How do cognitive and perceptual differences of neurodiverse individuals affect creative processes and outputs?

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Contents

INTRODUCTION	3
AIMS, OBJECTIVES AND RESEARCH QUESTIONS	5
LITERATURE REVIEW	6
Context	6
Cognitive profiles and creativity	7
Mental health and wellbeing	9
Obstacles	9
Summary	10
PROPOSED METHODOLOGY	11
Survey	12
Observational task	13
Structured interview	14
Focus group	16
Sampling	17
Ethics and limitations	17
Summary	17
CONCLUSION	19
	20

Introduction

The exploration of neurodiversity in the workplace represents a burgeoning field of study that intersects organisational behaviour, psychology and diversity management. The creative industries, known for their dynamic and evolving work environments, have increasingly recognised the importance of neurodiversity in fostering innovation and creativity. According to Austin and Pisano (2017), neurodiverse individuals bring unique perspectives and skills that can enhance creative processes and outcomes. However, the integration of neurodiverse talent remains a challenge with workplaces often not fully equipped to support their distinct needs (Robertson, 2009).

Numerous studies focus on a single aspect of neurodiversity (e.g., ASD or ADHD) in isolation when exploring cognition, integration and creativity. There is currently a shortage of comparative research across different neurodiverse conditions to understand how various neurocognitive profiles contribute to creative thinking and problem-solving uniquely.

The following neurodivergent conditions have been selected for the study as they are the most diagnosed ailments in the UK (NHS, 2022):

- Autism Spectrum Disorder (ASD): A neurodevelopmental disorder marked by enduring • difficulties in social communication and reciprocity across various situations, alongside restricted, repetitive and stereotypical behaviour, interests and/or activities (Zaky, 2017).
- · Attention Deficit Hyperactivity Disorder (ADHD): Individuals may have difficulty with attention, impulse control and hyperactivity, affecting their performance in diverse aspects of life like education, employment and interpersonal connections. Symptoms may encompass inattention, impulsiveness and hyperactivity, though they can differ significantly from person to person (Barkley, 2014).
- Dyslexia: A form of reading impairment characterised by consistent and unanticipated difficulties in achieving proficient reading skills, even with appropriate teaching methods, sufficient cognitive abilities and favourable socio-cultural circumstances (Shaywitz, 1998).
- Obsessive Compulsive Disorder (OCD): A heterogeneous condition characterised by recurrent, intrusive thoughts (obsessions) and repetitive behaviours or mental acts (compulsions) (Leckman et al., 2010).

This study aims to investigate individual contributions of people with ASD, ADHD, OCD and dyslexia to creative problem solving and how diverse cognitive profiles interact within team settings to influence creative collaboration and innovation. It acknowledges the unique

strengths and challenges associated with each condition and seeks to understand how these can complement each other in hybrid, neurotypical team environments, leading to potentially novel and innovative outcomes.

It's crucial to clarify that this study will not explore the optimal professional roles for various types of neurodivergence but will rather take a holistic approach to the design thinking process. Praslova et al. (2023) highlight an important consideration, noting, "stereotypical job fit recommendations may leave those with dual diagnoses or multiple neurodivergent traits without any suitable careers."

Keywords:	Termin	Terminology:			
Neurodiverse	ASD	Autism Spectrum Disorder			
Neurotypical	ADHD	Attention Deficit Hyperactivity Disorder			
Cognition	OCD	Obsessive Compulsive Disorder			
Perception					
Creativity					
Workplace dynamics					
Hybrid teams					
Innovation					

Aims, objectives and research questions

Aims:

- To explore how neurodivergent problem-solving can innovate creative outputs and processes.
- To examine how workplace dynamics in hybrid teams can evolve to encourage alternative problem-solving by neurodiverse employees in hybrid teams.
- · To identify strategies and practices that can leverage the unique strengths of neurodivergence to enhance creativity, innovation and productivity in creative industries.

Objectives:

- · To catalog and describe the range of cognitive and perceptual differences that characterise neurodiversity among individuals working in creative industries.
- To examine how these cognitive and perceptual differences influence the dynamics of team collaboration, communication and conflict resolution in creative projects.
- To evaluate the effect of neurodiversity on the creative process and outputs.
- To identify and recommend best practices for managing neurodiverse teams in creative fields, focusing on structure, communication and conflict resolution strategies that harness the strengths of all team members.
- To develop practical frameworks that organisations in the creative industry can implement to support neurodiverse individuals and teams.

Research questions:

- How do specific cognitive and perceptual differences (e.g., those found in ASD, ADHD, Dyslexia) uniquely contribute to or challenge teamwork in creative contexts?
- · How can creative processes be best suited to individuals with certain types of neurodiversity and how can teams be optimally composed to leverage these strengths?
- · What specific communication strategies can be employed to facilitate better understanding and collaboration among neurodiverse team members in creative projects?
- How do environmental factors (e.g., workspace design, meeting structures, technology use) impact the productivity and creativity of neurodiverse teams?
- · How can training programs for team leaders and members in creative fields be designed to increase awareness of neurodiversity and improve team dynamics and output quality?

Mental health

Literature review

The term 'neurodiversity' was first coined by sociologist Judy Singer in 1998 in her article "Neurodiversity in Materials Science", Singer articulated the necessity of transforming the perception of autism from a medicalised disability into a burgeoning social movement (Fung et al., 2022). Today, neurodiversity encompasses various neurological conditions including autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), obsessive compulsive disorder (OCD), dyslexia, epilepsy and more as normal variations in human cognition rather than deficits (Armstrong, 2012).

This perspective is particularly relevant in creative industries, where the unique strengths of neurodivergent individuals, such as the meticulous attention to detail often found in people with ASD (Grandin, 2009) or the innovative problem-solving abilities associated with ADHD (White and Shah, 2006), can lead to exceptional contributions. Research has linked creativity with right brain activity, magnetic resonance imaging (MRI) and positron emission tomography (PET) scanning have shown that the brain patterns of individuals with ADHD resemble those of highly creative individuals (Batty et al., 2010).

CONTEXT

In the UK, among 55.7% of NHS registered patients with a learning disability, there has been a significant increase in the diagnosis of autism from 21.4% in the 2017-18 period to 30.7% by 2021-22. Concurrently, the percentage of learning-disabled patients diagnosed with ADHD rose from 5.5% to 8.0% across the same timeframe. Additionally, the proportion of patients without a learning disability but diagnosed with ADHD increased from 0.5% to 0.8%. Notably, 4.8% of patients with a learning disability were diagnosed with both ADHD and Autism (NHS, 2022).

COGNITIVE PROFILES AND CREATIVITY

Whilst direct evidence specifically comparing creative problem-solving across various neurodiverse conditions is limited, there is substantial evidence supporting the unique creative capabilities within individual neurodiverse groups. The following are generalised characteristics of each condition:

Autism Spectrum Disorder (ASD)

A study by Happé and Vital (2009) suggested that individuals with autism may excel in tasks requiring strong systemising abilities and meticulous attention to detail, proving advantageous in fields that demand detailed analytical work and innovative solutions. Additionally, Livingston et al. (2020) observed heightened abilities in pattern recognition and logical reasoning among individuals with ASD, crucial components of innovative thinking.

Individuals with ASD also often display high levels of divergent thinking, adopting unconventional approaches to problem-solving (Sasson et al., 2017). Recent neuroimaging studies by Chávez-Eakle et al. (2007) have further shown distinct patterns of brain connectivity associated with enhanced creativity in individuals with ASD. Interestingly Baron-Cohen et al. (2015) found that individuals with ASD tend to score lower in terms of empathy than their neurotypical counterparts.

Attention Deficit Hyperactivity Disorder (ADHD)

White and Shah (2006) suggest that the impulsive nature of individuals with ADHD can lead to the generation of unconventional ideas, fostering creativity. Moreover, a meta-analysis by Runco and Jaeger (2012) revealed a positive correlation between ADHD symptoms and creative ideation across various age groups and settings. A recent behavioural study by Stoite et al. (2022) has also shown that individuals with ADHD exhibit enhanced cognitive flexibility, facilitating their capacity for generating numerous innovative solutions. In contrast, White and Shah (2006) observed the impulsive nature of individuals with ADHD can often lead to struggles with verbal fluency and inhibitory control.

Dyslexia

Menghini et al. (2010) found that individuals with dyslexia tend to rely more on visual strategies for problem-solving, which can enhance their creativity in certain domains. Recent neurocognitive research by Franceschini et al. (2013) has revealed distinct patterns of brain activation in individuals with dyslexia during visual-spatial tasks.

A report by Logan (2009) noted a higher incidence of dyslexia among entrepreneurs, suggesting that the coping strategies and creative problem-solving skills developed to navigate traditional educational challenges may contribute to entrepreneurial creativity and success. Additionally, Leather et al. (2011) found that individuals with dyslexia often exhibit strengths in identifying opportunities and thinking outside the box, critical skills for entrepreneurship. A comparative study, also by Logan (2009), has shown that individuals with dyslexia who pursue entrepreneurial endeavours often demonstrate resilience and adaptability in the face of challenges, contributing to their success in business ventures.

Obsessive-Compulsive Disorder (OCD)

Individuals with OCD often exhibit a heightened attention to detail and a preference for order and symmetry, traits that can influence certain types of problem-solving and creative expression (Mancini (2018). Stamatis and Mamani (2020) demonstrated altered patterns of neural connectivity in individuals with OCD during tasks requiring creative problem-solving, suggesting potential neural mechanisms underlying their creative abilities. Individuals with OCD often excel in tasks requiring thoroughness, contributing to high-quality outcomes in creative projects (Coles et al., 2007). Moreover, neuroimaging research by Cocchi et al. (2011) has demonstrated that individuals with OCD show enhanced abilities in cognitive control, allowing them to maintain focus and accuracy during tasks.

	ASD	ADHD	Dyslexia	OCD
Attention to detail				
Systematic thinking				
Idea generation				
Risk-taking				
Visual-spatial awareness				
Entrepreneurial skills				

Table 1. Comparison of cognitive profiles. Islaam, A (2024).

A study by McDowall, Doyle and Kiseleva (2023) of 990 neurodivergent employees and 127 employers in the UK found that over 80% of the neurodivergent employees exhibited hyperfocus, 78% demonstrated creativity, 75% engaged in innovative thinking, 71% excelled in detail processing and 64% exhibited authenticity in their interactions with colleagues. The study also emphasises the importance of recognising the strengths in neurodiverse thinking as well as suggesting there are numerous knowledge and attitude gaps in benchmarking and guality assurance in workplace contexts.

The aforementioned skills align with the World Economic Forum's identified top skills for 2027. emphasising the importance of individuals who are detail orientated, creative and divergent in the evolving landscape of work (World Economic Forum, 2023).



MENTAL HEALTH AND WELLBEING

Although skills demonstrated by neurodiverse individuals are perceived as advantageous, the UK Office of National Statistics (ONS, 2022) reports that among employed individuals with neurodivergence and disabilities, over 20% identified a mental health condition as the primary cause of their disability. This includes 17.6% reporting depression, anxiety or nervousness and 3.9% indicating other cognitive afflictions or disorders. Notably, depression, anxiety or nervousness emerged as the most prevalent type of impairment mentioned in the ONS Annual Population Survey. This is also reflected by the UK National Health Service as during the period of 2021-22, 21.2% of patients with a learning disability received treatment with antidepressants (NHS, 2022).

OBSTACLES

Cognitive and perceptual differences within neurodiversity can offer both advantages and challenges. While these differences enable some to excel in problem-solving that requires exceptional pattern recognition or creative thinking (Krzeminska et al., 2019) they may also

lead to difficulties in traditional workplace settings such as strict workflows, navigating social norms or managing sensory overload. Misunderstandings, communication challenges and accessibility are also significant challenges (Robertson, 2009).

Stigma is also prevalent in personal and professional environments. in 2022, 78% of autistic people in the UK were unemployed (ONS, 2022) whilst the National Autistic Society reports that 45% of neurodivergent individuals have either been forced out or have guit their jobs due to difficulties arising from misunderstandings. Currently, only one out of every 16 autistic adults holds a fulltime job. Fox & Partners LLP has observed an increase in employment tribunal claims related to neurodiversity discrimination, with the number of cases rising to 93 in 2021, up from 70 in the previous year (Ash, 2022).

SUMMARY

While the above examples focus on individual neurodiverse conditions, they collectively suggest that different neurodiverse groups possess overlapping, yet unique cognitive and perceptual styles that can enhance creative abilities in distinct ways. The variability in thinking patterns, problemsolving approaches and perceptual sensitivities among these groups indicates a rich area for research into how these diverse cognitive profiles contribute to creativity both individually and in comparison to each other.

The influence of neurodiversity on creativity and innovation is increasingly recognised as a valuable asset within creative sectors. Neurodivergent individuals often bring novel approaches and perspectives to problem-solving and creative processes, enhancing the quality and innovation of creative outputs (Scott et al., 2014).

Their unique cognitive styles contribute to a richer diversity of thought, which is crucial for innovation in teams and can lead to ground-breaking advancements (Buetow et al., 2018). The role of neurodiverse individuals in fostering an environment where innovation thrives cannot be overstated, highlighting the importance of embracing cognitive diversity in creative collaborations (West, 2019). Despite these strengths, the literature also points to significant challenges faced by neurodivergent individuals, including higher rates of mental health issues and substantial barriers in employment and social acceptance.

This study will look to establish key connections and recommendations between design thinking processes, communication styles and where neurodiverse creativity can innovate and make impactful contributions.

Proposed methodology

A mixed-methods research design will be employed, incorporating both quantitative and qualitative approaches to capture the nuanced effects of neurodiversity on creative processes and outputs. This design allows for a comprehensive understanding of neurodiverse contributions to creativity and innovation, combining statistical analysis with ethnographic insights from participants.

The study will target a sample of individuals working in creative industries such as design, advertising, digital media and arts, with a particular focus on those who identify as neurodiverse (including ASD, ADHD, dyslexia and OCD) and their neurotypical colleagues. Recruitment will be through industry networks, social media platforms and organisations supporting neurodiversity in the workplace.



SECONDARY

SURVEY

An online survey will be conducted to collect quantitative data and insights from a segment of the population at a particular moment in time (Yin, 2003). Concerning this study, the sample will involve individuals with ASD, ADHD, dyslexia and OCD. A separate survey may be necessary for neurotypical colleagues to further understand phenomena relating to experience and perceptions of neurodivergent processes, creativity, communication styles and workplace dynamics.

The rationale behind conducting surveys encompasses the following key objectives:

- Descriptive analysis: To describe the characteristics of a large population, making it feasible to collect data on lived experiences or perceptions including attitudes, preferences and behaviours (Fink, 2003).
- Explanatory research: To explain relationships between variables and to test hypotheses that have been formulated after the initial exploratory research phase (Creswell and Creswell, 2017).

Expected results from conducting a survey

The results expected from conducting a survey include numerical data that can be analysed statistically and thematically to identify patterns, trends and correlations among variables.

Disadvantages

Kumar (2014) describes the following disadvantages to consider when conducting a survey:

Low response rate

 Explaining the purpose clearly and concisely whilst making sure the length and design of each question is suitable to the participant is essential to lessen a low response rate.

Fewer opportunities to clarify issues

 Respondents typically do not have an opportunity to ask the researcher for clarity if a question is perplexing. The clarity and design of each survey question is paramount to prevent or lessen misinterpretation of a questions meaning.

Spontaneous responses

 Could be a foreseen issue concerning individuals with ADHD. To mitigate this, conducting some surveys in person dependent on location and available time may be appropriate.

OBSERVATIONAL TASK

Observational methodologies involve systematically observing participant interactions with tasks, products or environments and attentively noting behaviours, challenges and preferences without direct intervention. This approach provides contextual insights into cognition and perception, informing a human-centric design process. (Muratovski, 2021).

The rationale behind conducting observational research encompasses the following key objectives:

- Comprehending behaviour and context: To grasp the natural dynamics of cognition and interactions within specific contexts. It unveils deviations between actual and intended behaviour, revealing avenues for innovation (Koskinen et al., 2011).
- Identification of needs: To uncover latent needs that participants may not overtly express. (Sanders and Stappers, 2008).

Example case study

The Unusual Uses Test (UUT) is recognised as a key indicator for assessing divergent thinking, inviting participants to come up with as many applications as possible for a mundane object, such as a brick, for example constructing a dwelling or paving a drive. The diversity, originality and versatility of the responses are indicators of an individual's capacity for divergent thinking (Torrance, 1974). Research conducted by White and Shah (2006) found that individuals with ADHD outperformed their non-ADHD counterparts on the UUT. However, these same individuals with ADHD did not perform as well on the Remote Associates Test (RAT) and the semantic Incidental Operant Response (IOR) task when compared to those without ADHD. The study indicated that the relationship between ADHD and creative potential was, to some extent, influenced by differences in inhibitory control.

Expected results from observational tasks

Observational tasks yield in-depth qualitative and quantitative insights offering a nuanced understanding of participant behaviours, preferences and socio-cultural contexts, surpassing the limitations of surveys or interviews alone (Rosenbaum, 2021).

Disadvantages

According to Maxwell (2013), the following disadvantages should be considered with observational research tasks:

Time and resource intensive

 Observational research can be time consuming and resource intensive, requiring significant investment in personnel and equipment.

This deep understanding fosters the creation of innovative and human-centred design solutions

Observer bias

 The presence of an observer can influence the behaviour of participants, leading to unnatural or biased responses.

Interpretation

 Interpreting observational data can be subjective and prone to misinterpretation, as it relies heavily on the observer's perception and judgment.

STRUCTURED INTERVIEW

Structured interviews consisting of open-ended questions will be conducted to provide comparable, uniform answers between neurodiverse and neurotypical participants. Open ended questions allow for a wealth of qualitative data concerning patterns, behaviors or perceptions across a population. Content analysis grounded in thematic analysis will be explored (Kumar, 2014).

The purpose of conducting a structured interview encompasses the following key objectives:

- Standardisation: Ensuring that each participant is asked the same questions in the same order, reducing interviewer bias and enhancing the reliability of the data collected. This standardisation facilitates the comparison of responses across participants (Wilson, 2010).
- Replicability: The structured format enhances the replicability of the research. Other researchers can repeat the study using the same interview protocol to verify findings or to conduct longitudinal studies that track changes over time (Flick, 2009).

Disadvantages

Limited depth and flexibility

· Structured interviews, due to their pre-defined set of questions, may not allow for the exploration of unexpected topics or in-depth discussions. This can result in missing nuanced insights that open-ended conversations might reveal (Bryman, 2016).

Respondent's perspective may be overlooked

 The fixed nature of questions might not capture the participant's viewpoint, complexities of their experiences or the context of their responses, leading to potentially superficial data (Patton, 2002).

Social desirability bias

· The presence of the interviewer and the formal setting of structured interviews can lead to social desirability bias, where participants might answer in a way they believe is expected or acceptable, rather than truthfully. The participants comfort level with the interviewer can also affect results (Nardi, 2018).

Example questions

Can you please tell me about your role and experience in the creative industry?

Do you identify as neurodiverse, or have you worked closely with colleagues who are neurodiverse?

Neurotypical

In your experience, how does neurodiversity impact the creative process within your team or personal work?

Can you share specific instances where neurodiverse thinking contributed to problemsolving or innovation in a project?

How do communication styles vary among neurodiverse and neurotypical team members in your experience?

What strategies have been effective in facilitating collaboration and understanding within diverse teams?

What challenges, if any, have you or your neurodiverse colleagues faced in the workplace, particularly related to creativity and innovation?

How have these challenges been addressed, and what solutions or accommodations have been most effective?

What forms of support do you believe are essential for fostering an inclusive environment that maximises the creative potential of neurodiverse individuals?

Are there specific policies, programs or practices in place within your organisation that support neurodiversity?

Based on your experiences, what do you believe are the key benefits of embracing neurodiversity in creative industries?

What recommendations would you make to organisations looking to better integrate and support neurodiverse talent?

Neurodiverse

In what ways do you think your neurodiversity influences your approach to the creative process?

Can you provide examples where your neurodiverse perspective has led to unique solutions or innovations in projects?

How do you experience communication within your team or with colleagues? Are there any challenges or advantages you've noticed due to neurodiversity?

What strategies or accommodations have helped improve collaboration and understanding between you and your neurotypical colleagues?

What specific challenges have you encountered in the workplace related to your neurodiversity, especially regarding creativity and innovation?

How have these challenges been addressed? Are there particular solutions or accommodations that you found helpful?

What kind of support do you think is crucial for creating an inclusive environment that leverages the creative abilities of neurodiverse individuals?

Are there any specific policies, programs, or practices your organization has implemented that you find supportive of neurodiversity?

From your perspective, what are the major benefits of including neurodiverse individuals in creative projects and teams?

Based on your experiences, what recommendations would you give to organizations to better support and integrate neurodiverse talent?

FOCUS GROUP

The study will offer an opportunity for neurodiverse participants to co-design a design thinking process that proposes when, how and why neurodivergent thinking could enhance innovation in creative problem-solving (Moore, 2006).

The purpose of conducting a focus group encompasses the following key objectives:

- Validation of assumptions: Focus groups serve to validate or challenge assumptions based on direct participant observation, ensuring that recommendations and decisions remain grounded in authentic behaviour and needs (Brown, 2009).
- Idea generation and innovation: Co-design sessions leverage the collective creativity of the group, facilitating the generation of innovative ideas and solutions. The collaborative environment encourages diverse perspectives, leading to more creative and often unexpected solutions (Visser et al., 2005).
- Iterative feedback and refinement: These sessions allow for the immediate sharing of feedback on design concepts and prototypes. This iterative process of critique and refinement is vital for rapidly evolving a design to better meet individual needs (Bodker et al., 2009).

Expected results from observational tasks

To observe how participants interact to the identical questioning, how they moderate their opinions, react to differing perspectives and how disagreements are managed as well as collective problemsolving (Muratovski, 2021). Presenting previous findings for data and process validation will also be benefical.

Disadvantages

According to Maxwell (2013), the following disadvantages should be considered with observational research tasks:

Group dynamics and dominance

 The dynamics within a focus group can lead to certain individuals dominating the conversation, potentially overshadowing quieter participants and skewing the data collected. This can result in a bias towards the opinions of more vocal participants, limiting the diversity of input (Morgan, 1996).

Consensus difficulty

· Reaching a consensus in co-design sessions with diverse participants can be challenging. Conflicting opinions and interests may hinder the decision-making process, leading to compromises that might not fully satisfy any party (Lauren, 2007).

Risk of groupthink

 There is a risk that participants in a co-design session may conform to group opinions, suppressing dissenting views in favor of harmony. This phenomenon, known as groupthink, can stifle innovation and lead to less optimal design outcomes (Janis, 1972).

SAMPLING

Concerning this study, the sample will primarily focus on the neurodiverse population. To stratisfy this population, individuals with ASD, ADHD, dyslexia and OCD have been selected as the most diagnosed ailments in the UK. As males have higher rates of neurodiversity a higher proportion of male participants is expected (NHS, 2022). Equals numbers of each neurodiverse condition will be necessary to ensure my data is balanced. Access will be through industry and personal networks, social media platforms and organisations supporting neurodiversity in the workplace.

Neurotypical individuals will also be included for contextual and comparative data.

ETHICS AND LIMITATIONS

Ethical considerations are crucial in research to ensure the rights and well-being of participants are protected. Here are some key points (Larson, 2009):

- · Informed consent: Obtain informed consent from participants, ensuring they understand the nature of the study, risks, benefits and their right to withdraw at any time.
- Confidentiality and anonymity: Protect participants' privacy by ensuring that their identity and responses are kept confidential or anonymised as appropriate.
- Avoiding harm: Take measures to minimise any potential harm or discomfort to participants. Ensure that risks are minimised and justified by the potential benefits of the research.
- Deception: Minimise the use of deception in research and ensure that any deception used is justified and does not cause undue harm.
- Conflict of interest: Disclose any potential conflicts of interest that could bias the research findings or compromise the integrity of the study.
- Data handling and storage: Follow ethical guidelines for the handling, storage and disposal of data to ensure security and prevent unauthorised access.

SUMMARY

A mixed-methods research design will be employed. This design integrates both quantitative and qualitative approaches, allowing for a comprehensive exploration of neurodiverse contributions to creativity and innovation. By combining statistical analysis with ethnographic insights from participants, the study aims to capture the nuanced effects of neurodiversity on creative processes and outputs.

The research will target individuals working in creative industries such as design, advertising, digital media and arts. This focus will provide insights into how neurodiversity influences creativity within professional contexts. Recruitment will be conducted through industry and personal networks, social media platforms and organizations supporting neurodiversity in the workplace. By involving both numerous neurodiverse populations and their neurotypical colleagues the study will enable comparative analysis and a deeper understanding of the dynamics at play during the creative process.

Multiple sources of evidence and triangulation of findings from interviews, surveys, observations and focus groups will strengthen the quality and overall findings (Yin, 2003).

Conclusion

Numerous studies often focus solely on one aspect of neurodiversity, like ASD or ADHD, in isolation when exploring cognition, integration and creativity. Currently, there is a shortage of comparative research across different neurodiverse conditions to understand how various neurocognitive profiles uniquely contribute to creative thinking and problem-solving.

The proposed methodology for this study aims to explore the intricate relationship between neurodiversity and creative processes within various UK creative industries. Neurodiversity refers to the spectrum of neurological differences such as autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), dyslexia, and obsessive-compulsive disorder (OCD). These differences can manifest in unique perspectives and approaches to problem-solving and creativity. Understanding how neurodiversity influences creativity is essential for fostering inclusive environments that harness the full potential of diverse talents.

The research aims to empirically demonstrate the unique contributions of neurodiverse individuals to creativity and innovation in UK creative industries by identifying specific cognitive and perceptual styles that have the potential to enhance specific stages of design thinking within the creative processes. The study hopes to inform practices and policies that leverage neurodiversity as a strength, fostering more inclusive and innovative creative work environments.

References

Armstrong, T., 2012. Neurodiversity in the classroom: Strength-based strategies to help students with special needs succeed in school and life. ASCD.Vancouver

Ash, V. (2022). *Employment tribunal claims relating to neurodiversity discrimination jump by a third in past year*. [online] Employment Law Specialists. Available at: https://www.foxlawyers.com/employment-tribunal-claims-relating-to-neurodiversity-discrimination-jump-by-a-third-in-past-year/ [Accessed 8 Feb. 2024].

Austin, R. and Pisano, G. (2017). *Neurodiversity as a Competitive Advantage*. [online] Available at: https://celebratingneurodiversity365. com/wp-content/uploads/2019/08/Neurodiversity-Is-a-Competitive-Advantage-article-in-Harvard-Biz-Review.pdf [Accessed 2 Feb. 2024].

Barkley, R.A. (2014). Attention-Deficit Hyperactivity Disorder, Fourth Edition. Guilford Publications.

Baron-Cohen, S., Bowen, D.C., Holt, R.J., Allison, C., Auyeung, B., Lombardo, M.V., Smith, P. and Lai, M.-C. (2015). The 'Reading the Mind in the Eyes' Test: Complete Absence of Typical Sex Difference in ~400 Men and Women with Autism. *PLOS ONE*, 10(8), p.e0136521. doi:https://doi.org/10.1371/journal.pone.0136521.

Batty, M.J., Liddle, E.B., Pitiot, A., Toro, R., Groom, M.J., Scerif, G., Liotti, M., Liddle, P.F., Paus, T. and Hollis, C. (2010). Cortical Gray Matter in Attention-Deficit/Hyperactivity Disorder: A Structural Magnetic Resonance Imaging Study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(3), pp.229–238. doi:https://doi.org/10.1016/j.jaac.2009.11.008.

Bodker, K., Kensing, F. and Simonsen, J., 2009. Participatory IT design: designing for business and workplace realities. MIT press.

Brown, T. (2009). Change by Design : How Design Thinking Transforms Organizations and Inspires Innovation. New York: Harpercollins E-Books.

Bryman, A. (2016). Social Research Methods. 5th ed. Oxford: Oxford University Press.

Chávez-Eakle, R.A., Graff-Guerrero, A., García-Reyna, J.-C., Vaugier, V. and Cruz-Fuentes, C. (2007). Cerebral blood flow associated with creative performance: A comparative study. *NeuroImage*, 38(3), pp.519–528. doi:https://doi.org/10.1016/j.neuroimage.2007.07.059.

Cocchi, L., Harrison, B.J., Pujol, J., Harding, I.H., Fornito, A., Pantelis, C. and Yücel, M. (2011). Functional alterations of large-scale brain networks related to cognitive control in obsessive-compulsive disorder. *Human Brain Mapping*, 33(5), pp.1089–1106. doi:https://doi.org/10.1002/hbm.21270.

Colella, A., Hebl, M. and King, E. (2017). One hundred years of discrimination research in the Journal of Applied Psychology: A sobering synopsis. *Journal of Applied Psychology*, 102(3), pp.500–513. doi:https://doi.org/10.1037/apl0000084.

Coles, M.E., Cook, L.M. and Blake, T.R. (2007). Assessing obsessive compulsive symptoms and cognitions on the internet: Evidence for the comparability of paper and Internet administration. *Behaviour Research and Therapy*, 45(9), pp.2232–2240. doi:https://doi. org/10.1016/j.brat.2006.12.009.

Creswell, J.W. and Creswell, J.D. (2017). *Research Design: Qualitative, quantitative, and Mixed Methods Approaches*. 5th ed. SAGE Publications.

Ellis Paul Torrance (1974). Torrance Tests of Creative Thinking. Scholastic Testing Service.

Fink, A. (2003). How to design survey studies. Thousand Oaks, Calif.: Sage Publications.

Flick, U. (2009). An Introduction to Qualitative Research. 4th ed. SAGE.

Franceschini, S., Gori, S., Ruffino, M., Viola, S., Molteni, M. and Facoetti, A. (2013). Action Video Games Make Dyslexic Children Read Better. *Current Biology*, [online] 23(6), pp.462–466. doi:https://doi.org/10.1016/j.cub.2013.01.044.

Fung, L.K., Ulrich, T.L., Fujimoto, K.T. and Taheri, M. (2022). Neurodiversity: An Invisible Strength? JOM, 74(9), pp.3200–3202. doi:https://doi.org/10.1007/s11837-022-05454-2.

Grandin, T. (2009). How does visual thinking work in the mind of a person with autism? A personal account. *Philosophical Transactions of the Royal Society B: Biological Sciences*, [online] 364(1522), pp.1437–1442. doi:https://doi.org/10.1098/rstb.2008.0297.

Happé, F. and Vital, P. (2009). What aspects of autism predispose to talent? *Philosophical transactions of the Royal Society of London.* Series *B, Biological sciences*, [online] 364(1522), pp.1369–75. doi:https://doi.org/10.1098/rstb.2008.0332.

Healey, D. and Rucklidge, J.J. (2005). An Exploration Into the Creative Abilities of Children With ADHD. *Journal of Attention Disorders*, 8(3), pp.88–95. doi:https://doi.org/10.1177/1087054705277198.

Irving Lester Janis (1972). Victims of Groupthink. Houghton Mifflin.

Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., & Wensveen, S. (2011). Design Research Through Practice: From the Lab, Field, and Showroom. Elsevier.

Krzeminska, A., Austin, R.D., Bruyère, S.M. and Hedley, D. (2019). The advantages and challenges of neurodiversity employment in organizations. *Journal of Management & Organization*, [online] 25(04), pp.453–463. doi:https://doi.org/10.1017/jmo.2019.58.

Kumar, R. (2014). Research Methodology : a step-by-step Guide for Beginners. 4th ed. London: Sage Publications Ltd.

Larson, K., 2009. Research ethics and the use of human participants. Teoksessa SD Lapan & MT Quartaroli (toim.) Research essentials. An introduction to designs and practices.

Lauren, B. (2007). The researcher 'in the middle': Negotiating the insider/outsider dichotomy. *The Australian Community Psychologist*, [online] 19(1). Available at: http://hdl.handle.net/20.500.11937/22045.

Leather, C., Hogh, H., Seiss, E. and Everatt, J. (2011). Cognitive Functioning and Work Success in Adults with Dyslexia. *Dyslexia*, 17(4), pp.327–338. doi:https://doi.org/10.1002/dys.441.

Leckman, J.F., Denys, D., Simpson, H.B., Mataix-Cols, D., Hollander, E., Saxena, S., Miguel, E.C., Rauch, S.L., Goodman, W.K., Phillips, K.A. and Stein, D.J. (2010). Obsessive-compulsive disorder: a review of the diagnostic criteria and possible subtypes and dimensional specifiers for DSM-V. *Depression and Anxiety*, 27(6), pp.507–527. doi:https://doi.org/10.1002/da.20669.

LeFevre-Levy, R., Melson-Silimon, A., Harmata, R., Hulett, A.L. and Carter, N.T. (2023). Neurodiversity in the workplace: Considering neuroatypicality as a form of diversity. *Industrial and Organizational Psychology*, [online] 16(1), pp.1–19. doi:https://doi.org/10.1017/ iop.2022.86.

Livingston, L.A., Shah, P. and Happé, F. (2019). Compensatory strategies below the behavioural surface in autism: a qualitative study. *The Lancet Psychiatry*, [online] 6(9), pp.766–777. doi:https://doi.org/10.1016/s2215-0366(19)30224-x.

Logan, J. (2009). Dyslexic entrepreneurs: the incidence; their coping strategies and their business skills. *Dyslexia*, 15(4), pp.328–346. doi:https://doi.org/10.1002/dys.388.

Mancini, F. (2018). The Obsessive Mind. Routledge.

Maxwell, J.A. (2013). Qualitative Research Design : an Interactive Approach. 3rd ed. Thousand Oaks, Calif.: Sage Publications.

McDowall, A., Doyle, N. and Kiseleva, M. (2023). *Neurodiversity at work: demand, supply and a gap analysis*. [online] bbk.ac.uk. Available at: https://eprints.bbk.ac.uk/id/eprint/50834/ [Accessed 30 Jan. 2024].

Menghini, D., Finzi, A., Benassi, M., Bolzani, R., Facoetti, A., Giovagnoli, S., Ruffino, M. and Vicari, S. (2010). Different underlying neurocognitive deficits in developmental dyslexia: A comparative study. *Neuropsychologia*, 48(4), pp.863–872. doi:https://doi.org/10.1016/j.neuropsychologia.2009.11.003.

Moore, N. (2006). How to do research : a practical guide to designing and managing research projects. London: Facet.

Morgan, D.L. (1996). Focus Groups as Qualitative Research. SAGE Publications.

Muratovski, G. (2021). Research for Designers. SAGE.

NHS (2022). Health and Care of People with Learning Disabilities, Experimental Statistics 2021 to 2022. [online] NHS Digital. Available at: https://digital.nhs.uk/data-and-information/publications/statistical/health-and-care-of-people-with-learning-disabilities/experimental-statistics-2021-to-2022 [Accessed 5 Feb. 2024].

ONS. (2022). *Disability and employment - Office for National Statistics*. [online] Available at: https://www.ons.gov.uk/ peoplepopulationandcommunity/healthandsocialcare/disability/datasets/disabilityandemployment [Accessed 30 Jan. 2024].

Patton, M.Q. (2002). Qualitative Research and Evaluation Methods. 3rd ed. Thousand Oaks, Calif.: Sage Publications.

Praslova, L., Bernard, L., Fox, S. and Legatt, A. (2023). Don't tell me what to do: Neurodiversity inclusion beyond the occupational typecasting. *Industrial and Organizational Psychology*, 16(1), pp.66–69. doi:https://doi.org/10.1017/iop.2022.105.

Rivera, D.L., Miller, G.N. and Kana, R.K., Diagnostic and Sex Differences in Symptom Profile and Cognitive Ability in Autism. 2021-2022 JOSHUA Staff, p.2.

Robertson, S.M. (2009). Neurodiversity, Quality of Life, and Autistic Adults: Shifting Research and Professional Focuses onto Real-Life Challenges. *Disability Studies Quarterly*, 30(1). doi:https://doi.org/10.18061/dsq.v30i1.1069.

Rosenbaum, P.R. (2021). Design Of Observational Studies. 2nd ed. Springer Cham.

Runco, M.A. and Jaeger, G.J. (2012). The Standard Definition of Creativity. *Creativity Research Journal*, 24(1), pp.92–96. doi:https://doi.or g/10.1080/10400419.2012.650092.

Sanders, E.B.-N. . and Stappers, P.J. (2008). Co-creation and the new landscapes of design. *CoDesign*, [online] 4(1), pp.5–18. doi:https://doi.org/10.1080/15710880701875068.

Sasson, N.J., Faso, D.J., Nugent, J., Lovell, S., Kennedy, D.P. and Grossman, R.B. (2017). Neurotypical peers are less willing to interact with those with autism based on thin slice judgments. *Scientific Reports*, [online] 7(1), pp.1–10. doi:https://doi.org/10.1038/srep40700.

Shaywitz, S.E. (1998). Dyslexia. New England Journal of Medicine, [online] 338(5), pp.307–312. doi:https://doi.org/10.1056/ nejm199801293380507.

Stamatis, C.A. and Weisman de Mamani, A. (2020). A latent profile analysis of creativity: Associations of convergent and divergent thinking with subclinical schizotypal, obsessive-compulsive, and affective symptoms. *Psychology of Aesthetics, Creativity, and the Arts*, 16(4)(651-664). doi:https://doi.org/10.1037/aca0000378.

Stolte, M., Trindade-Pons, V., Vlaming, P., Jakobi, B., Franke, B., Kroesbergen, E.H., Baas, M. and Hoogman, M., 2022. Characterizing creative thinking and creative achievements in relation to symptoms of attention-deficit/hyperactivity disorder and autism spectrum disorder. *Frontiers in Psychiatry*, *13*, p.909202.Vancouver

Swaen, B. and George, T. (2022). Constructing a Conceptual Framework. [online] Scribbr. Available at: https://www.scribbr.com/ methodology/conceptual-framework/ [Accessed 29 Jan. 2024].

Verma, S. and Kushwaha, S. (2013). Creative Thinking and Attention Deficit Hyperactivity Disorder. *Journal of Psychosocial Research*, [online] 8(2), pp.167–176. Available at: https://web.p.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=b844dcd3-d1fb-4be7-ae01-d0b4c7470de6%40redis [Accessed 7 Feb. 2024].

Visser, F.S., Stappers, P.J., van der Lugt, R. and Sanders, E.B-N. (2005). Contextmapping: experiences from practice. *CoDesign*, 1(2), pp.119–149. doi:https://doi.org/10.1080/15710880500135987.

White, H.A. and Shah, P. (2006). Uninhibited imaginations: Creativity in adults with Attention-Deficit/Hyperactivity Disorder. *Personality and Individual Differences*, [online] 40(6), pp.1121–1131. doi:https://doi.org/10.1016/j.paid.2005.11.007.

Wilson, J. (2010). Essentials of business research : a guide to doing your research project. London: SAGE Publications Ltd.

World Economic Forum (2023). *Future of Jobs Report 2023*. [online] Available at: https://www3.weforum.org/docs/WEF_Future_of_ Jobs_2023.pdf [Accessed 5 Feb. 2024].

Yin, R.K. (2003). Case study research : design and methods. 3rd ed. Thousand Oaks, Calif.: Sage Publications.

Zaky, E.A. (2017). Autism Spectrum Disorder (ASD); The Past, The Present, and The Future. *Journal of Child and Adolescent Behavior*, 05(03). doi:https://doi.org/10.4172/2375-4494.1000e116.