

Review article

Diverse minds, shared spaces: navigating neurodiversity in public engagement with research events

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Peer review

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Abstract

Engaging neurodivergent individuals in research events is crucial, as they offer unique perspectives that can shape the future of research, yet they are often unintentionally excluded. The Children and Young People's Mental Health Research Collaboration at the University of Exeter, UK, conducts research on neurodivergence and neurodevelopmental differences, as well as engagement events. Here, we aim to understand effective engagement event formats tailored to neurodivergent families. This reflective article compares and contrasts insights from two events that sought to prioritise the needs of neurodivergent families. The first was held at the University of Exeter and was attended by over one hundred family members with children with attention deficit hyperactivity disorder; the

second had nearly one thousand attendees in Falmouth, Cornwall and was for the wider public, but it incorporated accessibility adaptations. Evaluation feedback was gathered from participants and volunteers at both events by post-event surveys. The attention deficit hyperactivity disorder event fostered an environment where families felt comfortable and could freely express themselves. Conversely, the wider public event reached a larger audience, yet it faced challenges in identifying and supporting neurodivergent attendees in a busy setting. Variations in event space layout also influenced the visitor experience. Both events effectively engaged neurodivergent audiences. We have created a checklist of considerations for future events. Refining these approaches, prioritising them in current and future event planning, and learning from event feedback, will contribute to securing inclusivity. Making research events accessible to neurodivergent audiences is essential for integrating diverse perspectives into research. By employing meaningful engagement, we can enhance inclusivity and incorporate insights from under-represented voices.

Keywords public engagement; neurodiversity; patient and public involvement; accessibility; marginalised groups; attention deficit hyperactivity disorder; ADHD; autism; inclusion

Key messages

- We identified a range of strengths and weaknesses for hosting public engagement events for neurodivergent families, such as the importance of having a separate sensory/quiet space, and physical supports such as ear defenders.
- By contrasting two formats of engagement event, we provide points of consideration for people who want to hold inclusive events involving children and young people: neurodivergent-specific events make the attendees feel more comfortable to be themselves; however, general public events attract a wider variety of individuals and bigger audiences, while also being accessible.
- Moving forward, when conducting inclusive engagement events, key things to consider are: having sufficient staffing; briefing staff and academics on what to expect from those who have different needs (for example, children who may ask the same question over and over); and having physical spaces available that are stimulating or calming, with things to do that keep hands busy. We have included a checklist for event planners to begin their thinking about their own events.

Introduction

Neurodivergence

Neurodivergence refers to variations in how individuals' brains process, learn and behave, diverging from what is considered 'typical'. In medical terminology, this encompasses neurodevelopmental disorders (NDDs) such as autism spectrum disorder (ASD) and dyslexia (Cleveland Clinic, 2022). Within this article, we use the term 'neurodivergent' to describe individuals who experience these variations, to align with current community preferences. This term is often attributed to Judy Singer in 1998, although the emergence of the term is now attributed to collective internet communities as early as 1996 (Botha et al., 2024). Recently, there has also been a shift away from 'disorder' paradigms (focusing on reducing symptoms) towards neurodiversity paradigms (focusing on supporting and affirming neurodivergent experiences) (Sonuga-Barke, 2023; Sonuga-Barke and Thapar, 2021). Given estimated prevalences, it is plausible that around 15–20 per cent of the population are neurodivergent (Doyle, 2020). NDDs vary in prevalence, with the most common being dyslexia (8 per cent), dyspraxia (6 per cent), attention deficit hyperactivity disorder (ADHD) (5 per cent), dyscalculia (3–6 per cent) and autism (1 per cent) (Lingam et al., 2009; Polanczyk et al., 2007; Yang et al., 2022; Zeidan et al., 2022). Neurodivergent traits vary widely,

and they can include sensory sensitivity and differences in information processing. Many neurodivergent traits are impairing, hence NDDs are also classed as disabilities.

Neurodivergent people are an important part of society and the economy. It is estimated that 70–80 per cent of disabilities are hidden (Kelly and Mutebi, 2023). In 2015, the consumer spending power of disabled people and their households was an estimated £212 billion a year. However, 75 per cent of disabled families have walked away from a business because of an accessibility or customer service issue, highlighting the importance of adaptation to meet basic needs and the opportunity for optimising economic contribution (GOV.UK, 2014).

Public engagement in research

Public engagement in research (PER) is critical to scientific duty; it aims to integrate members of the public with work conducted within academic institutions, fostering a reciprocal relationship between researchers and the community (Bodmer, 2010; The Royal Society, 1985). This broad definition shows that PER can vary, and can include many individual activities (Burchell, 2015). PER aims to consult individuals with lived experience, and to incorporate their views to enhance research from conception to dissemination. Some key principles of PER are to provide a platform for mutual learning, understanding and benefit, and to co-design research and ensure that research findings are relevant for, and disseminated to, the communities they seek to benefit and establish connections within.

Highlighting neurodivergent voices in public engagement with research

One subset of the population who are overlooked in public engagement efforts are neurodivergent people, who can face exclusion in event planning when their needs are overlooked. Sensory over- and under-sensitivities, and other challenges such as stigma, often make non-selective, traditional engagement events and their planning overwhelming or inaccessible for neurodivergent individuals and their families (ACC Liverpool, n.d.). There is little available guidance on tailoring PER events to neurodivergent families. One article evaluated sensory-friendly concerts (Shiloh and Lagasse, 2014). The authors demonstrated that it is possible to adapt events which might occur in an environment which is seemingly particularly challenging, or even impossible, to make 'neurodivergent friendly'. In a further example, Trotman and McGinley (2018) adapted the current model of museum activities, considering the importance and value of ensuring that activities are accessible to as many audiences as possible. The scaffolding of their new programme aimed to demystify neurodivergent-centred engagement and co-creation methods (Trotman and McGinley, 2018). This is something that our team also aimed to do, through training academics and students in neurodiversity, delivering a presentation on inclusion of neurodivergent audiences in PER events, and publishing our insights in this article. We hope that this will contribute to an increasing culture of purposeful inclusion.

The Children and Young People's Mental Health Research Collaboration (ChYMe) (University of Exeter Medical School, n.d.) at the University of Exeter, UK, conducted two engagement events designed for neurodivergent families. The first was an ADHD and Science Family Day at the University of Exeter in 2022, and the second was a Pop-up Shop in Falmouth in 2023. We aimed to further partnerships with the public by building rapport with local families, providing a non-judgemental space, demystifying the university environment, and supporting local communities that have contributed to our research.

Previous articles have highlighted the importance of creating accessible events. A report produced by Imperial College London discusses concepts and theories that allow for a deeper understanding of why accessibility is crucial in PER science events, and barriers that underserved groups may experience (Imperial College London, n.d.). The Ontario Municipal Social Services Association (OMSSA) and the National Health Service of Greater Glasgow and Clyde (NHSGGC) also lay out guidelines for how to make events accessible (NHSGGC, 2017; OMSSA, 2013). Having learnt from carrying out similar processes to the OMSSA, we aim to contribute to this growing body of literature by sharing our own experiences. This

article looks at how guides and recommendations can be implemented to meet the real-world demands of PER event planning, while centring equity for attendees, and to make the process feasible for event planners who may have time or funding constraints. Through time and perseverance, we were able to create events with enhanced accessibility. Nonetheless, there were some accessibility barriers that could not be removed. In this article, we examine how we navigated and overcame these practical barriers, and we provide recommendations for others organising a PER event.

Aims

This article aims to contrast, reflect on and understand effective formats for PER events for neurodivergent families, utilising our two most recent engagement events as exemplars, and comparing a novel approach with an adaptation of an existing event format. We make recommendations which will support other researchers to consider accessibility within PER. We achieve this through exploring how each approach was developed, and how this was translated into the physical execution of events. Following this, we outline the characteristics of the events, and we synthesise participant and staff feedback and personal reflections.

Methods

Event planning

Our approach to planning and executing the two events for neurodivergent audiences was rooted in community engagement and collaboration, aiming to deliver events tailored to the needs of the participants. Our research team is a mix of neurotypical and neurodivergent individuals, many with prior experience of working with children in educational or health-care settings. The team's main research focus was to better support neurodivergent children, or those struggling with their mental health, in schools. Both events were planned with wider neurodivergent individuals to combine a range of views from people unrelated to the research environment.

Community engagement and co-planning

Prior to the development of the events, extensive community consultation was conducted through meetings with public collaborators. Parents of children with ADHD were involved in a current research project, Tools for Schools, which aims to support children with traits of ADHD in primary schools (Russell et al., 2023b). These meetings facilitated discussions and idea generation, allowing community members to shape the event. For example, the idea to include careers advice in the day was suggested by a parent.

Additional input to event planning included feedback from previous events, relevant research publications and ongoing studies within our research group that provided insights into the needs and challenges faced by neurodivergent individuals and their families (Benham-Clarke et al., 2021; Liabo et al., 2020; Russell et al., 2023a). This informed the development of activities aiming to meet these requirements; for example, the need for space to run around, a chance to meet other families, and to be able to change activity at short notice. Physical spaces were reviewed by the team to decide where activities were best placed, considering the layout and decor of rooms, as well as ease of access and proximity to the other spaces used for the event. Details such as whether objects needed to be moved out of rooms, or whether lighting was sufficient, were also considered. Signposting to event locations, information provided to families in advance and on the day, and the layout of this information, were also carefully considered and reviewed. Weekly team planning meetings contributed to this process, and new ideas or barriers were identified, and plans to adapt or make these accessible, were put in place.

The ADHD planning group set out to make the event inclusive from the outset – monthly meetings were held in the six months preceding the event. Local people with lived experience formed the core group, allowing us to have key voices involved in every decision. The Pop-up Shop was preceded by two planning meetings in which team members EFB and AER met with the organisers from Agile Rabbit (an educational charity specialising in public engagement) (<https://www.agile-rabbit.com/>) at the venues in Falmouth to discuss event layout. At these meetings, we also had opportunities to sense-check our plans with the local venue holders. Weekly online meetings were also held between the two teams.

Collaboration with community organisations

Collaboration with community organisations played a pivotal role in shaping the events. Partnerships were established with representatives of local charities and support organisations, businesses and schools, local and university-based neurodivergent communities, and the Autistic Community of Cornwall CIC (<https://www.theautisticcommunityofcornwall.org>), with venues including The Cornish Bank (<https://thecornishbank.co.uk/>) and Fairwinds Community Hub (<https://fairwindsfalmouth.co.uk>) providing valuable resources, insights and support. By leveraging existing community networks, we were able to amplify the reach of the events and ensure their relevance to local communities.

The ADHD and Science Family Day was organised and conducted by the research team, with the university events company (Event Exeter) being used to book spaces, and for logistical support such as catering. For the Pop-up Shop, which was a wider public event, a collaboration was established between Agile Rabbit and our team. Agile Rabbit are a public engagement charity, and they have extensive experience organising public engagement events on behalf of higher education institutions, while our team offered expertise and capacity to consider the accessibility of an event run by them. They received funding from The Futures Festival (see below) to deliver the Pop-up Shop, while our funding was provided by University of Exeter funding pots, with the Waterloo Foundation as an addition. Agile Rabbit were key to the delivery of the Pop-up Shop, while we contributed additional activities to the event.

The events

The ADHD and Science Family Day

The ADHD and Science Family Day, held in September 2022 at St Luke's Campus of the University of Exeter, was created in response to feedback from conversations with public collaborators in research, highlighting the challenges of taking part in mainstream activities. The event aimed to provide a supportive space for families, allowing parents to connect, and promoting positive messages about ADHD. Feedback was collected at this event by volunteers, and it was planned six months in advance by SH, AER, JW, CRK, EFB and GB.

Ten external activity providers and stall-holders, along with 17 university staff members and 19 volunteer stewards supported the event unpaid. The event was fully booked three days after launching online in June 2022, and ten days after posters were distributed within local communities. Everyone on the waiting list was eventually offered tickets due to last-minute cancellations. The event had capacity for approximately 34 families, based on the physical space, amount of funding, and number of available supporting volunteers.

To maximise the accessibility of the event, specific adaptations were made:

1. The event was **free to families**, including lunch and 18 different activities for children and teenagers. Families with children who have disabilities may have to overcome financial challenges, such as the additional cost of care for their children and barriers to employment (Social Finance, 2011). Recognising the potential financial barriers to attendance (Scope, n.d.), funding was secured to provide financial support for transportation expenses, and to offer free lunch and free activities to all attendees. This was explicitly communicated to participants during the ticket-booking process, and it was reiterated on the day of the event.

2. **Quiet spaces** were provided, and they were available for use throughout the day. Not only were there low-sensory zones; there were also areas designed so that families could manage dysregulation without judgement.
3. **Physically engaging activities** such as scavenger hunts and martial arts, and opportunities to use the swimming pool on campus, were provided.
4. **Sensory and exploratory activities** were provided, for example, the 'egg drop' and 'leaf bashing'.
5. **Mentally stimulating activities**, such as science experiments and educational trips to the lab were offered.
6. To ensure the broadest reach and accessibility for our events, **diverse advertising channels were utilised**, including physical posters and flyers distributed across religious and community venues, leisure centres, schools and businesses throughout Exeter and Devon, as well as online platforms such as Facebook and Twitter, and existing research and University of Exeter patient and public involvement networks. Low-income neighbourhoods and ethnically diverse areas of the city were targeted one week ahead of more widespread advertising to proactively disseminate and engage with groups who may not usually have opportunities to participate in such events.
7. If they wanted to wear them, **volunteers were provided with badges indicating their neurodivergent identity** (if the volunteer felt comfortable disclosing this), fostering a sense of community and understanding among attendees.
8. Additionally, volunteers, stall-holders and lunch staff received **comprehensive training about ADHD** through briefing sessions and written briefing materials, enabling them to effectively interact with neurodivergent individuals and to create a stigma-free environment.
9. **Flexibility was incorporated into the event schedule**, allowing children the freedom to switch between activities as they wished, empowering them to lead their own experiences and tailor their participation to their individual preferences.
10. **The event was invitation-only** to create a 'safe' non-judgemental environment for neurodivergent families.
11. Prior to the event, **participants were encouraged to communicate any specific needs or preferences** that would enhance their experience. This proactive approach aimed to foster a supportive and accommodating environment, promoting inclusivity and accessibility for all attendees.
12. To further facilitate attendance, **ADHD-supportive (frequent and non-judgemental) reminders** were emailed and texted to families one month, week and day before the event. We also gently encouraged them to offer up their place if unable to attend up to 24 hours before the event, thereby maximising participation opportunities for those on the waiting list. The reminders acknowledged that families may have unforeseen reasons which prevented them from attending, and they assured them that the organisers would be understanding of these, so as to mitigate negative impacts if families needed to cancel.
13. **Spaces, handouts and maps** were designed with neurodivergent families in mind.
14. **Volunteers were over-recruited for the event**, to ensure that there were always points of contact for families who needed them.
15. There was a **high percentage of neurodivergent staff and volunteers**.

A full programme of the events can be seen in [Figure 1](#).

The Pop-up Shop

Following the ADHD and Science Family Day, Agile Rabbit, who are experienced in delivering public engagement events, contacted us and expressed an interest in collaborating with us on future events to improve engaging neurodivergent families in events and considering accessibility. This presented a novel opportunity and learning experience for our team, using our approach to adapt an existing event structure. The Pop-up Shop was delivered by Agile Rabbit on behalf of the University of Exeter as part of

Figure 1. Programme of events



FUTURES2023, a festival that celebrates research across the South West of England via a programme of public engagement events (<https://futuresnight.co.uk/>).

The structure of the Pop-up Shop was predetermined, with 15 activities being run by academics, coordinated by Agile Rabbit, and the event being open to the public on a 'walk-in' basis. Activities included live music, talks, workshops and stalls. Unlike the ADHD and Science Family Day, this event was already planned, and our contributions involved implementing adaptations to accommodate neurodivergent individuals, rather than considering these adaptations from the start of the planning process. The specific accommodations were:

1. Three venues were designated, offering **high, medium and low auditory volume spaces** to cater to varying preferences and sensitivities. Notably, one room housed all the science activities, located within a venue with live music playing outside. Recognising the potential for overcrowding and sensory overload in such an environment, a second, separate, family-focused space, Fairwinds, was hired and run by our team. Here, families could relax, engage in games, enjoy refreshments, and interact with volunteers, fostering a more comfortable atmosphere. A third space, located at a different venue on each of the two days, provided an even calmer place (the 'quiet space') for families to go to get away from the busier, noisier spaces.
2. A **quiet hour** was scheduled at the end of the day, characterised by subdued lighting and the absence of music, aimed at mitigating overstimulation for attendees.
3. To support the activity-leading researchers and volunteers with limited experience of neurodiversity, a **briefing guide** was developed, offering guidance on understanding and responding to various

behaviours sensitively and effectively, for example, making staff aware that some individuals may ask repetitive questions about the same thing, and others may engage in conversation but not wish to make eye contact.

4. Each venue was equipped with **ear defenders and a fidget toy library**, providing resources to help individuals manage sensory challenges and promote comfort and engagement.
5. An **online accessibility guide was made available in advance**, offering detailed information on venue accessibility, transportation options and nearby amenities, aiming to facilitate forward-planning and to alleviate potential barriers for neurodivergent families.
6. We ensured that we **over-recruited volunteers**, and we had 15 volunteers for each day of the Pop-up Shop, as we intended to spread these out across the three venues to make sure that we were always visible to families. The walk-in format of the event meant that the number of visitors, and neurodivergent visitors, was unpredictable. Volunteers were trained using an information sheet and an on-the-day briefing, due to the relative speed and low cost with which these could be delivered.
7. The quiet space was curated to provide a **sensory-rich environment**, featuring sensory toys, a sensory projector galaxy light, beanbags, colouring materials and fidget toys. Trained volunteers facilitated interactions within this space, fostering meaningful one-on-one engagements between attendees and representatives of the university. Such interactions aimed to facilitate families feeling at ease, and it provided valuable insights for researchers, fostering a sense of connection and support with the neurodivergent community.

Evaluation

ADHD and Science Family Day

Feedback was collected from families via a post-event feedback questionnaire which was emailed to families to the email that they had used to sign up to attend. Volunteers were also contacted via email and asked to complete a post-event feedback questionnaire.

Pop-up Shop

Feedback was collected on the day by members of the Agile Rabbit/Futures team, who interviewed attendees, and completed observations of the event venues. Participants could put colour-coded Post-it notes on the wall to indicate if they had had a good, OK or bad time. After the event, volunteers were contacted via email and asked to complete a post-event feedback questionnaire.

Results

The ADHD and Science Family Day

The ADHD and Science Family Day was attended by 30 families (107 people: 53 adults and 54 children), matching the pre-event target. Each family included at least one child with an ADHD diagnosis or 'identified' traits. A significant proportion of staff and volunteers also had an ADHD diagnosis. Approximately 57 per cent of the children were primary school age. There was one minor safeguarding concern on the day, managed by the event leads, and no other health and safety or safeguarding concerns were raised.

Feedback from families

We received feedback from 11 adults (21 per cent of adult attendees). On average, adults rated the day 4.5 stars out of 5 ($n = 11$), and when reporting how their child would rate the day, this received 4.4 stars out of 5 ($n = 7$). Almost every activity was mentioned as a highlight at least once, either directly by families commenting in a free-text box or through feedback given to activity providers. The most frequent

responses reported by families directly were the scavenger hunt ($n = 3$), followed by the Q&A session, the brain lab, sharing ADHD experiences, parent support, the egg drop, swimming and virtual reality (VR) headsets (all $n = 2$).

Regarding improvement in the future, feedback was varied, with no single aspect standing out. Nearly half of respondents indicated that they would like 'more of the same'. Suggested improvements included: better stewarding of the popular VR activity; more adult-oriented information, workshops, and parenting guidance or peer support; reduced waiting time on arrival; enhancements for the scavenger hunt; and comments about lunch and refreshments. Out of 11 families who completed the questionnaire, 10 wished to be contacted about participating in future research; 9 of these were also interested in being involved in planning research.

Feedback from academics, activity providers and volunteers

The average rating by academics, activity providers and volunteers was 4.6 stars out of 5 ($n = 23$). Highlights from these groups included: the variety of activities on offer and the level of engagement in them ($n = 13$); the opportunity to interact with the public, talk science and ADHD, and increase understanding ($n = 9$); bringing families together to socialise, to share experiences, and to access support ($n = 9$), enthusiastic, supportive staff and volunteers ($n = 9$); the inclusive, non-judgemental, ADHD-appropriate nature of the event ($n = 8$); fun and enjoyment ($n = 7$); the chance to interact with researchers and to network ($n = 6$); being able to make a contribution ($n = 4$); to focus on opportunities (not difficulties), positive messages and countering stigma ($n = 3$); well-organised event ($n = 2$); emphasis on lived experience of ADHD ($n = 2$); and lots of people attending ($n = 1$).

Regarding improvements for future events, the most common comment was that there was 'nothing to improve' ($n = 5$). General suggestions for what to improve included locating the activities closer together ($n = 4$); offering various lunch/refreshment options ($n = 4$); having fewer activities per family or inviting more families for a bigger event next year ($n = 4$); having more stewards for the VR headsets activity ($n = 3$); improving clarity for volunteer roles on the day ($n = 3$); improving signage ($n = 3$); inviting more scientists ($n = 2$); and reducing the registration queue or having a staggered start ($n = 2$).

Some people had ideas about what we could add to the event, if it were to run again. The most common was to have the same activities or event again, or that no changes were needed ($n = 11$). Others wanted more support organisations and information (for example, slots for parents to meet 'experts' for private consultation) ($n = 2$); slots for peer-to-peer parent support ($n = 2$); more active games for children ($n = 2$); more child-targeted ADHD education ($n = 2$); and more group activities to engage children, freeing parents to chat and learn ($n = 2$). One suggestion was to have a fun ADHD bingo game to help parents to identify shared experiences and feel less isolated.

Qualitative themes from family and volunteer feedback

Families and volunteers appreciated that it was an ADHD-only event: Several families provided feedback outlining the positives of the event being specifically for families and children with ADHD 'in a space that was held just for us', citing similar life experiences, being around other people like them, and not having to be concerned about whether their child's behaviour would be acceptable. One family also highlighted that the focus on ADHD (rather than autism) was encouraging: 'my child absolutely loved it and felt so good to know she was around other people like her' (Family 1).

Families and volunteers also liked the venue and activities: Families commented on the venue being 'well organised' and clear, with activities that were led by enthusiastic volunteers: '[I liked] the genuine engagement and quality of activities provided' (Volunteer 3).

Families and volunteers also enjoyed the focus on the positives of ADHD: In the post-event feedback, volunteers and families highlighted that they enjoyed that positives of ADHD were highlighted, in 'a chance to break some stigma' and 'deliver a positive message' about ADHD, especially with the

children that were attending the event: 'It was also lush to show our children some positives and say how well they had done, when they often heard criticism' (Family 2).

The Pop-up Shop

We aimed to reach 150 visitors each day. The Cornish Bank (the 'loud' space) had over one thousand visitors over the weekend in total. The Fairwinds (the 'medium' space) had over eighty visitors per day. Most of these visitors were part of a family group. It was not possible to monitor the total numbers who attended specifically because of our advertising, or the additional spaces, materials and activities that we offered, as capturing these data could have been intrusive for families, detracting from experiences of the event itself.

Feedback from visitors

Of the 24 people who provided feedback, 10 said that they or a member of their family were neurodivergent; 6 of these visitors stated that the event met their needs or the needs of their family. One left the question blank, with no comment; one left it blank and said, 'wouldn't be able to say'; one stated, 'A bit overwhelming at times – music + too many people'. One visitor said that the event did not meet their needs or the needs of their family. It was noted that this individual was in a wheelchair and had struggled to get through the entrance doors. This was something that the team had overlooked, assuming that because the venue had a ramp and a disabled toilet, that the venue doorway itself would be wide enough for a wheelchair.

In addition, 13 visitors were interviewed, with one stating that they or a member of their family were neurodivergent. This individual had also attended a 'walk and talk', and they felt that the event had considered and met their needs and the needs of their family.

Feedback from volunteers

Four volunteers provided feedback. Positive feedback about the volunteering experience included meeting other volunteers and new people ($n = 4$), working with families ($n = 4$), seeing joy and excitement, feeling useful, being included, and the friendly, non-judgemental team (all $n = 1$). In terms of areas for improvement, volunteers stated having: more roles for people to do, fewer volunteers to prevent spaces feeling overcrowded, and more information about the workshops before they happened (all $n = 1$). Regarding the activities in Fairwinds, volunteers liked the range of activities ($n = 2$), that it was accessible ($n = 1$), that it was very inclusive ($n = 1$), the creativity ($n = 1$), the activities on the street that helped encourage people in ($n = 1$), and a Sunday morning workshop on storytelling run by a neurodivergent PhD student ($n = 1$). Volunteers also provided comments on the quiet space. They liked that for those who used it, the quiet space was deemed beneficial ($n = 1$), and that the space was calm/not overwhelming ($n = 2$). Specific features that volunteers mentioned as positives included the beanbags ($n = 2$), lights ($n = 2$), toys ($n = 2$) and colouring ($n = 1$). Volunteers commented that to improve visitors' experiences, we could make the quiet space more central to the location of other activities, incorporating it better with the Pop-up Shop ($n = 2$), include more of the science and information for parents that was included in the previous ADHD day to make the event more targeted to neurodivergent families ($n = 1$), and use a larger space for activities ($n = 1$).

Qualitative themes from volunteer feedback

Quotations about the day fitted into various categories.

Engaging families: Volunteers commented that the activities were engaging and welcoming: 'Something fun parents and children could do randomly on a weekend day which was a nice, free, friendly activity' (Volunteer 1).

Focus on ADHD and neurodivergence: Many volunteers who offered their time at the Pop-up Shop had also helped on the ADHD and Science Family Fun Day. These volunteers drew comparisons between the two events: 'Having done both events, I think both were successful for different reasons' (Volunteer 1). There were also comments about the different focus of the two events, with many volunteers preferring the ADHD Day's structure of targeted attendance: 'I don't think there was enough focus on mental health or ADHD so that it became more of an activity space' (Volunteer 3); 'I feel that the visitors had a good time but were not the targeted visitors that the event really needed. I think more of the science/information for parents from last year's event could have been incorporated [in the Pop-up Shop]' (Volunteer 3).

The quiet space: There was also mixed feedback from volunteers about the quiet space: 'I don't think the rooms for the quiet spaces were appropriate. They were too far away, meaning children who don't have the agency to decide where their parents took them couldn't choose to go in' (Volunteer 3). And: 'I think for those who used it, it was really beneficial, I liked the variety and consideration taken in selecting the toys, lights and seats' (Volunteer 1).

Linking to the Pop-up Shop in the Cornish Bank: Volunteers also expressed confusion about how the activities put on as part of the Futures Festival by Agile Rabbit linked into the activities that were offered in the quiet and medium level spaces: 'I was a bit confused at how we were linked to the larger event, people came in and didn't realise we were part of it' (Volunteer 1).

Enjoyment from a volunteering perspective: However, the volunteers overall found the event enjoyable and rewarding: '[I really enjoyed] meeting new people; feeling useful; being included; the friendly, non-judgemental team' (Volunteer 2).

Feedback collected from researchers (stall-holders)

When asked about specific highlights of the day, one researcher commented: 'Several engaging interactions – particularly neurodivergent children. All were really positive encounters.' The same researcher also noted that there was a 'Broad demographic – but was a bit tricky navigating/juggling different ages.'

When asked about the impact that the event could have on their research, one researcher reported: 'working with neurodivergent families was really helpful & insightful. Great briefings.' In addition, the researcher noted that the event could stand to benefit them and the university more widely, because one 'Always learn[s] something, working with children & families.' However, similarly to families and volunteers, it was noted that the 'noise level in [the] venue' was a particular challenge.

Discussion

Event summaries

The ADHD and Science Family Day was a one-day event held at the University of Exeter St Luke's Campus, which attracted 30 local families (107 people) with ADHD who came to the university solely to take part in the event. It was planned collaboratively by members of the public with ADHD and researchers. Feedback collected from attendees by post-event survey highlighted that families felt that the children they attended with could be themselves, and that this made the day a positive experience. However, feedback from volunteers and organisers noted that the organisation of the event was time-intensive, and that more families could potentially have attended, given the number of activities and the space available.

The Pop-up Shop had over one thousand attendees over Saturday and Sunday. The main event was organised by Agile Rabbit, a public engagement charity, who were aided by researchers to enhance accessibility to neurodivergent families. We facilitated the addition of a quiet space and a medium noise level space, in addition to the science fair structure of the Pop-up Shop. Fairwinds Community Hub, the

space that was designed to have medium noise levels, had over 80 visitors; 24 feedback cards were filled in by event organisers with visitors; 10 of these individuals reported that they were neurodivergent or a member of their family was. Researchers at the event commented that the resources that we provided were useful, and that they had some positive interactions with neurodivergent families and children. However, some families were unsure about how the activities in the Fairwinds Community Hub linked to the Pop-up Shop activities.

From qualitative findings from both events, we can conclude that the ADHD Day being open only to those with ADHD made it more of a 'safe space' for families, whereas the Pop-up Shop did not foster this same community feeling, which enabled people who are neurodivergent to form connections. However, the Pop-up Shop was able to maintain its own structure, and it attracted a neurodiverse audience as part of the general population reach, and it was able to engage a much larger and mixed audience. Moving forward, when conducting inclusive engagement events, key things to consider are: having sufficient staffing; briefing staff and academics on what to expect from those who have different needs; and having physical spaces available that are stimulating or calming, with things to do that keep hands busy.

From these findings, we have created a checklist of considerations that may be helpful for other event organisers to consider (Table 1). This is by no means an exhaustive list, but it presents suggestions that may be helpful to begin discussion for a given event. We encourage fellow organisers to consider the unique barriers posed by their event. It goes without saying that the answers to these questions should be informed by public and patient involvement contributors.

We will now explore how the event formats relate to published literature, compare and contrast the pros and cons of broad versus specific audience events, and explore whether these formats confer valuable knowledge exchange activities.

Staffing and integration of the team

Both of our events benefited from neurodivergent people volunteering to run them. The final teams of volunteers were diverse in numerous ways, including those meaningful to neurodivergent attendees. The ADHD and Science Family Day had a medical stance as its default, acknowledging ADHD as a medical diagnosis as part of the recruitment and attendance materials, and being explicit about how those with ADHD may require exclusive activities to 'be yourself', meaning that neurotypical families were not invited. We were unsure about how this approach would be received by those attending, but feedback suggested that our marketing and materials were inclusive, accepting and not stigmatising. Botha et al. (2024) have found that favouring a neutral or social approach to autism over a medicalised approach, and including autistic people in research, can reduce ableist language in narratives written by researchers. Educating organisational staff and event stall-holders on what is normal for neurodivergent young people included a combination of information on what is normal in children and young people, regardless of neurodiversity, and particular details that may support meaningful engagement of neurodivergent young people, such as allowing and being positive about fleeting, or very sustained, engagement with one activity.

We expected that, following our second event, we would be able to easily weigh up feedback and decide which format to progress with for future events. However, we found that there were strong and conflicting positives for each, with the ADHD and Science Family Day being a positive and relaxing environment because it was exclusively for families with ADHD, and the Pop-up Shop being positive because it expanded access for an event from the neurotypical general public to the neurodiverse general public. Deciding what kind of event to run and the target audience is likely to vary based on what the event organisers are aiming to achieve. Gunter et al. (2021) held a booth at a science fair, with which they aimed to collect questions about autism. The authors had a very different aim to that of our events; however, they did evaluate staffers' knowledge before and after. Knowledge or literacy in the area of neurodivergence is an outcome which could be considered as a measure of event success in the future.

Table 1. Checklist for event planners

| Done? | Category | For example... |
|-------|------------------------|--|
| | Activities | Is there a range of activities for different ages and abilities? Are the activities physically, sensorially and mentally stimulating? |
| | Advertising | Are the advertising channels going to reach diverse families? Is this done consciously by targeting different areas or settings? |
| | Attendees | Is the event invitation-only? Or, if it is a broader event, is it possible to reserve some tickets for neurodivergent or underserved families? Have you considered asking whether people will be bringing a carer, and accounted for them to attend? |
| | Cost for families | Have you considered the cost of travelling to the event, the event itself, plus any activities that may cost extra, the cost of refreshments, lunches or childcare for children not in attendance? |
| | Cost for organisers | Have you considered budgeting for additional needs of families, for example, ear defenders, or if families have specific accessibility needs? |
| | Contact with families | Do you have a system in place to be able to remind families that the event is happening? Are you confident that you can do this in a way that's non-judgemental? Have you given families a way to get in touch if they need to let you know about specific requirements? |
| | Flexibility | Is there flexibility within the event schedule? Is anything a 'one-off' or a follow-on from another activity? Are sessions run multiple times? |
| | Resources for families | Would a briefing document be helpful for families? What information (for example, venue information, local facilities, parks, public transport) would be useful for families? Do parents know who to go to on the day of the event if they need anything, and do staff know where to direct them? |
| | Staff/volunteers | Do they have the training they need? What about staff who are not necessarily public facing? Do staff/volunteers have name badges? Are there any neurodivergent staff, and would the event benefit from asking if neurodivergent staff/volunteers would like to wear badges disclosing this, or a sunflower lanyard signifying a hidden disability? |
| | Venue | Are the venues physically accessible? What are they like to be in? Are quiet spaces needed, signposted, accessible and appropriate? |

Knowledge exchange

Knowledge exchange is beneficial to both parties. The concept was first introduced by Kiefer et al. (2005), who defined it as an interaction between those who produce research and those who use research. Public engagement often aims to include the 'general' public. We concur that the audience should be considered, and this is key, given that knowledge exchange is a two-way process. For example, where participants engage in research, it is the expectation that this research is disseminated and shared among those who it stands to benefit. As researchers, we must endeavour to include participants and the public in the research cycle from start to finish, giving credit to their knowledge and understanding throughout. Our PER events are examples of knowledge exchange in both a specific context and a more general context, sharing research from all areas of the university to a broad general audience. The actions that we

took represent a push to improve neurodiversity, but ideally the team would also have had involvement from a more diverse group of collaborators in designing the event, to consider other minoritised groups and intersectionality, and to more comprehensively improve engagement and access. The ADHD and Science Family Day, or future similar events, could include more broad knowledge exchange activities, with research from different fields having stalls and activities, similar to those in the Pop-up Shop. We question whether the converse is true, and whether a general public engagement event specifically focused on neurodivergence and family health would have wider appeal. There is more work to be done on this area about the types of research we choose to present, and when; should it be interactive, cross-disciplinary, science, or broader than this?

Implications for future events

There are many potential barriers to making events accessible, namely, lack of time, resources (including funding), or meaningful (as opposed to tokenistic) public engagement and knowledge exchange. However, many of these barriers are small and easily modified or addressed, and the positives of accessible PER are huge, and (we believe) they outweigh the barriers. These barriers, and strengths, of a planned event should be considered ahead of time, and unique ideas or features may need to be considered to overcome these. Guidance written by neurodivergent (or underserved, depending on the aims) communities should be utilised (for example, [NCCPE, 2025](#)).

Even events which seem impossible to adapt can be changed to be made accessible, without losing the essence of the original events. There are advantages to both the creation of novel events and the adaptation of activities or events that already exist. Additionally, there are benefits to having a wide public audience, and to having a small, invitation-only, specific approach to hosting events. There are benefits to having a 'safe space' which attracts fewer attendees, and to having a wider public event which will not necessarily be suitable for all neurodivergent attendees. It is important for future event planners to consider these aspects in their planning, carefully considering the purpose and goals of their future event to decide on the best format for delivery. We must recognise and consider accessibility, and embed this culture after the event in order to improve accessibility in future. For example, our partners from the Pop-up Shop are proactively considering inclusivity for next years' event.

It is important to have an integrated team of individuals with lived experience, and those with experience of running and planning events, to deliver accessible PER effectively. Engagement events are often planned by researchers, or by a small team that represent the university or institution. Indeed, this project emerged from researchers planning an event based on hearing experiences of social exclusion in the ADHD community. There is a need for inclusive events, but this is often challenging if you do not have relevant experience. Co-production with neurodivergent people is essential – society and institutions are characterised by neurotypical standpoints and neurotypical 'knowledge' ([Botha et al., 2024](#); [Sonuga-Barke, 2023](#); [Sonuga-Barke and Thapar, 2021](#)). Neurotypical event planners are not necessarily equipped to be able to understand the biases inherent in usual event planning, even if they have some knowledge about neurodiversity. As above, some universities and organisations have created guidelines, but to make these more widely available, researchers holding PER events should aim to share their work. This can be done by writing articles or blogs, sharing the resources that are produced, and encouraging an atmosphere of making changes in a slow way to lead to systemic change. During the Covid-19 pandemic, the sunflower lanyard became a symbol of hidden disabilities, and this may have increased public visibility and knowledge about the inaccessibility of certain events.

Strengths and limitations

These were novel events put on entirely by researchers, public engagement charities and volunteers. The events generally had positive feedback from families, and they were rewarding for families, researchers and volunteers. Learning that we have gained from these events will help us to improve how we engage

the public in research events in the future, depending on the event aims and needs. These events have strengthened the case for more like them in the future, and the high levels of attendance have shown that it is worth the resources needed to engage minoritised communities. However, it is challenging to accommodate everyone, especially in the field of neurodivergence where traits are often heterogeneous, and contradicting preferences and needs across individuals might be present. Neurodivergence can also sometimes be contradictory. While there are some commonalities that can be used within neurodivergent groups, caution is required to avoid making broad assumptions about what will work for people with autism or ADHD, or other types of neurodivergence. When putting on an event, there is a wide range of needs to cater for, not a one-fits-all approach to make an event 'ADHD-friendly'.

The funding, time and knowledge required to plan the events were higher than would be typical. The events were also challenging to evaluate, and so we lack robust evaluation data, especially from the Pop-up Shop, and there was limited response feedback from both events. Exploring creative feedback methods, and evaluating existing literature and guidance on event evaluation and feedback, will be useful for our future events.

Conclusions

Public engagement events cannot just target 'the general public' without defining who is included within this definition and how efforts are made to include those across the spectrum of the chosen definition. Everyone has different needs, and event planners should consider the people who may normally find events inaccessible and attempt to ameliorate the problems associated with their attendance. It may be that the most valuable knowledge exchange happens with communities who are not normally engaged with. Inclusive event planning must be done through communication and collaboration with individuals and organisations that represent the community to generate ideas and put these changes in place. Planning should be grounded in ideas around the target audience from early stages to improve the chances of being able to make accessible events. Neurodivergent individuals have often been overlooked in standard inclusivity event planning. This is in part because they represent a heterogeneous group with diverse needs that can conflict with traditional notions of what a public event should look like.

Guidance is inadequate on this matter, and it requires systematic change rather than placing the burden on individual organisers to be responsible – if adjustments and ideas of areas of need are ingrained in the planning process, this can be budgeted for, and it can be implemented more frequently and easily. Funders should consider making this a requirement in funding applications to encourage individuals to consider how they can make this change in their own work. This also relies on those with expertise working with others who may require help, as well as being known to university public engagement teams.

By exploring two formats of engagement event, we provide points of consideration for people who want to hold inclusive events involving children and young people: neurodivergent-specific events make the attendees feel more comfortable to be themselves; however, general-public events attract a wider variety of individuals and a bigger audience, while also being able to be accessible.

Declarations and conflicts of interest statement

Research ethics statement

The activities reported in this article were for the purposes of knowledge exchange and engagement; as such, research ethics approval is not required.

Consent for publication statement

Not applicable to this article

Conflicts of interest statement

The authors declare no conflicts of interest. All efforts to sufficiently anonymise the authors during peer review of this article have been made. The authors declare no further conflicts with this article.

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