

# Neurodiversity - summary of evidence

## Summary

Although there is no single definition for neurodiversity, in their recent guide the Chartered Institute for Personnel and Development (CIPD) in collaboration with Uptimize define neurodiversity as “the biological reality of infinite variation in human neurocognitive functioning and behaviour, akin to ‘biodiversity’ in the natural world.” The term ‘neurodiversity’ is now also being used to describe the fast-emerging sub-category of workplace diversity and inclusion that focuses on including people who are neurodivergent” (CIPD, 2018, p. 3). Additionally, they define ‘neurodivergent’ as “having cognitive functioning different from what is seen as ‘normal’ – while the term appears to reflect the ‘medical model’, it is a term that most neurodivergent people are comfortable with” (CIPD, 2018, p. 3).

Neurological conditions include but are not limited to attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), dyslexia and dyspraxia. It is important to note that these conditions are spectrum conditions and that there are a range of characteristics associated with each condition therefore the characteristics shown by one individual may not be the same as another individual with the same condition.

Research suggests that neurominorities represent greater than 10% of overall populations (CIPD, 2018). Therefore, affecting a large number of potential employees, staff and customers however, the impact of neurodiversity will vary depending on the neurological condition and the individual. There are a number of challenging attributes experienced by neurodiverse individuals, e.g. ADHD is associated with difficulties in focussing and restlessness and dyslexia is associated with difficulties remembering information that is seen or heard. However, there are also a number of strengths associated with neurodiverse conditions e.g. those with dyspraxia may be good at ‘big picture’ thinking and pattern-spotting (CIPD, 2018) and individuals with ADHD may demonstrate strong creative thinking and be hyper-focused (Weinberg & Doyle, 2017).

Statistics show that neurodiverse individuals are more likely to be unemployed. Yet organisations are beginning to recognise the benefits of neurodiversity inclusion.

Research has been conducted to examine how we can support neurodivergent individuals in the workplace. However, when examining the evidence we found very little data in this area and it is therefore hard to make any clear recommendations. The data that has been conducted has investigated a variety of interventions on a particular neurodiversity in a range of individuals and relies on very small samples. At the individual level, the strongest research conducted investigated coaching as an intervention to support individuals with dyslexia and the results suggest that this is an effective reasonable adjustment (Doyle & McDowall, 2018). At the organisational level, case studies have provided interesting insights but further research is required before any conclusions or recommendations can be made.

At the individual level, research has focused both on how to support neurodiverse individuals into the workplace and how to support individuals once they are within the workplace. The research suggests that interventions to increase social communication skills may be useful for individuals with ASD (Baker-Ericzen et al. 2017). Results also suggest that different types of support interventions can be effective (Brooke et al., 2018; Hillier et al. 2017; Mawhood & Howlin, 1999). This could include support in terms of job searching, help with interviews, coaching support and providing information to employers and co-workers (Hillier et al. 2017). Research examining individuals already in employment suggests that coaching is an effective reasonable adjustment for adults with dyslexia seeing advantage in both increasing the self-confidence and skills of coachees (Doyle & McDowall, 2018). For individuals with ADHD, research suggests that cognitive assistive technology, such as weekly schedules and watches/alarm clocks was beneficial (Lindstedt & Umb-Carlsson, 2013). The findings regarding individual interventions suggest there are a number of effective interventions, but further research is required to better understand the best type of support for the different neurological conditions.

At the organisational level, case studies have been provided which result in suggestions for how best to improve employment for individuals with a neurological condition. For example, increasing awareness and understanding of neurodiversity through training, increasing visibility through mentoring, employee networks and role-modelling (Bewley & George, 2016). In addition, being aware of environmental factors that may impact on neurodiverse individuals e.g. sensitivities to noise and smell or colour (Townesley et al. 2014). Limited research examining specific interventions has also been provided; for example one study examined a three-month internship at Deutsche Bank for eight autistic graduates and found overall positive impact, both for the managers who reported better knowledge of autism and diversity and reflection on their own management styles; and many of the interns reporting increased confidence. However, there were some challenges for example judging communication in the office environment (Remington & Pellicano, 2017).

To explore these studies in more detail, please click on [[Explore the Evidence](#)].

### **What is neurodiversity?**

There is no single definition for neurodiversity. However, in the recent guide 'Neurodiversity at work' produced by the CIPD in collaboration with Uptimize a number of 'working definitions' are provided. In this guide, neurodiversity is defined as "the biological reality of infinite variation in human neurocognitive functioning and behaviour, akin to 'biodiversity' in the natural world. The term 'neurodiversity' is now also being used to describe the fast-emerging sub-category of workplace diversity and inclusion that focuses on including people who are neurodivergent" (CIPD, 2018, p. 3). Additionally, they define 'neurodivergent' as "having cognitive functioning different from what is seen as 'normal' – while the term appears to reflect the 'medical model', it is a term that most neurodivergent people are comfortable with" (CIPD, 2018, p. 3). Neurodiversity refers to any condition that impacts on cognitive functioning e.g. thinking, attention and memory (Weinberg & Doyle, 2017) but it is often used to refer to dyslexia, dyspraxia, ADHD and Autism Spectrum.

It is proposed that these conditions are developmental – individuals are born with the condition and it develops later in childhood and adolescence. Neurological conditions may have a range of outcomes, some may impact behaviour whereas others may impact more on education. It is important to note that these conditions are spectrum conditions and there are a range of characteristics associated with each condition therefore the characteristics shown by one individual may not be the same as another individual with the same condition.

### **Prevalence and impact of neurodiversity in the workplace**

Research suggests that neurominorities represent greater than 10% of overall populations (CIPD, 2018). Therefore, affecting a large number of potential employees, staff and customers however, the impact of neurodiversity will vary depending on the neurological condition and the individual.

Although there are a number of challenging attributes experienced by neurodiverse individuals. For example, individuals with ADHD may struggle with focussing, attention to detail and restlessness and individuals with dyslexia may struggle with processing and remembering information that they see and hear (Bewley & George, 2016). There are also a number of positive attributes. For example, people with dyslexia, can have significant strengths in creativity, visual reasoning, visual-spatial skills, storytelling and entrepreneurialism, people with ADHD can have strong visual spatial reasoning abilities and creative thinking and can be hyper-focused, passionate and courageous (Weinberg &

Doyle, 2017) and those with dyspraxia may be good at 'big picture' thinking and pattern-spotting (CIPD, 2018). Typically, organisations have focused on these challenging attributes. Tasks that neurodiverse individuals may find challenging may have been misinterpreted as the individual not trying and this could result in discrimination. Employees also may not feel comfortable disclosing their condition and it may not be immediately obvious to their employer (Weinberg & Doyle, 2018). There may also be specific elements of the work environment which will impact on the performance of neurodiverse employees e.g. office lighting, noise levels and equipment.

### **What can we do to support neurodivergent individuals in the workplace?**

Statistics show that neurodiverse individuals are more likely to be unemployed. For example, in the UK only 16% of autistic adults are in full-time employment but 77% of unemployed autistic people would like to work (National Autistic Society, 2016). Yet organisations are beginning to recognise the benefits of neurodiversity inclusion.

Research has focused on both how to support neurodiverse individuals into employment and the different elements of such programmes and support when an employee is within the workplace.

Prince (2017) conducted a scoping review to investigate workplace accommodation for people with hidden or invisible disabilities. He concluded that often it is about managing effectively rather than making exceptions. He recommended that employers have clear expectations, open communications and inclusive practices. Prince (2017) also noted the difficulty of disclosure of a hidden disability as there can be many disadvantages to disclosure, employers should therefore foster a culture which encourages disclosure. However, it is important to note that not all individuals with a hidden disability will need accommodations to perform their job and many individuals may only need a few accommodations, additionally any reasonable adjustment should be personalised and specific.

Research conducted in the US using the US population study (von Schrader, Xu & Bruyere, 2014) also examined different accommodation requests. Results showed that those with cognitive conditions asked for accommodations such as changes in work tasks, job structure or schedule. Overall, 95% of individuals requesting accommodations were those without a disability. They also suggest that awareness training and creating an inclusive culture for disclosure are important.

Examining the research in this area showed there is very little data and it is therefore hard to make

any clear recommendations. The data that has been conducted has investigated a particular neurodiversity in a range of individuals and relies on very small samples. At the individual level, the strongest research conducted investigated coaching as an intervention to support individuals with dyslexia (Doyle & McDowall, 2018) and the results suggest that this is an effective reasonable adjustment. At the organisational level, case studies have provided interesting insights but further research is required. At the time of this review there were no interventions at the manager level and no comparative reviews.

### **Individual Interventions**

Individual interventions to support neurodiverse employees in gaining employment have been implemented in a range of settings. Many of them have shown promising results.

One of the neurological conditions that much of the research has focused on is Autism Spectrum Disorder and interventions have tended to focus on enhancing social communication skills. Research suggests that these interventions may be effective at increasing social communication skills which is a critical skill for workplace inclusion (Baker-Ericzen et al. 2017). However, for some of the studies there were limited findings available regarding the impact on employment success (Walsh, Holloway & Lydon, 2018). Support has also been provided in the context of job searching, applications, mock interviews, providing coaching and information to employers and co-workers. After the intervention although ratings provided by supervisors were positive, they also showed that some social skills ratings remained low (Hillier et al. 2007).

Support has also been provided in the form of a support worker. In one study the amount of support provided at the beginning of the study was very high at the beginning of the study and decreased overtime. Support included helping clients to find jobs and prepare them for work, supporting clients with regards to the social requirements of the job and providing education and advice to employers. Results showed that more of the support group found work than the control group and that they were in work for a greater percentage of the time (Mawhood & Howlin, 1999). Similarly, one study investigating an employment support organisation for Competitive Integrated Employment (CIE) suggested that it was cost effective as most employees received minimal support but achieved employment retention (Brooke et al. 2018). The support varied and was provided across all phases of supported employment; it included support with giving and receiving feedback, organising work days, conflict resolution, retraining if that was deemed necessary and assessing both employer and employee satisfaction with the job.

One study examined coaching as a reasonable adjustment for adults with dyslexia. The results showed that performance ratings, by coachees and their managers improved between the before and after ratings and that this improved both self-confidence and skills. This study supports the idea that coaching is an effective reasonable adjustment for adults with dyslexia (Doyle & McDowall, 2018). Examining support for individuals with ADHD, Lindstedt and Umb-Carlsson (2013) found that cognitive assistive technology such as weekly schedules, watches/alarm clocks and weighted blankets may be beneficial. 15 months after the study started a higher number of participants were employed/studying and performing paid work.

The research suggests that a number of individual interventions may be effective. However, further research is required before any firm recommendations can be made.

In addition to workplace interventions, research by Wehman et al. (2017) suggests that it is beneficial to provide employment related support *before* individuals enter the workplace – i.e. when neurodivergent individuals are still at school. In their 9-month intervention for high school youth with autism spectrum disorder the results showed that those who received support, in the form of a job training programme (Project SEARCH), had higher rates of employment 3 months after graduating and at 12 months post-graduation.

### **Organisational Interventions**

Case studies have provided actions needed to improve employment for individuals with a neurological condition; for example, increasing awareness and understanding of neurodiversity through training, increasing visibility through mentoring, employee networks and role-modelling. Additionally, more information regarding this topic is needed for employers (Bewley & George, 2016). Results from an internship programme at a UK bank for autistic graduates suggested it was a positive, meaningful experience for most of those involved. However, there were some challenges experienced and the resulting suggestions to organisations were: be clear and always be committed, treat people as individuals, provide widespread training on autism and create a point-person - someone who is neutral and known by everyone involved who can facilitate discussions if there are difficulties or disagreements and who could provide advice - for autistic interns and their managers (Remington & Pellicano, 2017). Research (Townesley et al., 2014) has also examined barriers to employment for young people with autistic spectrum disorders, These include barriers such as, employers' attitudes towards young people with ASD (Autism Spectrum Disorder) being potentially based on stereotypes; and that searching online for jobs may be difficult for young people with ASD. The research provided suggestions to address these barriers, such as ASD-specific or ASD-aware employment support, providing help with job searching and interviews and on-going in-work training and mentoring both to support the individual with ASD but also to provide information and advice to employers and managers.

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