PROJECT AIR
A PERSONALITY DISORDERS STRATEGY

# UNDERSTANDING BORDERLINE PERSONALITY DISORDER THROUGH THE LENS OF THE BRAIN

Recent neuroscientific research has informed and increased our understanding of borderline personality disorder (BPD). Specifically, neuroimaging studies have provided insights that could be difficult to assess through talking to people with lived experience alone. Studies assessing responses in the brain have illuminated our understanding of emotion regulation, and how specialised psychotherapies may positively impact brain functioning. These neuroimaging studies are starting to provide further insights into self-functioning and interpersonal functioning in BPD. Our understanding of the brain as adaptive and flexible in response to our environment is a helpful framework for understanding the behaviours and experiences that we may observe when working with people living with BPD.

## THE COMPLEX AND ADAPTIVE BRAIN

The brain is a complex organ. It consists of billions of cells that communicate at incredible speed supporting us to function physically, psychologically and emotionally. Research studies that aim to understand what happens in the brain when we feel, think about ourselves and others are increasing. One way of measuring these responses is using an MRI (magnetic resonance imaging) scanner when people are doing a task that invites them to feel, think or respond to specific situations. These studies give us insights in what might be happening in the brain when emotions are intense or when trying to make sense of self or others. However, these insights might change based on new research and the ways brains can change over time and through specialised psychotherapies. Our brains may shape the way we see things and at the same time, the environment can influence how the brain responds. This means that a supportive environment may provide more opportunities for the brain to grow in helpful ways.

## AFFECTIVE AMYGDALA

The amygdala is one of the areas that is involved in the experience of emotions, including threat, anxiety, shame and guilt. Multiple studies have found that the amygdala is smaller and more reactive in people with a diagnosis of BPD compared to those without this diagnosis when they are shown images of faces in various emotional states. A smaller and more reactive amygdala has also been associated with childhood maltreatment, which may reflect that the amygdala has not had the opportunity to grow and is working hard to manage emotional environments. To regulate emotions a brain-wide network is involved and we do not yet fully understand how this network functions for people living with BPD. It does appear that for people with living with BPD, the brain responds differently not only for decreasing (down-regulating) emotion but also for increasing (upregulating) emotion. For people living with BPD, changing or controlling the intensity of the emotion being experienced appears to be more challenging. Using skills-based strategies aimed at self-soothing, practicing tolerating distress successfully and providing a safe self-environment for the amygdala to be less reactive can decrease intensity and longevity of emotions.

## REFLECTIVE PRECUNEUS

The precuneus is important for identity, self-awareness and making sense of information that is related to who we are. Studies indicate that the precuneus responds differently in people living with BPD when processing negative and positive events. This is relatively new territory and findings are not yet straightforward. However, it seems that the precuneus may find it hard to integrate information that informs our sense of self. Being mindful of how our environment and experiences inform our self-understanding, being curious and gentle with ourselves and our need to survive, using balanced thinking and reflection on facts may support precuneus to create a better understanding of ourselves.

## RELATIONAL TEMPORAL PARIETAL JUNCTION (TPJ)

The TPJ is relevant for creating perspective and is important when we think about others. Studies indicate that people living with BPD show a different way of connecting to others than those without the diagnosis in the TPJ. Some studies point to a different way of relating to others where people with BPD may more intuitively and automatically resonate with others. Other studies point to challenges in being "in sync with" or feeling connected to someone without a diagnosis of BPD. However, this appears to change with effective psychotherapy as people who no longer meet criteria for BPD anymore did not show this differential TPJ attunement to the same degree. Learning targeted diverse communication and relational skills-based strategies, being engaged in supportive and safe relationships and learning to understand challenges in interpersonal relationships can support a more balanced response within the TPJ.

## CHANGE THROUGH SPECIALISED PSYCHOTHERAPIES

Studies indicate that brain function and structure changes after engaging in psychotherapies such as Dialectical Behaviour Therapy (DBT) and psychodynamic therapies such as Mentalization Based Therapy (MBT). So far this has mainly been evidenced in areas relevant for understanding, experiencing, tolerating and regulating emotions. Change may potentially also be seen in areas relevant for thinking about the self and relating to others as research continues to focus on these areas of interest. Overall, we see research into the brain and it's functioning in those living with BPD is creating a hopeful narrative that the brain can change, learn and adapt when provided with a skilled, educated, supportive and caring environment.

## SOME FURTHER RESOURCES

**Webinars**

Dr Ely Marceau on Personality Disorder and the Brain - the Neuroscience of Treatment

Dr Charlotte van Schie and Mahlie Jewell: Two perspectives on brain functioning in borderline personality disorder: from science to lived experience