual experience of the world. Our brains then combine these two sources of information about the world to create perception (Friston 2018; Friston et al. 2017; Friston and Kiebel 2009; Schneebeli et al. 2022).

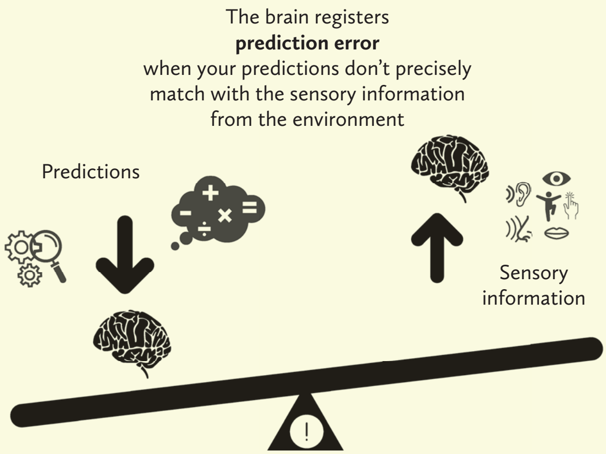
Interestingly, it is this predictive coding process, which differs from computers, that is a primary reason why robots are unlikely to ever be fully 'human-like' because we haven't figured out how to make artificial intelligence (AI) that can 'perceive' fully through predictive coding. Understanding the brain, as a predictive coding 'machine', is an exciting field of neuroscience at the moment, with many studies adding evidence of human perception, cognition and behaviour being driven by predictive coding processes. For example, in the infant brain (Emberson, Richards and Aslin 2015), there is evidence at a neural level of feed forward and feedback from higher-level to lower-level cells by neuromodulator receptors (dopamine, glutamate, NDMA) (Huang and Rao 2011).

Perception as predictive coding challenges the idea that when we receive sensory stimuli from the environment and process it in a unidirectional way, like a computer, for example, when we hear a sound, we don't simply just take the auditory information and process the sound we hear. Instead, there are two different inputs interacting together to create our perception: (1) the raw sound we hear from the world through our senses and (2) our own individual predictions of what we think the noise will sound like based on our past experiences of the world and the beliefs that we have. Thus, for each of us, our perception and our subjective reality are unique.



Another key part of human perception is 'prediction error', which, simply put, can be understood as the surprise that our brain registers when there is a difference between the raw sensory information we receive from the environment and our predictions (Friston and Kiebel 2009).

In every experience we have there is always some prediction error because no two situations are ever precisely the same – our prediction based on our past experiences will always be in some way different from what is happening right now.



Prediction error is essential to our growth and development as this is what enables us to understand and learn in the world. However, human brains do not cope well with lots of surprises and uncertainty, and too many prediction errors disrupt our balanced state. So one of the most important jobs of our brain is to remain in a balanced and regulated state as much as possible (Friston 2010). This is known as a 'state of homeostasis'. Because our predictions are never precisely the same as the sensory information from the environment, our brain needs to work in other ways to remain in this state.

A human brain has many ways to reduce the amount of prediction error and to keep us balanced, such as regulating our internal organs, our breathing, temperature, hormones, emotions etc., to match with our environment. Some human brains can also cognitively decide to ignore some prediction errors and write them off as unimportant, irrelevant noise. This means that we may never be consciously aware or able to learn from some prediction errors if our brain takes this strategy. We can also use physical action, such as moving away or avoiding environments where there is likely to be a lot of prediction error. We can engage in self-regulating actions such as stimming, which means we still register the prediction error and can learn from it, but the stimming action works as a counterbalance to the deregulation caused by the prediction error.

What strategies our brain uses to maintain homeostasis is mostly unconscious and automatic and depends on our neurotype and perceptual style. It is not a matter of us consciously choosing what strategies we would like to use. However, there are ways in which we can consciously take further action to keep balance. We all, to a certain extent, attempt to follow routines in our day-to-day lives, from sleeping on the same side of the bed, eating similar food at certain times, drinking coffee in the morning, taking the same route to work, following a yearly schedule, sticking to traditions and celebrating holidays on certain days. We also like varying amounts of excitement and adventure, taking risks and seeking thrills; some of us even like to jump out of aeroplanes with only a parachute. We each have our own unique balance that is right for us.

It is important to understand that surprise and uncertainty come from positive experiences such as excitement, wonder, supported challenge and joy as much as they come from negative experiences such as those that are threatening or distressing, low mood or boredom. There can be uncertainty in low stimulation as much as there can be in high energy and busy contexts. Balance is key. It is important to note that uncertainty and surprise is not inherently bad – in moderation and with support it can open avenues to creativity, adventure, learning and growth – but prolonged exposure to intense uncertainty with no support can lead to anxiety, frustration and depression, so the ability to self-regulate to reduce prediction error and maintain an individualized level of self-regulation and balance is vital.

> ### Reflection Point
>
> Many neurotypical people do not consider they stim, but finger tapping, hair twiddling, pen tapping etc. are all stims. One key difference is that stimming is an integral way in which many Autistic people self-regulate rather than merely being more of a 'fidget'. Many Autistic people have multiple experiences of being shamed for stimming, and as a consequence, have learned to either refrain from stimming totally, or find an alternative, less regulatory, stim. The need to stim and regulate has not lessened, of course, but the Autistic person can be left without their intuitive management strategy. Imagine being shamed repeatedly for doing what is as natural as breathing. How would it feel to suppress every breath? Is that sustainable?
>
> In sessions, clinicians need to be clear that they welcome and celebrate all of a person's stims (and even better, model a few of your own!). Often, finding one's way to an authentic Autistic Self is relearning to embrace what we once did naturally before society told us that that was shameful. Support Autistic people to relearn their stims, to embrace them joyfully and find great Autistic joy in exploring new ones.

Autistic Perception and Predictive Coding

Recently there has been increased interest within the Autistic community about how predictive coding processes might differ in Autistic neurology, how predictive coding processes and prediction errors are evaluated in Autistic perception and used in Autistic learning. One popular theory within the Autistic community suggests that the Autistic brain has a specific perceptual mechanism that is distinctively different to the perceptual mechanism of the neurotypical brain (van de Cruys et al. 2014). It is proposed that this difference in evaluating prediction errors is the foundation from which all other Autistic experiences grow.

It is suggested that in the neurotypical brain, many prediction errors are ignored and considered irrelevant noise. Neurotypical perception is influenced more by predictions based on beliefs and past experience, with much less raw sensory influence. In comparison, Autistic brains pay more attention to the prediction errors that are more often judged as important for learning and for understanding the world. So Autistic perception reflects a more accurate view the world, one rich in detail and influenced less by beliefs and past experiences (van de Cruys et al. 2014).

Perceptions of a Tree

This can be easier to understand if we use the example of perceiving something in the environment – a tree, for example. Think of a tree, any tree, in your environment that you are familiar with.

For the very first time in experiencing this tree, both Autistic and neurotypical brains are likely to have a similar perceptual experience of it. Both are likely to perceive the tree in a lot of detail. However, it is at the next stage when this tree, or even just a similar tree to this one, is experienced again, that the perceptual experience for Autistic and neurotypical individuals begins to differ significantly.

Any subsequent times after the first time that a neurotypical brain perceives this tree, or a similar tree, they are less likely to perceive it again in all its detail.

Any surprises (prediction errors) that the neurotypical brain registers between what their senses are telling them now about the tree compared to the prediction they made about how they expected to perceive the tree are much more likely to be judged as unimportant and irrelevant for understanding trees (unless, of course, the tree is markedly different, such as this time, instead of standing up, the tree has fallen over).

The neurotypical brain's internal model of the world is less likely to be automatically updated to include the details and rich complexity of the world because many prediction errors are judged as irrelevant to learning and are ignored. Neurotypical people are more likely to perceive and have a more generalized understanding of the world (van de Cruys et al. 2014).

This perception applies not only to experiencing trees but also happens for the feel of a jumper or the flicker of lights or the noise of a fridge in a supermarket. Neurotypical people might notice all these things the first time, but after that it just becomes another jumper, light or fridge – they don't notice all the details every time because their brain filters it out as just irrelevant noise to be ignored.

This neurotypical brain strategy works to reduce uncertainty and prediction errors but also limits learning, because without the neurotypical person taking a conscious effort to learn more, their brain's perceptual mechanism naturally blocks learning in detail and experiencing the complexity of the world. The neurotypical brain does this by preventing neurotypicals from becoming aware of many of the surprises (prediction error) that indicate that there is a difference between what they already know and what is still to be discovered about the world. The upside of this neurotypical perception mechanism is that neurotypical people are much less likely to experience perceptual overload because their brain naturally ignores a lot of the uncertainty that exists in the world (van de Cruys et al. 2014).

Any time that an Autistic brain perceives this tree or any tree, they are highly likely to perceive the tree again in all its details.

Even the smallest surprise (prediction error) indicating a difference between the sensory stimuli received from the environment compared to the predictions they made about how they expected to perceive the tree is much more likely to be judged as important and relevant for learning and understanding trees, for example. Each surprise (prediction error) is categorized as its own individual scene or whole new 'picture', which is perceived separately and as new in all its details (van de Cruys et al. 2014).

The Autistic brain's internal model of the world is much more likely to be automatically updated regularly to include the details and rich complexity of the world because many more prediction errors are judged as important to learning. Autistic people are more likely to have a much more detailed and complex understanding of the world (van de Cruys et al. 2014).

This perception not only applies to experiencing trees but also to Autistic perception of everything. For Autistics, perception happens in detail, and with each change to any aspect of the **gestalt** (the whole scene in all its details), a new scene is perceived (Bogdashina 2016). This means that an Autistic model of the world is much more likely to be made up of millions of separately perceived and categorized individual trees, individual lights, individual feelings of clothes. For example, one might argue that surely a jumper stays the same and is unlikely to trigger prediction errors every time, but then it's not just the jumper we need to consider; the skin it is touching may feel different, how we feel may be different, the temperature may be different, or there might be one stitch that has come undone. Which means that even a jumper can trigger prediction error and add more complexity to an Autistic person's understanding of the world.

As the Autistic brain is more likely to evaluate prediction errors as important and to pay attention to these surprises (prediction errors) and learn more from them, this means that the Autistic brain is much more aware of the uncertainty that exists in the world compared to the neurotypical brain. Autistic people are much more susceptible to perception overload, particularly in neurotypically designed environments where there is often a lot of sensory stimuli and uncertainty (van de Cruys et al. 2014).

The role of stimming and context in maintaining homeostasis (balance)

While the mechanisms of Autistic perception don't reduce uncertainty by ignoring prediction error, prediction errors are more likely to be registered and used in learning. The Autistic brain's main aim to maintain homeostasis (balance) remains the same, and so Autistic people need other Autistic ways to self-regulate and reduce uncertainty to maintain balance.

One function of self-regulating actions such as stimming is that it provides controlled predictable feedback and can be self-soothing calming and/or energizing (van de Cruys et al. 2014). Stimming functions as a wonderful human adaptive strategy to deal with and reduce prediction error in the same way that ignoring prediction error works for neurotypical people. Stimming also works for neurotypical people, but they don't rely on it as much as they don't experience all the uncertainty in the world as Autistic people do. It is important to note, however, that it is not that Autistic people are more intolerant of uncertainty; it is that Autistic people perceive more of the uncertainty that exists in the world.

Often Autistic individuals seek out and thrive in predictable environments where there is less likelihood of a bombardment of prediction error. However, in volatile environments, such as where there is a lot of sensory stimulus and uncertainty (e.g., public areas where crowds of people gather, and the majority of neurotypically designed social spaces), it is in these environments that registering and evaluating many more prediction errors as important and using them to learn about the world can be detrimental to Autistic wellbeing and balance. Continuous exposure to such volatile environments can lead to continuously experiencing elevated levels of uncertainty and increase the likelihood of sensory overload (van de Cruys et al. 2014), which can, in turn, lead to anxiety, frustration and depression or perceptual or processing copying strategies.

- **Important note:** Neurotypical and Autistic mechanisms of perception are different but both are entirely valid; neither is better or worse than the other – they are simply different neutral neurotypes, each with their own neurotype-specific perceptual mechanisms. Out of context, they are both neutral, and can show a variety of contextually dependent strengths and challenges that are dependent on the environment.

There is an issue when we come to think about the context and how the world has been designed. Most contexts of the world are biased towards neurotypical beliefs and cultures, from how the environment is designed, to insisting on following what are socially appropriate forms of expression, communication, learning and connection from a neurotypical point of view. An excellent example of how neurotypical people try to ignore prediction errors is how their beliefs influence how they perceive people who have a different perception of the world from them. They do not naturally see this surprise as something to learn from, something that should be used to update their internal model of the world and their understanding of the diversity of humans. By default, the neurotypical brain often judges this difference as unimportant for learning and that learning does not happen automatically – those differences are seen as a disorder rather than something new to discover, therefore reducing the uncertainty. They ignore the differences and judge them as irrelevant and explain them away with their beliefs as the 'gold standard'. They insist that there is only one right way to communicate, develop, act, learn and play.

This is a crucial point for neurotypical professionals. Due to the neurotypical brain using the coping strategy of ignoring many prediction errors to reduce uncertainty, there is a trade-off in terms of learning, and they must take a more active and conscious effort to update their model of the world and to learn more about neurodiversity.

Autistic Perception, Prediction Error and the Autistic Experience

The Autistic perceptual default is to not distinguish central information as being more salient than background information. In the literature this is often described as a judgement that Autistic people do not distinguish between irreducible (no more learning is possible) and reducible (learning is still possible) uncertainty, although it is important to note that, in this context, what is considered irreducible or reducible is only from a neurotypical perspective. The aim of building a generalized model of the world does not consider the different yet valid ways that Autistic people can reduce so-called neurotypically judged 'irreducible' uncertainty to build a complex and detailed model of the world that neurotypical people either cannot or decide not to learn from.

Autistic people evaluate and decide what is reducible and irreducible differently to neurotypical people. What neurotypical people consider irreducible or just background noise is often evaluated as important for learning about the world and salient to Autistic people. In the framework of Autistic perceptual mechanisms and cognition, what's going on in the background is seen as just as important as what's going on in the foreground, and Autistic people tend to perceive more of everything going on in the environment (Bervoets, Milton and van de Cruys 2021). However, when it gets to the processing stage, perceiving all this information can be challenging, particularly when situated in neurotypically designed contexts with more of, and less control of, uncertainty, where there is often a belief that everyone processes in a similar way, and an expectation that all people are experiencing the same reality and should be able to respond in similar ways and at a similar time.

With prolonged exposure to an environment not designed for Autistic people, it all becomes too much, all the prediction errors can be too overloading, and in order to cope, this can then sometimes lead to a 'roadblock' at the processing stage, especially in environments where there is a superfluous about of uncertainty and change to perceive and then process (Bogdashina 2016). All humans, regardless of perceptual mechanism, have a limited resource for processing information. As a result, the Autistic brain often temporarily shuts down one or more of its senses, or parts may become fragmented, delayed or distorted at times to preserve resources in challenging contexts and to survive in a world not designed for them.

Sensory overload

Understanding Autistic perception and predictive coding differences can help us understand why Autistic people don't often like change, because with each change to any aspect of the gestalt (the whole scene in all its details), a new scene is perceived (Bogdashina 2016). Going back to the tree example, describing how Autistic individuals see all the details of the tree each time, if even one miniscule element of the whole scene changes, then the whole gestalt is altered, and this is perceived and processed all over again as something new.

It can be extremely stressful when change happens constantly, when you have established your routine, from how things are set up in your space to how your time is organized. This helps with our understanding of why Autistic people might like to keep to that sameness because of how Autistic perception works. For Autistic people, little changes are perceived as huge changes.

Overload can be experienced as too much uncertainty in one or more senses. Considering this adds to our understanding of how specific processing challenges, such as auditory processing issues, can arise and be experienced by Autistic people. For example, at certain times someone may experience a roadblock (as described above) when it is time to process what has been perceived, but this 'roadblock' might only be experienced in one of the eight senses, for example, the auditory sense. This means that the overload is then restricted to only one of two senses affected, and the coping strategies the brain engages in to deal with this roadblock, such as temporarily employing 'weak central coherence' (Happé 1996), only affects the overloaded senses. The person's visual perception and processing may remain strong, but their auditory perception and processing may become delayed, fragmented or disconnected, such as voices speaking, background noise, an opening door, pens clicking, footsteps moving, traffic outside, auditory announcements, etc. If there is an attempt to screen out anything, then everything is also screened out.

If the person is experiencing auditory processing issues, the prediction errors recorded in relation to auditory stimuli are the only prediction errors that have become 'too much', and the overload can be restricted to the auditory sense.

In stressful situations or volatile environments that contain a lot of uncertainty from sensory stimuli and prediction mismatch, Autistic people are more susceptible to overload (Lawson et al. 2014). Autistic people tend not only to respond and react to sensory information in different ways to how neurotypical people do, but their experience of hyposensitive and hypersensitive senses can also become more or less attuned when affected by dysregulation and sensory overload. This can result in them adopting copying strategies in order to survive these environments and situations that have not been designed to be accessible for Autistic perception.

Fragmented perception

Fragmented perception is where someone perceives all the bits of the whole scene as unconnected fragments, as opposed to theories such as 'weak central coherence' (Happé 1996), which suggests that Autistic people by default perceive in detail at the expense of the full scene. However, fragmented perception is not a default and is only adopted as a coping strategy when a person's overload reaches the point where their brain can no longer take in any more information because there is too much going on. As a result, the brain copes by limiting itself to fragmented perception (Bogdashina 2016). In a way, this again highlights the role of context and environmental design that either facilitates or creates barriers for Autistic perception.

Holistic perception (including the journey and exploring the joy of details) is important to Autistic people. The whole picture and all the details are seen as equally important (Bogdashina 2016). At times, however, it may also look like Autistic people are experiencing fragmented perception or weak central coherence, when, in fact, they will get to the whole scene, but it just takes longer, as perceiving in detail means that there is more information to perceive and process (Mottron et al. 2006). To deal with this state of 'too much', the brain might cope by limiting perception so that instead of perceiving all the pieces to make up the whole scene, fragmented bits that are unconnected are perceived (Bogdashina 2016).

For example, in a social environment an Autistic person experiencing fragmented perception might completely miss what another person is saying to them because they are hyperaware of each individual element of what is going on around them, such as each individual limb and movement of the other person, each movement of the other person's eyes, each breath of air they take, each pause and each syllable or sound, each mouth movement and facial expression change, as well as the environmental stimuli around the person, such as each light flicker, the movement of others, background noise, traffic noise, each tweeting bird, the flash of a phone screen, click of pen, squeak of a footstep. All these sensory inputs are experienced individually on their own, with no connection between them, and what the person is saying is not understood when experiencing fragmented perception – the full scene is not perceived, only the disconnected fragmented pieces.

Understanding fragmented perception as a coping strategy the Autistic brain uses to deal with overload illustrates more about the social differences seen in Autistic people because people are very unpredictable in many situations. Other people are the most unpredictable part of the environment, and even more so when they are working under a different neurotype and different perceptual mechanism (Milton 2017). If, as a coping strategy in a volatile environment, where most neurotypical social situations take place, the Autistic brain pares back to fragmented perception and processing for a time, the perception of other people becomes even more uncertain. That unpredictability now feels magnified into lots of little bits. It makes sense that in volatile environments Autistic people might want to reduce their contact with other people because at that stage, people are too unpredictable as they are being perceived as fragmented, unconnected parts. This helps explain why sometimes Autistic people need time away from others to process all that they have perceived.

Distorted perception

Distorted perception is another strategy used at times by the Autistic brain to survive the bombardment of prediction error in unpredictable and volatile environments (Bogdashina 2016). Distorted perception is different from fragmented perception, but both can occur at the same time, and both can also affect one or a few of a person's senses at once. The experience of fragmented perception alone can result in a perception of the whole scene, but the whole scene or elements are likely to be distorted. This includes distortion in depth perception, in time, space, movement; faces may look distorted or the person's own limbs may feel distorted; steps or walking can become difficult; telling how close you are to someone else or the feeling of your own personal space may be distorted. Rooms may look bigger or smaller. Sounds may be experienced as muffled, very loud or in unusual tones, or lights may flicker more. There may be distortion in proprioception, for example bumping into things, or vestibular distortions – feeling like you're falling back when standing still. Donna Williams describes an experience of distorted perception in proprioception and tactile sense in which she lost the sense of her hands, such that they felt unconnected to her body for a time when overloaded (Williams 1996).

Shutdowns

Prolonged exposure to volatile environments where there are high levels of sensory stimuli and prediction error resulting in sensory overload and coping mechanisms such as intensified hypersensory and hyposensory sensitivity, fragmented and distorted perception, and where the person has not had the space or support to recharge and recuperate, means Autistic people are much more vulnerable to experiencing shutdown (Bogdashina 2016). This is where somebody loses some or all of their normal functioning of perceiving and processing and interacting in the world. Shutdown is a horrendous experience for Autistic individuals. It is both physically and emotionally exhausting. Shutdown can happen in all of your senses at once, or in just some of them at a time.

For example, if someone experiences hypersensitive auditory sensory overload, then a coping mechanism in their brain might be to switch off the auditory sense. Or it may be that every other sensory channel is shut down apart from auditory to try and limit resources spent elsewhere. This is thought to be something that can be developed as a child and can be seen as withdrawing into your own world, self-imposed sensory deprivation, to regain some sense of control, although it can also be as a result of losing all control and everything becoming too much. It can be experienced as your whole system having had too much and resulting in shutdown, falling asleep with exhaustion, crying or suffering a mental breakdown. In order to recover from this, Autistic people often need to retreat to a space that suits their individual sensory system, which may mean somewhere with calming and predictable stimuli (such as the proprioceptive input from sitting under a weighted blanket in a dark room or in a space filled with nature and natural light), or it may mean retreating away from sources of overloading and unpredictable stimuli (such as other people) for hours, days or even weeks to recharge after the exhaustion of pushing the Autistic sensory perception to its limits.

'Delayed' processing (taking longer to process more)

Another coping strategy is 'delayed' processing. It is important to note that the term 'delayed' processing is not always accurate, however, because while processing can be delayed due the effects of fragmented and distorted processing, in another sense it is only delayed in that it is not keeping up with the speed of neurotypical processing, which is the same as saying the speed of processing a lot less takes less time, so, of course, processing more would take longer, but that doesn't mean it's delayed. Or at least that the delay is not necessarily due to a malfunction in the system.

For neurotypical people it might seem like they process information faster and that it is more automatic and effortless, but it has to be considered that neurotypical people are not perceiving as much information. They are perceiving the whole, but it is much more of a vague, generalized whole, while Autistic people are perceiving the whole with a lot more detail, so it's not that Autistic people have slower processing, but rather that they process more, and naturally that takes longer.

This can help with understanding why Autistic people might need more time to process things, so giving Autistic people more time to respond is important. Along with monotropic processing (see below and Chapter 5 in the handbook) it also makes sense why interruptions, switching tasks and executive functioning skills can be so difficult for Autistic people. This is because Autistic people are processing more, and if they are interrupted, the process is further prolonged. The same way that a single prediction error changes the entire gestalt and there is a need to process all over again as a new gestalt, an interruption for an Autistic person when they're in the middle of processing means that the already processed **gestalt** has changed again, and they now have to process again to take account of this new reshaping (Bogdashina 2016). While in moderation and in accessible environments this can increase learning by perceiving and processing from multiple perspectives, continued interruptions can be exhausting.

It also helps with understanding why repeating questions can be difficult to process because the question is not often said in exactly the same way, or it is said with a different tone, which means each time an entirely new **gestalt** is to be processed.

Due to the majority of the world being designed for neurotypical perception (perceiving less information that requires less processing time), for Autistic people who perceive more and therefore take longer to process, in a mismatched context Autistic perception can lead to out-of-context 'aha' moments, where someone gets the meaning but in another context, because the environment and others in it have moved on, while processing for the Autistic individual is still happening.

This also explains how Autistic people can experience time differently. So, for example, Autistic people might experience time going faster than neurotypical people. Neurotypical people might think that Autistic people are slower in processing, but then we have to consider the foundations of why slower processing is happening. If we think of the perceptual level, where Autistic people are perceiving more than neurotypical people, they are building a more complex model of the world, and a more complex output will always take longer than a simple output. Autistic people are not slower, but they are perceiving and processing more, and all in an environment that is not designed for them (Bogdashina 2016).

Autistic and neurotypical perception are both simply different types of perception; they are both neutral, and neither is better or worse than the other. However, context and environmental design is what creates barriers or facilitates strengths. While Autistic perception and learning from prediction error can have so much strength where there is adequate control and predictability, unpredictable, volatile and busy environments create barriers (van de Cruys et al. 2014). This makes sense as to why Autistic people like predictability, because as we know, all human brains like to maintain a state of homeostasis. An Autistic person likes predictability and prefers not to have many changes or to stay in familiar surroundings, because in volatile and unpredictable environments it requires so much more effort and energy, and there is a lot less control over the perceptual world, but this also means there is much more opportunity for learning.

Monotropic processing

Monotropic focus is an Autistic means by which to both manage perceptual overload (e.g., intense focus on one activity is an excellent way to focus out chaotic, overwhelming environments or reduce uncertainty), whilst also providing an enriching, joyful, beautiful experience. Monotropic processing is suggested to be the default Autistic cognitive style and way of allocating attention (Murray et al. 2005). Monotropism reflects a cognitive processing style and direction of cognitive attention that focuses intently on one or two main tasks, and only a small amount on other secondary tasks, such as interruptions, bodily sensation indicating tiredness or hunger, or planning tasks to do later. In monotropic processing, the brain still focuses on the entire **gestalt** made up of all the details, but the attention given to the number of **gestalts** is reduced (Bogdashina 2016). Monotropic focus allows complete immersion in the matter at hand, unlike neurotypical attention, which is thought to be distributed across many different areas and in a more fleeting way. The Autistic authors of *The Adult Autism Assessment Handbook* have benefited from the wonders of monotropic focus in writing, making us both productive and gaining great joy from being immersed in a pleasurable activity. The Autistic way of monotropic processing and engaging in something so deeply and in such a focused manner can be intensely joyful and productive, and is an effective means by which to filter out extraneous demands and cues. (See https://monotropism.org for a monotropism repository.)

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