Neurodiversity in Safety-Critical Roles: Examining the Lived Experiences of Train Drivers

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SUMMARY

There is a growing body of research on neurodiversity and its impact on performance and well-being in workplace settings. However, within the rail industry, little is known about the strengths and challenges experienced by neurodiverse train drivers, or about the solutions that can be implemented in driving cab environments, where opportunities for adjustments are more limited.

KEYWORDS

Neurodiversity, Train driving, rail

Introduction

The term neurodiversity is commonly used to describe neurological differences that influence how individuals process information, think, learn, and behave. Neurodivergence reflects a natural variation in human cognition—acknowledging that everyone perceives and experiences the world differently (Harvard, 2021). It is typically used as an umbrella term for conditions such as autism spectrum condition (ASC), attention deficit hyperactivity disorder (ADHD), and dyslexia.

Approximately 15-20% of the UK population is estimated to be neurodivergent (Skillscast, 2025; Nielsen, L., 2026). As a result, the railway workforce inevitably includes employees with a formal neurodiversity diagnosis, those who suspect they may be neurodivergent, those who choose not to pursue a diagnosis, and others who may be unaware of their differences. Understanding and supporting neurodivergent individuals is important, as they are at increased risk of experiencing stress, anxiety, or depression compared with their neurotypical peers (NHS, 2026).

The National Autistic Society reports that up to half of individuals with ASC experience depression at some point in their lives, which can affect their ability to carry out day-to-day activities (National Autistic Society, 2021). Similarly, up to half of individuals with ADHD are estimated to have one or more co-occurring anxiety disorders (Van der Meek et al., 2018).

Research has been carried out to examine how neurodiverse employees can be supported in office environments, as well as how passengers experience the railway setting. The train-driving role involves shift work, direct interaction with passengers, maintaining focus in both low- and high-stimulation environments, and retaining information from rules and procedures.

The primary aim of this project was to understand the experiences of neurodiverse train drivers and the specific challenges associated with this role. This includes exploring what attracted them to the profession, the strengths and skills they contribute, the difficulties they encounter, and the adaptations that may help them feel supported and empowered to thrive at work.

Method

The first stage of the project involved conducting semi-structured interviews with eight neurodiverse train drivers. These interviews were carried out online to explore the lived experiences of neurodiversity within the rail industry. The sample consisted of volunteers from both train operating companies and freight operating companies. Topics explored included what attracted participants to the role, the strengths and attributes they bring, and the aspects of the job they find challenging.

The second stage consisted of three online workshops with employers. The purpose of these workshops was to present the interview findings and identify both existing support measures and potential future improvements. Each workshop focused on one of the following topics: awareness, diagnosis and culture; competence management; and day-to-day tasks. Each neurodivergent person experiences the world differently, so the support and adjustments they need will vary. For this reason, a range of support options and adjustments was considered.

Results

There are many aspects of the train-driving role that may appeal to neurodivergent individuals. For example, train drivers receive training on multiple routes and operate according to a timetable. This timetable is provided in advance and includes departure times, stopping patterns with scheduled stop durations, and even planned breaks. Clear, prescriptive rules govern how tasks are performed, how communication with signallers are structured, and what actions to take during degraded operations. Participants described this structured environment and rule-based approach as a "safety blanket", offering clarity about expected actions. The role also involves limited social interaction and is practical, often outdoors.

Neurodivergent individuals interviewed believed they brought valuable skills to the role. For instance, one train driver with autism spectrum disorder (ASC) demonstrated an ability to detect unusual smells and noises that could indicate mechanical faults. Others reported being able to learn new routes quickly and retain that information effectively and high conscientiousness levels. However, challenges were also identified. Examples of these challenges are provided below.

Culture and attitudes

There are several barriers to obtaining a diagnosis that lie outside the control of the rail industry, including long waiting times, limited awareness of neurodivergence, and the cost of private assessments. Participants in the workshops and interviews felt that within rail there is a culture of requiring formal evidence of neurodivergence in order to access additional support, or even to be believed that their challenges stem from neurodivergence rather than being attributed to personality traits such as laziness.

Attendees also expressed concerns that receiving a diagnosis could lead to gossip, removal from driving duties due to neurodivergence being classified as a disability, or their neurodivergence being used as a scapegoat following operational incidents.

Suggested improvements included sharing real lived experiences from frontline staff, senior leaders, and peer groups; delivering education programmes to increase awareness; using clear, neuro-inclusive language in communications; and normalising conversations about neurodiversity in day-to-day working life.

Interview participants also reported feelings of low self-esteem, anxiety, rejection sensitivity, masking fatigue, and difficulty navigating workplace politics. Building strong relationships with immediate line managers - supported by appropriate education - is a key enabler in addressing some

of these challenges. For example, one participant requested routine check-ins with a single point of contact who understood their neurodivergence and the potential for rejection sensitivity.

Richards et al. (2017) found that line managers often lack both an understanding of neurodiversity and the authority to implement formal or informal adjustments. They also reported a low level of disclosure from staff, which can make it even more difficult for managers to provide effective support.

Coaching is a commonly recommended approach for supporting neurodivergent individuals. Zimmerman (2016) identifies two types of executive functions that can be targeted through coaching: 'hot' executive functions, such as emotional regulation and social cognition, and 'cold' executive functions, including working memory. Coaching may involve support with developing or maintaining workplace relationships, strengthening communication skills, and identifying emotional triggers alongside strategies for regulation. Such support can help individuals feel heard and have their challenges validated (Gunjan & Salisbury, 2026).

Recruitment, training and assessment

Research has shown that neurodivergence can influence recruitment, training, and assessment processes (RSSB, 2025). For example, applicants with ASC may find it more difficult to self-promote or respond to open-ended questions (Davies et al., 2023), while applicants with ADHD may be less likely to complete long or detailed applications (Adamou et al., 2013).

Feedback from this project indicated that participants felt the online entry tests contained ambiguous wording, with no opportunity to seek clarification. They also reported that the large volume of material covered in initial driver training can be overwhelming, and that procedures are sometimes text-heavy or ambiguous or can be misunderstood when interpreted literally.

Neurodivergent learners may also have different learning profiles: some may grasp material more quickly and become disengaged if not sufficiently challenged, while others may require repeated exposure to information for it to 'stick'. Social dynamics within the classroom may further disadvantage neurodivergent trainees if their behaviour - or the reasons behind it - is misunderstood.

A variety of improvements were suggested in relation to learning design, for example, providing a syllabus in advance, increasing the use of visuals, breaking content into smaller chunks, and offering session recordings. Suggestions for delivery and facilitation included building trainer competence in managing different learner profiles, such as over-talkative or hyper-focused learners, quiet or anxious learners, and those who struggle with social norms. Participants emphasised the importance of fostering psychological safety by normalising questions and encouraging open discussion.

It was additionally suggested that competence could be monitored continuously, allowing learners to demonstrate their capability when they are ready rather than at a fixed assessment point.

Self-management

Participants expressed a preference for consistency and routine, noting that variable shift patterns were difficult to adapt to. However, requests for fixed shift times were often denied by their organisations. Participants also reported challenges with administrative tasks, such as interpreting roster information presented in chart formats, using remote book-on systems that require telephone check-ins, and completing practical tasks like ordering uniforms or booking taxis.

Focus on the driving task

A strength highlighted by participants was their ability to maintain focus during the driving task. Train driving can be repetitive, with periods of both low and high workload. Some participants described the alarms and alerts in the cab as overwhelming, often reducing the volume to the lowest permitted level in order to concentrate. One participant referred to the sensory environment of the cab as “sensory hell”.

However, others actively sought additional sensory input to help maintain focus, increasing the volume of alarms or creating rhythmic stimulation, for example, by switching on the windscreen wipers to provide a steady pattern that aided concentration. One suggestion was to allow radios in the driving cab to increase stimulation, although it was acknowledged that this could also introduce a greater risk of distraction.

Conclusion

The objective of this project was to gain an initial understanding of the experiences of neurodivergent train drivers. Within the rail industry, there has been a notable gap in knowledge regarding the strengths and challenges faced by neurodivergent frontline staff, as well as the types of support that could be introduced in the driving cab. This project served as a first step in consolidating best practices and laying the groundwork for future research in this area.

Many of the challenges identified are broadly applicable across other roles and industries, rather than being specific to the train-driving role, for example, those relating to workplace culture, education, and inclusive training practices. However, there were also some role-specific insights, such as the need to adjust how roster information is communicated, as well as opportunities for future research into focus and distraction within the driving cab.

The final output of the project was a toolkit outlining a range of adjustments and support options that could be offered to neurodivergent individuals. Its purpose was to provide railway operators with practical ideas for supporting their neurodivergent staff, as well as to highlight opportunities for future research. These support options can also serve as prompts to facilitate meaningful discussions with neurodivergent employees.

It is important to recognise that the suitability of any solution will depend on individual needs, and many of the proposed measures could be made available to all railway staff. A key finding from the project was that many of these adjustments may also benefit neurotypical train drivers. By making such support universally available, neurodivergent individuals would be less likely to feel singled out or perceived as receiving special treatment. Offering solutions based on specific challenges, rather than diagnostic labels, also acknowledges that certain traits may be shared across neurodivergent conditions or even present in neurotypical individuals (Mottram & Doyle., 2026).

Further work is required, not only to better support train drivers but also to understand the experiences of neurodivergent individuals in other frontline roles.

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