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The Language Scholar is an open access and peer-reviewed journal. Its main objective is to provide a platform to promote the scholarship of learning and teaching languages.

Contributions are welcome from practitioners, researchers and students who are involved in language education. Areas of particular interest to this Journal are theories and practices for language teaching and education, including language teaching approaches and methodologies, intercultural communication, the psychology of language learning, research-led teaching, student-led practices, communicative strategies and experimental teaching.

The Language Scholar is hosted by the Centre for Excellence in Language Teaching within the School of Languages, Cultures and Societies at the University of Leeds. It considers international contributions in multimedia formats, in and about any language (including ancient languages). It aims to provide a space for the development of scholarship in language education, and to provide a platform for pieces which highlight the potential of multimodality to enhance communication, including a supportive and developmental approach to peer review.

Alongside the annual printed issue, the Language Scholar's digital space hosts and showcases contributions, facilitating the sharing and exchange of ideas. Submissions can be sent to the journal at any time, although there will be deadlines announced for specific printed issues.

If you would like to get in touch or submit a piece, you can contact us on the journal's email: **languagescholar@leeds.ac.uk** or **LinkedIn** https://www.linkedin.com/in/the-language-scholar-0360b436b

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Editorial

Geoffrey Nsanja

Welcome to Issue 16 of The Language Scholar.

The three papers in this issue address different aspects of English for Academic Purposes and higher education, yet all share a concern with participation: how students engage with academic study, what may prevent that engagement, and what practitioners can do to create more inclusive opportunities for learning. Each paper draws attention to dimensions of learning that often remain invisible, encouraging practitioners to look beyond observable performance and consider the linguistic, cognitive and affective factors that shape academic engagement.

As universities continue to navigate significant change, the centrality of language in pedagogy and scholarship remains unabated. The papers collected here remind us that, while GenAI and its associated LLMs are increasingly becoming a critical factor in higher education (cf., Jiang and Hyland, 2026), it is important not to lose sight of students themselves and the diverse ways in which they experience learning. In this sense, the contributions in this issue offer an opportunity to re-examine participation, communication and inclusion within higher education, while continuing the project of making different facets of language visible in the academy (Bond, 2020).

In the first paper, Renata Lebioda-Green reflects on how EAP practitioners can meaningfully work with neurodivergent students particularly those who have Attention Deficit and Hyperactivity Disorder (ADHD). She also offers an analysis of how such neurodivergence impacts student engagement with academic literacies before offering practical tips practitioners could employ to help this cohort of students make the most of their academic pursuits. In similar vein, Charles Marshall's paper presents a detailed analysis of how ADHD affects the listening ability and/or competencies of students. In highlighting the uniqueness and/or individuality of students, Marshall poignantly observes that there is a need for academia, not just EAP or language scholars, to readjust "our practices with divergent listeners as learners in mind". Such a call elucidates how intertwined language is with all academic practices and how academia could also benefit from language practitioner's pedagogic perspectives. In the final paper, Helen Butt draws on available corpora to highlight the pragmatic aspects that make for a successful turn-taking and holding the floor in spoken interaction further buttressing the need for EAP practitioners to bear in mind that "turn-taking involves speaking and listening" if students are to excel at pragmatic competence.

Collectively, the papers highlight the importance of developing more inclusive understandings of academic participation. They are a timely reminder of the need to rehumanise language pedagogy by refocusing our attention to the embodied nature of our students; an embodiment that "invites identification and empathic connection" (Pelias, 2004). In doing so, the papers reflect *The Language Scholar's* continuing

commitment to scholarship grounded in humility, care, curiosity and inclusiveness (Ding et al., 2018). We hope that such focus will spur our readers to embrace these qualities not just in their scholarship but in their pedagogy as well.

Geoffrey Nsanja

Jean Godfrey

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References

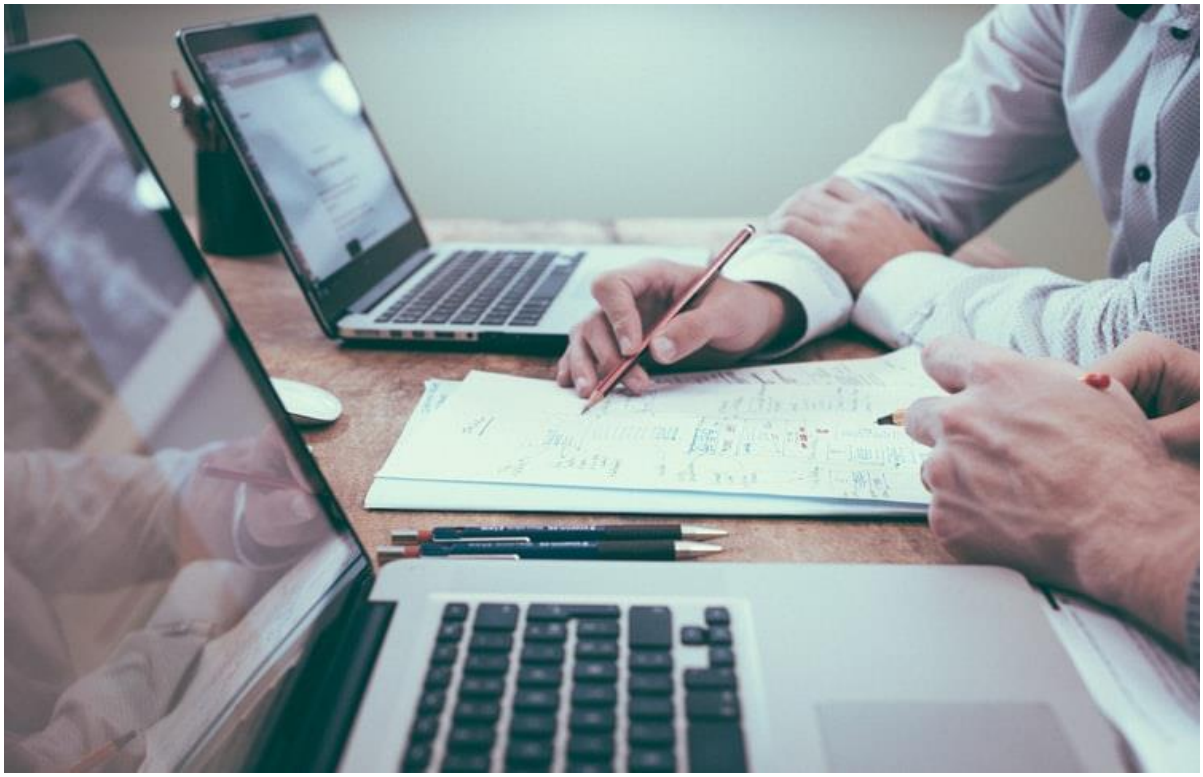
Bond, B. 2020. *Making language visible in the university: English for academic purposes and internationalisation*. Bristol: Multilingual Matters.

Ding, A., Bodin-Galvez, J., Bond, B., Morimoto, K., Ragni, V., Rust, N. and Soliman, R. 2018. A manifesto for the scholarship of language teaching and learning. *Language Scholar*. [Available at: https://languagescholar.leeds.ac.uk/manifesto-for-the-scholarship-of-language-teaching-and-learning/]

Jiang, F. K. and Hyland, K. 2026. EAP in a changing world: Towards a new research agenda. *Journal of English for Academic Purposes*, **80**, Article 101647 [DOI: https://doi.org/10.1016/j.jeap.2026.101647]

Pelias, R. J. 2004. *A methodology of the heart: Evoking academic and everyday life*. New York: Altamira Press.

Papers



Supporting university students with ADHD with academic literacies.

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ABSTRACT

This paper is a practitioner reflection written for EAP teachers working with students with Attention Deficit Hyperactivity Disorder (ADHD). The paper does three things: (1) it provides some insight into the nature of ADHD, considering both 'deficit' models which present the condition as a disorder, and neurodiversity models which see both challenges and strengths vis-à-vis neuronormativity; (2) it considers some of the difficulties ADHD students may face in their academic studies, specifically to do with reading, writing, time management and responding to feedback, and some of the strengths they may bring to their studies; and (3) it offers some practical suggestions for ways in which EAP teachers can help students with ADHD both meet these challenges and capitalise on their strengths. It provides links to some online resources.

KEYWORDS: neurodiversity, neuronormativity, Attention Deficit Hyperactivity Disorder (ADHD), rejection sensitivity dysphoria

INTRODUCTION

My interest in students with Attention Deficit Hyperactivity Disorder (ADHD) was sparked by an EAP class I taught in 2023. The class included one student who had a declared diagnosis of ADHD but also five others who exhibited similar struggles and traits. In a class of fifteen this was a sufficiently large sub-group to have a significant impact on classroom dynamics, and I found it a very challenging class to teach. The six students were frequently inattentive, struggled to stay on task and were sometimes disruptive in their interactions with me and other students. The student with declared ADHD could also be emotionally volatile and would get very upset by critical feedback of any kind. However, as I got to know the students better, I also found that when we hit on an activity or topic that actually engaged their interests, they could be very attentive indeed and work with a very high degree of focus and purpose. I also discovered that they could be unusually creative in solving problems and were eager to explain to others their 'out-of-the-box' approaches.

This experience prompted me to explore the literature on ADHD looking for insights and practical ways of supporting students with ADHD. Unfortunately, although there is an extensive literature on ADHD in the clinical and Special Educational Needs literatures (see below), very little attention has been paid to ADHD in the EAP and academic literacies literature. One notable exception, and to date the only paper I have found looking specifically at ADHD students from an EAP perspective, is Marshall (2025), which examines some of the difficulties ADHD students may have with listening to lectures as a result of neurodivergent perceptions of time. This valuable paper offers both insight into difficulties, suggestions for EAP responses, and thoughtful caveats.

In this paper, I would like to offer some practical guidance to EAP teachers working with ADHD students, based on my own experience. I shall do three things. The first is to provide some insight into the nature of ADHD, considering both 'deficit' models which present the condition as a disorder, and neurodiversity models which see both challenges and strengths vis-à-vis neuronormativity. The second, drawing on both the medical literature and the EAP/academic literacies literature is to consider some of the difficulties ADHD students may face in their academic studies, specifically to do with reading, writing, time management and responding to feedback, and some of the strengths they may bring to their studies. Unfortunately, EAP theorists have paid little attention to ADHD. Finally, drawing on what there is in the EAP literature but chiefly on my own experience, I shall try to offer some practical suggestions for ways in which EAP teachers can help students with ADHD both meet these challenges and capitalise on their strengths, including links to relevant online resources.

WHAT IS ADHD?

Attention Deficit Hyperactivity Disorder (ADHD) is typically defined in the medical literature as a neurodevelopmental disorder that begins in childhood, frequently persisting into adulthood, and which typically manifests itself in inattention, hyperactivity, and impulsivity (see for example, Faraone et al., 2006, Peterson and Pennington, 2015).

Brown (2013) reports that difficulties with executive function and self-regulation seem to characterise most people with ADHD. Sedgwick (2017) describes three main types of ADHD presentation: predominantly inattentive presentation, predominantly hyperactive/impulsive presentation, and combined presentation. Magnus et al. (2023) report that the inattentive subtype is observed in approximately 18 % of adults with ADHD, while the hyperactive/impulsive and combined subtypes account for over 8 % and 70%, respectively. According to Sedgwick (2017), these represent particular configurations of specific characteristics. Inattentive presentation would be displayed

through quickly losing focus on a task, shifting attention, absent-mindedness, easily getting distracted by low-priority activities, spontaneous mind-wandering, "zoning out" or daydreaming, overlooking details, disorganisation and forgetfulness, leading to poor time-management, forgetting commitments, or missing deadlines. Hyperactive/impulsive presentation would be shown through restlessness, being fidgety, feeling agitated, always being "on the go" as if driven by a motor, talking excessively, having trouble sitting still, interrupting others or talking over them, or saying things without thinking.

Other reported challenges may include emotional volatility, for example regularly feeling irritable and/or unable to cope, being short-tempered, being easily flustered and/or stressed, being hypersensitive to criticism, procrastination (a general tendency to put tasks off), experiencing burn-out and easily getting bored when the novelty of an activity has worn off. ADHD and dyslexia are also commonly diagnosed together (Peterson and Pennington, 2015), as are depression, anxiety or learning difficulties (DuPaul et al., 2013). On the positive side, Sedgwick (2017) lists having lots of energy and having hyper-focus – an unusual degree of attention – when a subject or task is genuinely absorbing.

The studies above all characterise people with ADHD as suffering from a (potentially treatable and remediable) *disorder*. The clue, of course, is in the name. Although I am in no way questioning the robustness of the research in these studies nor the potential benefits of medical treatment for people with ADHD, I do have to question the characterisation of people with ADHD as being purely in deficit; as lacking something that 'normal people' have. In doing so, I would draw attention to the concept of neurodiversity that has figured prominently in recent discussions of equity, diversity and inclusion in higher education (Bertilsdotter et al., 2020). Put simply, this view, argues that people think, process information and communicate in different ways (Walker 2014, 2021) and do so in ways that may give them cognitive *advantages* as well as presenting them with cognitive challenges.

Dodson (2024) has applied the concept of neurodivergence to ADHD and argues that the best characterisation of ADHD is as 'an interest-based nervous system'. This means that along with the inattention and fidgetiness when bored, students with ADHD may show unusual *hyperfocus*, related to heightened motivation during interesting, rewarding or novel activities. This hyperfocus provides an intense concentration on tasks which can result in both deeper learning and higher productivity. Students may acquire new skills very quickly, often producing work exceeding expectations, when channelling energy into projects or topics they are passionate about. This highlights that ADHD entails strengths as well as challenges.

ADHD STUDENTS IN THE UNIVERSITY

Quite how common ADHD is amongst university students in the UK is unclear. Worldwide estimates for incidence in academia are as high as 16% (Mak et al., 2022). I have been unable to locate figures for incidence in the UK, but I note that Sedgwick- Müller (2022) estimated that 27% of students at that time had declared a mental health disability of some kind, before or during their programme of studies in the UK.

Unsurprisingly, research suggests strongly that symptoms associated with ADHD lead to lower academic performance, particularly in students presenting with inattention (Barkley et al., 1997; Barkley et al., 2008; Sedgwick-Müller et al., 2022). MacCann et al. (2012) point to problems with time management, study skills and learning effectiveness. Wunsch et al. (2021) note problems managing academic stress and pressure. DuPaul et al. (2020) report lower use of study skills and lower levels of academic self-efficacy. Procrastination appears to be closely associated with adverse consequences and outcomes in university settings because of impaired capacity to meet deadlines (Howell and Watson, 2007; Niermann and Scheres, 2014) and maladaptive coping strategies, poor self-regulation, or avoidance (van Eerde and Klingsieck, 2018). Knouse et al. (2013) note it may be associated with negative self-schemata and low self-esteem. As many students with ADHD find it challenging to concentrate, manage, and organize their studies they may be more susceptible to the development of burnout syndrome. Porto, et al. (2024) report correlations between ADHD symptoms and burnout, emotional exhaustion, leading to negative academic outcomes at university. Additionally, Smith et al. (2020) argue that students with ADHD may show significantly lower levels of both intrinsic and extrinsic academic motivation, as compared to their peers. There also seems to be differences in performance between male and female students with ADHD. Morris et al. (2023) indicate that female students perform better than male. It is unclear why this might be, though possibly having better coping strategies and accessing support services more often than their male colleagues, might help female students.

However, although students with ADHD cope with the challenges of an interest-based nervous system, and exhibit the behaviours noted above, they may also bring an unusual creativity, hyperfocus, curiosity and flexibility, *when their interest is engaged* (Panagiotidi et al., 2020; Dawson et al., 2022). Margot and Rinn (2016), for example, report on the 'intellectual overexcitability' of students with ADHD which can be seen in a deep need for knowledge and may be shown by persistently asking questions or offering critical observation. Other research has focused on the value of divergent, as opposed to convergent thinking (Torrance, 1987; White and Shah, 2006). While

convergent thinking, for example, the narrowing down of solutions and ideas by discarding inappropriate ones is necessary, divergent thinking is critical for solving novel problems. As many university students with ADHD exhibit higher levels of creative and divergent thinking, e.g. alternative uses and unique ideas, or strategies (White and Shah, 2006; Verheul et al, 2015), they may be better at thinking 'out of the box' and finding novel solutions to problems.

ACADEMIC LITERACY CHALLENGES FOR ADHD STUDENTS AND STRATEGIES FOR SUPPORT

The term academic literacy has developed over the last thirty years from a narrow concern with reading and writing at university (see e.g. Spack, 1997) to a conception that sees literacy practices as multi-modal and interwoven. Green (2023) describes academic literacies as 'situated, multimodal communicative practices that students must master in order to construct and share disciplinary knowledge and to participate as legitimate members of their academic communities' (2023, p.168). This view of academic literacy interweaves traditionally conceived communicative practices such as writing with 'soft skills' such as time-management and the ability to take and make use of feedback.

Working within this framework, in what follows in the rest of this section, I am going to focus on a limited number of academic literacy practices to identify problems ADHD students may have and to suggest some solutions.

ADHD students and potential difficulties with reading

Reading efficiently and fluently, among other factors, is linked to processing speed (Rucklidge and Tannock, 2002; Willcutt et al., 2005, Wolf and Katzir-Cohen, 2001). Decoding text needs to be effortless so attention can be easily given to comprehension of the reading material. When reading becomes more automatized, less mental effort is needed for ongoing decoding and the reader can focus on meaning. Unfortunately, according to Gregg et al. (2002) and others, many adults with ADHD demonstrate problems with processing and motor speed. Gregg et al. (2002) argue further that the reading performance of university students with ADHD appears to be influenced significantly by cognitive factors such as attention and executive functioning. Many students with ADHD report that they struggle with comprehension of long passages in academic texts because of a lack of sustained attention (Kofler et al., 2020). This could be because their reduced attentional resources may impair forming text connections so that central information may not emerge in their text representation to the same degree that it does in other students. Other challenges may be related to skipping some parts of the text. For example, Zentall (1993) reports that some students with ADHD skipped a fourth of the reading material when they read silently to themselves in a quiet

environment. Other, often self-reported problems students may experience are having difficulties with scanning and skimming information rapidly, struggling with sustaining focus while reading and potentially reading slower. Having problems with retaining information that was read earlier and being easily 'derailed' by external distractions were commonly reported, too.

There are many techniques which can help students with ADHD overcome reading challenges. To improve focus and prevent skipping parts of the text, students should be encouraged to read printed materials whenever possible. Using pens or highlighters to annotate or track words on paper can aid in organizing information and enhancing recall. Some of my students who tried to utilise paper materials reported that it helped them with concentration and engagement. However, since most academic material is online and students often read from screens, they could be advised to follow the text with their finger or computer mouse. Many students in my class who seemed initially reluctant to try this out reported that it was beneficial with regard to focus and engagement.

Students should also be taught active reading strategies, which involve engaging with and interrogating the text regularly. Reading aloud, quizzing themselves on sections before moving forward, and working with a partner, if possible, can make the material more engaging and memorable. Re-reading specific parts to encode information in greater detail may further aid retention. From my experience, when neurodivergent students with ADHD find texts particularly interesting, they are highly motivated to research the topic extensively and they can approach texts from different perspectives and quiz other students on texts showing them potential issues they might have missed.

One particularly useful technique is the Pomodoro method (Cirillo, 2025) which is usually beneficial for improving reading and writing focus. The method uses focused bursts of work combined with regular breaks every 25 minutes to keep the brain fresh and motivated. It allows for rest and helps to reset focus. Both students with ADHD and neurotypical earners reported that they had used this technique for self- study successfully.

Since many students with ADHD struggle with summarizing academic papers, they should be guided to read the title and abstract first, referring to the introduction or conclusion if further detail is needed. Additionally, checking papers that cite the original work and summarizing them can be helpful. Encouraging students to identify the specific question a study addresses often makes the content more engaging and fosters a clearer understanding of its purpose. Although these techniques are commonly taught to mainstream students in English for Academic Purposes (EAP) courses, they are particularly beneficial for students with ADHD.

Using 'bionic reading' (introduced by Casutt, 2026) has shown promising results in improving reading speed and comprehension among students with ADHD, especially those with short attention span (Ghelani et al., 2004). Bionic reading is a type of reading technology which utilises bold font for parts of each word, so the term above would be written as **bio**nic **read**ing. This use of bold font guides the eyes of the reader through artificial fixation points making the brain 'skip' parts of each word, ensuring that the brain fills in the rest of the text. This can be explained by the fact that the brain processes words faster than the eyes can read individual letters. Focusing on fewer letters at a time allows the reader to process text faster while still grasping the full meaning. Some of my students reported that using bionic reading had changed their attitude to reading and they felt much more positive about reading and understanding longer texts. My students commented that this helped them read faster, understand more and remember more. However, this technique may only be applicable to reading online. My classroom observation also showed that it may not be beneficial for all text types, for example more complex or nuanced text which require deeper analyses. It is possible to access the bionic reading software online for free.

There are a number of other apps that can be used for increasing reading speed in ADHD students. Hecker et al. (2002) reports four main benefits that using apps may bring students with ADHD. Using apps may help with comprehension of texts, increase students' engagement, improve their focus and hence concentration and help increase reading speed. Technologies like text-to-speech (TTS) software can help readers better understand complex material by allowing them to hear the text read aloud. TTS converts the text into audio with a click of a button or the touch of a finger. This tool especially benefits auditory learners or those with specific reading difficulties like dyslexia which is common in some ADHD students. With regard to increasing engagement, interactive e-books and reading apps often incorporate multimedia elements such as sound effects, animations, and video clips, which can capture readers' attention and make reading more immersive.

For some, assistive technology can help increase reading speed. For instance, individuals who use text-to-speech software often report that, over time, they can understand content at faster speech rates. Such assistive technologies may support working memory, reduce cognitive load and motor demand, isolate thought generation from transcription, reduce orthographic integration demands, reduce demand on encoding (e.g. unnecessary focus on spelling). Further, they can support slow processing speed which lowers cognitive demand placed on working memory in students with ADHD. Some examples of such apps would be speech-to-text software like VoiceNote II or ClaroRead, Read&Write, which supports both reading and writing, Speeder, which helps to increase reading speed and Spreed which is similar to Speeder (see the links to apps in the appendix).

ADHD students and potential difficulties with writing

Written expression has been identified as a particular challenge for students with ADHD (Gregg et al., 2002) due to impairments in working memory and attention (Wagner and Smith, 2003). However, there is very little research on writing difficulties among university students with ADHD.

Research on writing indicates that working memory plays a crucial role as writers must retrieve information from memory while maintaining multiple ideas simultaneously (Berninger, 1999). Working memory also supports planning, executing the writing process, and evaluating the final product (Zimmerman and Risenberg, 1997). These processes are closely linked to self-regulation and attention control (Graham and Perrin, 2007). Since students with ADHD often experience difficulties with working memory and attention (Wagner and Smith, 2003), academic writing can be particularly cognitively demanding.

Even beginning to write has been reported as challenging by students with ADHD. This may be due to difficulties with executive functioning, which can lead to problems with initiating tasks. Additionally, limitations in working memory may contribute to difficulties with holding onto main ideas and supporting details, making it challenging to start writing. Further, some students report feeling pressured to write 'perfectly' which may lead to avoidance of writing altogether. Maintaining focus is also a frequent challenge; many students report thinking of multiple ideas or 'jump' from idea to idea' at the same time which is confusing when trying to begin writing in an organised way.

Regarding the writing itself, both the quality of writing and the processes involved (e.g., planning and editing) have been identified as particular challenges for students with ADHD. These aspects appear more difficult than writing productivity or meta-cognitive knowledge of writing. Research indicates that students with ADHD consistently allocate significantly less time to planning their writing and significantly less time to planning, re-reading and correcting their work compared to control groups (Rodriguez et al., 2017).

Rodriguez et al. (2017) compared the percentage of time students reported spent on engagement in specific writing activities. The results show that students with ADHD spent only 10% of time reading and unpacking the title of the assignment in comparison to 18% of time reported by students without ADHD. Further, students with ADHD were shown to spend only 23% of time rereading their assignment in comparison to 46% students without ADHD who report spending 46% time on the same activity. Finally, making changes to text after rereading it took students with ADHD 26% of

allotted time while their peers spent 40% of allotted time. These results seem significant so it is vital to address these potential problems with writing in the classroom.

There are a number of techniques that can benefit students with ADHD overcome writing challenges. To produce more complex text and ensure that all parts of the assignment question are addressed, students should spend more time reading and unpacking the assignment brief. I observed a huge difference in students' confidence when a substantial part of the lesson was devoted to analysing the assignment brief. Students would ask questions more often and appeared less self-conscious asking these questions. At the same time, I observed that monitoring students' closely when they discussed their understandings of the topic of the assessment later on in groups was essential to ensure that all learners fully understand the task at hand. One helpful strategy is prioritising the outlining of key points, as this may reduce working memory demands. By freeing up cognitive resources in this way, students will be able to write in greater depth and, as a result, more effectively (Dehn, 2008; Meltzer, 2018).

Encouraging students to allow their ideas to flow while writing is also very beneficial. This may be useful as from my observation in and outside class many students with ADHD delay starting writing because they are not sure how to start and organise it. They should be advised to set aside time for revising their ideas and editing their work later as writers with ADHD tend to find themselves caught in a cycle of trying to perfect a single sentence before moving on, which can be debilitating. To overcome this challenge, students should be encouraged to draft their ideas with the understanding that many sentences will be rewritten later in the process. Additionally, students should be asked to annotate and underline problematic sentences or paragraphs in their drafts. This practice ensures that they have clear samples for redrafting, helping them to refine their work more effectively. Finally, sufficient time should be allowed for editing and fine-tuning the text, ensuring that their final piece is well-structured and polished.

Writing apps can offer numerous benefits for students with ADHD as they can help them navigate challenges related to focus and organisation of text. Additionally, these apps can enhance organisation by providing tools for notetaking, outlining, and task management, allowing students to structure their ideas and track their assignments more efficiently. Furthermore, they may facilitate the revision process by allowing students to annotate, edit, and refine their drafts with ease, ensuring that they produce well-structured and polished final pieces.

To help students to begin to write and further develop their writing skills, word completion tools can be very useful. One example is Dicom Portable 1.1.1**.**, which helps users type words with fewer keystrokes. Another valuable tool for students who struggle to organize their thoughts into written words is Inspiration, a graphic organizer. It supports mind mapping, concept mapping and outlining. It can be especially beneficial not only for students with ADHD but also for those with autism, dyslexia, or aphasia. Additionally, MindNode offers a visual approach to brainstorming. Writers begin by placing their initial idea at the centre, then expand on it by adding new ideas, color-coding them, and drawing connecting lines. The tool also allows conversion of mind maps into Microsoft Word documents or image files (see the links to apps in the appendix).

Another useful technique is ‘body doubling’. This technique entails completing a task in the company of someone else who is also completing the task. Having a body double may help with anxiety, provides accountability and may improve focus (Yean, 2023). There is very little research on how it helps combat ADHD and improve motivation but there are some scientific explanations; for example, social facilitation theory, mirror neurons theory, polyvagal theory, and the Hawthorne effect (Krach et al., 2010, Heyes and Catmur, 2021; Porges, 2022). Social facilitation theory posits that the presence of others enhances performance of well-learned or simple tasks. Mirror neuron theory suggests that seeing somebody else who is focused and productive triggers the same state in our brain and facilitates ‘observational learning’. So, when we observe ‘a body double’ writing or reading for example, mirror neurons stimulate that state of concentration. Neurodivergent students who may struggle with internal regulation may ‘borrow’ the executive function and ‘calm energy’ of their partner. According to polyvagal theory, when students with ADHD engage in body doubling, they experience calming effect. This is due to a change from a state of hyperarousal to a state of calm engagement and this shift facilitates enhanced focus and productivity. The Hawthorne effect refers to the phenomenon in which people modify their behaviour when they know they are being observed, often resulting in increased productivity. However, it is important to note that no power dynamic should be introduced when neurodivergent students engage in body doubling as some students experience rejection sensitivity dysphoria (see section 3.3 below).Therefore, working only with peers may help create a supportive, non-judgmental environment which in turn, fosters a sense of ‘ we are in this together’ and encourage collaboration without fear of criticism. Apart from physical body doubling, there are virtual sessions for body doubling. The following apps can facilitate body doubling online: Caveday, Flown and Focusmate. Some of my students found these apps very beneficial as they allow flexibility with finding a partner and some anonymity.

Potential problems with receiving feedback

As reported above, ADHD is associated with a lack of self-regulation (Shiels and Hawk, 2010) hence students with ADHD may find processing critical feedback particularly difficult due to rejection sensitivity dysphoria (Bedrossian, 2021). 'Dysphoria' is the Greek word meaning *unbearable* and emphasizes the severe physical and emotional pain. Rejection sensitivity dysphoria makes a person expect, perceive, and react intensely to rejection which can be real or perceived (Reimherr et al., 2020).

Providing timely and frequent feedback on students' academic performance is essential and feedback should be specific, constructive, and focused on students' efforts rather than solely on the outcome (Braude and Dwarika, 2020). To enhance its effectiveness, it is advisable to use inclusive language when addressing areas for improvement. For instance, saying "we have to work on…" instead of "you have to work on…" has been found to be beneficial when supporting students with ADHD. Research suggests that the use of "you" can correlate with distress and self-focus (Rude et al., 2004), making an inclusive approach more effective.

Additionally, it is important to ask students how they feel about the feedback they receive. Encouraging open discussions allows them to express their emotions, consider potential solutions, and explore outcomes. According to Rude et al. (2011), this process can facilitate the resolution of negative feelings and enhance sensitivity, fostering a more productive and supportive learning environment.

Potential problems with time perception

The challenges regarding differences in the perception of time in children with ADHD have been widely researched. In recent years, these difficulties have also been studied in adults (Coghlan, 2009; Antshel et al., 2014 and Mette, 2023, Marshall, 2025) who report problems with time perception and time management. Recent research in students with ADHD confirmed these findings (Ptacek et al., 2019). Time management can be defined as behaviour that uses time effectively and economically in specific activities and hence is closely related to academic success. Conversely, time managed ineffectively can lead to stress in university students with ADHD (Claessens et al., 2007).

'Time blindness' or 'temporal myopia', terms coined by Barkley (1997) manifest itself in inability to perceive and tract time. This may often result in underestimating or overestimating the amount of time needed for specific tasks, experiencing trouble focusing on long-term goals or procrastinating

(as mentioned earlier). Understanding time blindness can help students with ADHD develop strategies to navigate their academic and daily lives more effectively.

To help students with ADHD manage their time effectively, several strategies can be beneficial. Since repetitive and boring tasks tend to feel much slower for individuals with ADHD, offering specific rewards or encouraging students to reward themselves upon completion can help maintain motivation.

Frequent reminders about deadlines are also essential, as breaking assignments into manageable chunks and providing regular prompts can prevent students from feeling overwhelmed. Additionally, registering with disability services at university and accessing accommodations, such as additional time for coursework or examinations, can support students' academic success. Using timers is another practical strategy which can help track their work sessions and maintain focus. Furthermore, relying on a friend for support can be useful, as they can provide timely prompts when a student needs to transition between tasks, enhancing overall time awareness and productivity. Effective time management is crucial for students, especially those who struggle with maintaining focus and prioritizing tasks.

Utilizing time management apps can significantly enhance productivity and organization. One useful tool is Microsoft To-Do, which allows students to create task lists, set reminders, and track their progress. Another valuable tool is Priority Matrix, a task management system designed to help users identify and prioritize tasks efficiently. It categorizes tasks into four quadrants: those to complete first, those to delegate, those to delay, and those to delete, making decision-making much more structured. Additionally, Time Boxing is a technique that helps students divide their day into dedicated time blocks, ensuring that each period is assigned to a specific task or activity. This method minimizes distractions and encourages focused work.

Beyond time management, students can benefit from apps designed to assist with managing assignments. The ASK Assignment Calculator helps students create a personalized schedule based on their start and submission dates, making assignment planning more systematic. For those struggling with online distractions, StayFocusd allows users to block or limit access to distracting websites, ensuring better concentration during study sessions. Similarly, Strict Workflow employs the Pomodoro technique, which encourages students to work in 25-minute bursts while restricting access to distractions (see the links to apps in the appendix).

CAPITALISING ON STRENGTHS STUDENTS WITH ADHD DEMONSTRATE

As mentioned in Section 1, ADHD students may show an unusual creativity, hyperfocus, curiosity and flexibility, *when fully engaged*. So one way of capitalising on this is to design lessons, materials and tasks that offer students the possibility of pursuing the things they find interesting, while minimising the time they have to spend on activities that do not engage them. There is actually nothing very new in this idea. Learner-centred curricula in education have been advocated for decades (e.g. Nunan, 1988); it is simply that the needs of neurodivergent students have made their importance clearer than ever.

Practical examples of this approach would include giving students greater control over lesson topics either through offering choices or by seeking nominations and giving students greater control over the tasks they carry out and how they do them, again by offering options or by ceding control over aspects of tasks to the students. Learner-directed reading or listening activities, where students are prompted to decide what they want to find out by reading or listening to a text and then scaffolded to find the information, are a relatively easy alternative to textbook-prescribed comprehension questions. One such activity that I have done involves texts with accompanying (and interesting) pictures. I start off by giving the students the pictures and getting them to speculate about them and to pose questions they think might be answered by the accompanying text. These questions then become the focus of the students' reading. Some years ago, White (2006) speculated about the EFL listening class and the possibility of handing over a lot of the control to the students (including control over the playback equipment) and these are also options for giving students a greater sense of control and choice. I would argue that this might benefit many neurotypical students but I am sure it would encourage engagement from ADHD students.

Assessments can also be designed with such learner choice in mind. Flexible assessments methods such as projects or portfolios, which offer learners choices and the chance to follow their interests may help students with ADHD to sustain their engagement.

As also mentioned earlier, many students with ADHD show high levels of creative and divergent thinking, for example developing alternative or unique ideas, thinking 'outside of the box' and so often arriving at novel solutions to problems. Therefore, one way of capitalising on this is to build lessons around problems to be solved and to give students the chance to think 'out of the box'.

Finally, I have mentioned above the hyper-sensitivity to criticism students with ADHD may have so one thing that I have found that really helps such students capitalise on their strengths is to acknowledge and celebrate their achievements and to be fulsome in my praise.

CONCLUDING REMARKS

In this paper, I have tried to offer some insight into the nature of ADHD, to indicate some of the academic literacy challenges students with ADHD may face and finally, drawing largely on my own practical experience, to suggest practical ways in which EAP teachers can both help students meet the challenges they face and capitalise on the advantages of an interest-based nervous system. I have tried to show that although students with ADHD may both face and pose challenges for their teachers, their interest-based nervous system may enable them to turn a deficit into a plus, and if scaffolded in the right way, to produce very high-calibre work. The suggestions I have made concerning activities and tools for supporting students with ADHD have worked for me and the students with whom I have worked, but they may not suit everybody or every EAP classroom. I would hope though that the suggestions might be a starting point for teachers to work from and to build their own repertoires of techniques.

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REFERENCES

Antshel, K.M., Hier, B.O. and Barkley, R.A., 2014. Executive functioning theory and ADHD. In: Goldstein, S. and Naglieri, J. eds. *Handbook of Executive Functioning*. Springer: New York, pp.107–120.

Barkley, R.A., 1997. Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin*. [Online]. **121**, pp.65–94. [Accessed 12 May 2025]. Available from: https://doi.org/10.1037/0033-2909.121.1.65

Barkley, R.A., Murphy, K.R. and Fischer, M., 2008. *ADHD in adults: What the science says*. New York: Guilford.

Bedrosian. L. 2021. Understand and address complexities of rejection sensitive dysphoria in students with ADHD. *Disability Compliance Higher Education*. [Online]. **26**(4), pp.4-8. [Accessed 20 May 2025]. Available from: https://doi.org/10.1002/dhe.31047

Berninger, V. W. 1999. Coordinating transcription and text generation in working memory during composing: Automatic and constructive processes. *Learning Disability Quarterly.* [Online] ***22***(2), pp. 99–112. [Accessed 26 May 2024]. Available from: https://doi.org/10.2307/1511269

Bertilsdotter R.H., Chown, N. and Stenning, A. eds. 2020. *Neurodiversity studies: A new critical paradigm.* Abingdon: Routledge, pp. 91–107. [Online].[Accessed 20 May 2024]. Available from: https://doi.org/10.4324/9780429322297-10

Braude, S. and Dwarika, V. 2020. Teachers' experiences of supporting learners with attention-deficit hyperactivity disorder: Lessons for professional development of teachers. *South African Journal of Childhood Education*, **10**(1), pp.1-10.

Brown, T. 2013. *A new understanding of ADHD in children and adults: Executive function impairments.* New York: Routledge.

Casutt, R. 2026. *Bionic reading.* [Online]. [Accessed 10-1-2026]. Available from: https://bionic-reading.com/br-about

Claessens, B.J., van Eerde, W., Rutte, C.G. and Roe, R.A. 2007. A review of the time management literature. *Personnel Review*, **36**, pp. 255–276.

Coghlan, A. 2009. Time perception at root of hyperactivity disorder. *New Scientist*, **202** (12711), p.12

Cirillo, F. 2025. Pomodoro Technique. [Online]. [Accessed 02.02.2024] Available from: https://www.pomodorotechnique.com/

Dodson, W. *How ADHD shapes your perceptions, emotions & motivation.* 2024. [Presentation]. [Accessed: 5 June 2024]. Available from: https://adhd.dk/wp-content/uploads/sites/2/2022/05/

Dawson G., Franz L. and Brandsen S. 2022. At a crossroads-reconsidering the goals of autism early behavioral intervention From a neurodiversity perspective. *JAMA Paediatrics*. **176**(9), pp. 839–840.

Dehn, M. 2008. *Working memory and academic learning: assessment and intervention*. Hoboken, N.J.: John Wiley & Sons.

DuPaul, G.J., Gormley, M. J. and Laracy, S. D. 2013. Comorbidity of LD and ADHD: Implications of DSM-5 for Assessment and Treatment. *Journal of Learning Disabilities*. [Online]. **46**(1), pp. 43-51. [Accessed 12 April 2025]. Available from: https://doi.org/10.1177/0022219412464351

DuPaul, G.J., Evans, S.W., Mautone, J.A., Owens, J.S. & Power, T.J. 2020. *Future directions for psychosocial interventions for children and adolescents with ADHD*. Journal of Clinical Child & Adolescent Psychology. **49**(1), pp. 134–145. [Accessed 14 April 2025]. Available from: https://doi.org/10.1080/15374416.2019.1689825

Faraone, S. V., Biederman, J. and Mick, E. 2006. The age-dependent decline of attention deficit hyperactivity disorder: A meta-analysis of follow-up studies. *Psychological Medicine.* **36**(2), pp. 159–165

Ghelani, K., Sidhu, R., Jain, U. and Tannock, R. 2004. Reading comprehension and reading related abilities in adolescents with reading disabilities and attention-deficit/hyperactivity disorder. *Dyslexia*. **10**(4), pp. 364-384.

Guilfort, J. 1987. *Complexity of self: A developmental approach to psychopathology and therapy*. New York: The Guildford Press.

Graham, S. and Perrin, D. 2007. A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology*. **99**, pp.445-476.

Green, S. 2023. Re-thinking the scaffolding of academic literacies in EMI higher education on the Arabian Peninsula. In: Wyatt, M. and El Gamal, G. eds. *English as a medium of instruction on the Arabian Peninsula.* Abingdon: Routledge. pp. 168-184.

Gregg, K., Coleman, C. C., Stennett, R. R., Davis, M. M., Nielsen, K. K., Knight, D. D. and Hoy, C. C. 2002. Sublexical and lexical processing of young adults with learning disabilities and attention deficit: Hyperactivity disorder. In: Witruk, E., Friederici, A., Lachmann, T. eds. *Basic functions of language, reading and reading disability. Neuropsychology and Cognition*, vol 20. Springer, Boston, MA

Hecker, L., Burns, L., Elkind, J., Elkind, K. and Katz, L. 2002. Benefits of assistive reading software for students with attention disorders. *Bulletin of the Orton Society.* [Online]. **52**, pp. 243–272. [Accessed 12 May 2024]. Available from: https://doi.org/10.1007/s11881-002-0015-8

Heyes, C. and Catmur, C. 2021. What happened to mirror neurons? *Perspectives on Psychological Science*. [Online]. **17**(1), pp.153–168. [Accessed 14 March 2025]. Available from: https://doi.org/10.1177/1745691621990638

Howell, A. J. and Watson, D. C. 2007. Procrastination: Associations with achievement goal orientation and learning strategies. *Personality and Individual Differences*. [Online]. **43**(1), pp.167–178. [Accessed 10 May 2024]. Available from: https://doi.org/10.1016/j.paid.2006.11.017

Johnson, K., Poulton, A., Bowen, J., Dalton, B. and Maxwell, R. 2024. Evaluation of an ADHD study skills group for university students with ADHD. *European Neuropsychopharmacology*. **87**, pp.129–130.

Knouse, L. E., Zvorsky, I. and Safren, S. A. 2013. Depression in adults with attention-deficit/hyperactivity disorder (ADHD): The mediating role of cognitive-behavioral factors. *Cognitive Therapy and Research*. [Online]. **37**(6), pp.1220–1232. [Accessed 10 May 2024]. Available from: https://doi.org/10.1007/s10608-013-9569-

Kofler, M.J., Singh L.J., Soto E.F., Chan E.S.M., Miller C.E., Harmon S.L. and Spiegel J.A. 2020. Working memory and short-term memory deficits in ADHD: A bifactor modelling approach. *Neuropsychology.* [Online]. **34**(6), pp. 686-698. [Accessed 18 January 2024]. Available from: https://doi.org/10.1037/neu0000641

Krach, S., Paulus, F., Bodden, M. and Kircher, T. 2010. The rewarding nature of social interactions. *Frontiers in Behavioural Neuroscience*. [Online]. **4**(22), pp. 1-3. [Accessed 14 March 2024]. Available from: https://doi.org/10.3389/fnbeh.2010.00022

MacCann, C., Fogarty, G. J. and Roberts, R. D. 2012. Strategies for success in education: Time management is more important for part-time than full-time community college students. *Learning and Individual Differences*. [Online]. **22**(5), pp. 618–623. [Accessed 1 May 2004]. Available from: https://doi.org/10.1016/j.lindif.2011.09.015

Magnus, W., Anilkumar, A., Shaban, K. 2023. Attention deficit hyperactivity disorder. In: *StatPearls* [Online]. Treasure Island (FL): StatPearls Publishing. [Accessed 20 May 2024]. Available from: https://pubmed.ncbi.nlm.nih.gov/28722868

Mak, A. D. P., Lee, S., Sampson, N. A., Albor, Y., Alonso, J., Auerbach, R. P., Baumeister, H., Benjet, C., Bruffaerts, R., Cuijpers, P., Ebert, D. D., Gutierrez-Garcia, R. A., Hasking, P., Lapsley, C., Lochner, C. and Kessler, R. C. 2022. ADHD comorbidity structure and impairment: Results of the WHO world mental health surveys international college student project (WMH-ICS). *Journal of Attention Disorders*. [Online]. **26**(8), pp. 1078-1096. [Accessed 20 June 2024]. Available from https://doi.org/10.1177/10870547211057275 .

Margot, K. C. and Rinn, A. N. 2016. Perfectionism in gifted adolescents: A replication and extension. *Journal of Advanced Academics.* [Online]. **27**(3), pp.190-209. [Accessed 10 May 2004]. Available from: https://doi.org/10.1177/1932202X16656452

Marshall, C. 2025. The ADHD learner, time perception, and the listening skill in EAP: decoding the temporal rules of auditory processing of phonological information to rethink practices for an inclusive classroom. *The Language Scholar.* [Early Online Publication]. [Accessed 6-2-2026]. Available from: https://languagescholar.leeds.ac.uk/Marshall, 2025, The ADHD learner and time perception in phonological processing

Meltzer, L. 2018. *Executive function in education: From theory to practice*. New York: Guilford Publications.

Mette, C. 2023. Time perception in adult ADHD: Findings from a decade – a review. *International Journal of Environmental Research and Public Health*. [Online]. **20**(4), pp. 3098- 3102. [Accessed 20 April 2024]. Available from: https://doi.org/10.3390/ijerph20043098

Morris, J., Buchanan, T., Arnold, J., Czerkawski, T. and Congram, B. 2023. The impact of gender, accommodations, and disability on the academic performance of Canadian university students with LD and/or ADHD. *Learning Disabilities Research & Practice*. [Online]. **38**(4), pp. 296-310. [Accessed 20 April 2024]. Available from: https://doi.org/10.1111/ldrp.12324

Niermann, H. C. and Scheres, A. 2014. The relation between procrastination and symptoms of attention-deficit hyperactivity disorder (ADHD) in undergraduate students. *International Journal of Methods in Psychiatric Research*, **23**(4), pp. 411–421.

Nugent, K. and Smart, W. 2014. Attention-deficit/hyperactivity disorder in postsecondary students. *Neuropsychiatric Disease and Treatment*. [Online] **10**, pp. 1781–1791. [Accessed 02 May 2024]. Available from: https://doi.org/10.2147/ndt.s64136.

Nunan, D. 1988. *The learner-centred curriculum*. Cambridge: Cambridge University Press.

Panagiotidi M, Overton P.G. and Stafford T. 2020. The relationship between sensory processing sensitivity and attention deficit hyperactivity disorder traits: A spectrum approach. *Psychiatry*. [Online] 293:113477. [Accessed 21 April 2025]. Available from: https://doi.org/10.1016/j.psychres.2020.113477

Peterson, R. and Pennington, B. 2015. Developmental dyslexia. *Annual Review of Clinical Psychology*. **11**, pp. 283-307

Porges, S. W. 2022. Polyvagal theory: A science of safety. *Frontiers in Integrative Neuroscience*. [Online]. **16**, pp. 1-9. [Accessed 12 February 2024]. Available from: https://doi.org/10.3389/fnint.2022.871227

Porto, T. I., Murgo, C. S. and Souza, A. P. 2024. Prevalence and correlations between ADHD and burnout dimensions in Brazilian university students. *Paidéia (Ribeirão Preto)*. [Online] **34**, p. 3413. [Accessed 12 April 2024]. Available from: https://doi.org/10.1590/1982-4327e341.

Prevatt, F., Smith, S. M., Diers, S., Marshall, D., Coleman, J., Valler, E. and Miller, N. 2017. ADHD coaching with college students: Exploring the processes involved in motivation and goal completion'. *Journal of College Student Psychotherapy*. [Online]. **31**(2), pp. 93–111. [Accessed 23 May 2024]. Available from: https://doi.org/10.1080/87568225.2016.1240597

Ptacek R.., Weissenberger S, Braaten E., Klicperova-Baker M., Goetz M., Raboch J., Vnukova M. and Stefano G.B. 2019. Clinical implications of the perception of time in attention deficit hyperactivity disorder (ADHD): A review. *Medical Scientific Monitor.* [Online]. **25**, pp. 3918-3924. [Accessed 10 April 2025]. Available from: doi: https://doi.org/10.12659/msm.

Reimherr, F. W., Roesler, M., Marchant, B. K., Gift T.E., Retz, W. Philipp-Wiegmann, F. and Reimherr, M.L. 2020. Types of adult attention deficit/hyperactivity disorder: A replication analysis. *Journal of Clinical Psychiatry. [Online].* **81**(2), pp.1-7**.** [Accessed 12 January 2025]. Available from: https://doi.org/10.4088/jcp.19m13077

Rodríguez, C., Torrance, M., Betts, L., Cerezo, R. and García, T. 2017. Effects of ADHD on writing composition product and process in school-age students. *Journal of Attention Disorders.* **24**(12), pp.1735-1745.

Rucklidge, J. and Tannock, R. 2002. Neuropsychological profiles of adolescents with ADHD: Effects of reading difficulties and gender. *Journal of Child Psychology and Psychiatry*. **43**, pp. 988–1003.

Rude, S. S., Gortner, E. M. and Pennebaker, J. W. 2004. Language use of depressed and depression-vulnerable college students. *Cognition and Emotion*. **18**, pp. 1121–1133.

Rude, S. S., Mazzetti, F. A., Pal, H. and Stauble, M. R. 2011. Social rejection: How best to think about it? *Cognitive Therapy and Research*. [Online]. **35**(3), pp. 209-216. [Accessed 02 June 2024]. Available from: doi: https://doi.org/10.1007/s10608-010-9296-0.

Sedgwick, J.A. 2017. University students with attention deficit hyperactivity disorder (ADHD): a literature review. *Irish Journal of Psychological Medicine*. [Online]. **35**(3), pp. 1-15 [Accessed 01 January 2024]. Available from: https://doi.org/10.4088/jcp.19m13077

Sedgwick-Müller J.A, Müller-Sedgwick U., Adamou M., Catani M., Champ R., Gudjónsson G., Hank D., Pitts M., Young S. and Asherson P. 2022. University students with attention deficit hyperactivity disorder (ADHD): a consensus statement from the UK Adult ADHD Network (UKAAN). *BMC Psychiatry*. [Online]. **22**(1) pp. 292-302. [Accessed 20 February 2024]. Available from: https://doi.org/10.1186/s12888-022-03898-z

Shiels, K. and Hawk, L. W., Jr. 2010. Self-regulation in ADHD: The role of error processing. *Clinical Psychology Review.* [Online]. **30**(8), pp. 951–96. [Accessed 12 June 2024]. Available from: https://doi.org/10.1016/j.cpr.2010.06.010

Smith, Z. R., Langberg, J. M., Cusick, C. N., Green, C. D. and Becker, S. P. 2020. Academic motivation deficits in adolescents with ADHD and associations with academic functioning. *Journal of Abnormal Child Psychology*. [Online]. **48**, pp. 237–249. [Accessed 12 May 2025]. Available from: https://doi.org/10.3389/fnbeh.2010.00022

Spack, R. 1997. The acquisition of academic literacy in a second language: A longitudinal case study. *Written Communication.* **14**(1), pp. 3-62.

Wager, T. D. and Smith, E. E. 2003. Neuroimaging studies of working memory. *Cognitive, Affective, & Behavioral Neuroscience*. **3**, pp. 255–274.

Walker, N. 2014 Neurodiversity: Some basic terms and definitions. *Neuroqueer: the writings of Dr Nick Walker.* [Accessed 15 January 2025]. Available from: https://neuroqueer.com/neurodiversity-terms-and-definitions

Walker, N. 2021. *Neuroqueer heresies: Notes on the neurodiversity paradigm, autistic empowerment, and postnormal possibilities*. Fort Worth, TX: Autonomous Press.

White, H. and Shah P. 2006. Uninhibited imaginations: Creativity in adults with attention-deficit/hyperactive disorder. *Personality and Individual Differences*. [Online]. **40**, pp. 1121-1131. [Accessed 20 May2025]. Available from: https://doi.org/10.1016/j.paid.2005.11.007

White, G. 2006. Teaching listening: time for a change in methodology. In: Uso-Juan, E. and Martinez-Flor, A. eds. *Current trends in the development and teaching of the four language skills.* Berlin/New York: De Gruyter Mouton, pp. 111-138. Available from: https://doi.org/10.1515/9783110197778.2.111

Willcutt, E. G., Pennington, B. F., Olson, R. K., Chhabildas, N. and Hulslander, J. 2005 Neuropsychological analyses of comorbidity between reading disability and attention deficit hyperactivity disorder: In search of the common deficit. *Developmental Neuropsychology*, **27**(1), pp. 35–78.

Wolf, M. and Katzir-Cohen, T. 2001. Reading fluency and its intervention. *Scientific Studies of Reading*. [Online]. **5**(3), pp. 211–239. [Accessed 20 May 2025]. Available from: https://doi.org/10.1207/S1532799XSSR0503_2

Wunsch, K., Fiedler, J., Bachert, P. and Woll, A. 2021. The tri-directional relationship among physical activity, stress, and academic performance in university students: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health.* [Online]. **18**(2), p. 739. [Accessed 20 January 2024]. Available from: doi: https://doi.org/10.3390/ijerph18020739.

Van Eerde, W. and Klingsieck, K. B. 2018. Overcoming procrastination? A meta-analysis of intervention studies. *Review of Educational Research*. **25**, pp. 73–85.

Verheul, I., Block, J., Burmeister-Lamp, K., Thurik, R., Tiemeier, H. and Turturea, R. 2015. ADHD-like behavior and entrepreneurial intentions. *Small Business Economics*, **45**, pp. 85–101.

Yean, R. 2023. Body doubling for ADHD: Everything you need to know. [Online]. [Accessed 01 April 2024]. Available from: https://www.flow.club/blog/body-doubling-adhd#:~:text=Body%20Doubling%20for%20ADHD%3A%20Everything%20You%20Need%20to%20Know

Zentall, S. 1993. Research on the educational implications of attention deficit hyperactivity disorder. *Exceptional Children,* **60**(2), pp.143–153.

Zimmerman, R. D. and Risenberg, R. 1997. Becoming a self-regulated writer: A social cognitive perspective. *Contemporary Educational Psychology*. [Online]. **22**, pp.73-101. [Accessed 10 February 2025]. Available from: https://doi.org/10.1006/ceps.1997.0919

APPENDIX-LINKS TO APPS.

Apps that can be used for enhancing reading in ADHD students:

VoiceNote II

ClaroRead

Read&Write

Free App | Spreeder

Spreed (see instructions at https://youtu.be/oAU7ki0PYrs)

Apps that can be utilised for enhancing writing in ADHD students:

Dicom Portable 1.1.1

Inspiration

MindNote

Apps that can be used to help with time perception in ADHD students:

Microsoft To-Do

Priority Matrix

Apps that can assist with managing assignments:

ASK Assignment Calculator

StayFocused

Strict Workflow

Apps that facilitate body doubling online:

Caveday

Flown

Focusmate

The ADHD learner, time perception, and the listening skill in EAP: decoding the temporal rules of auditory processing of phonological information to rethink practices for an inclusive classroom

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ABSTRACT

This article aims to explore the complexity behind the potential challenges that some students have in English for Academic Purposes (EAP) classrooms and contexts regarding listening skills. The developing argument comes from a perspective that not all listeners will process auditory information identically due to neurological differences (neurodiversity) and therefore that we should adjust our practices with divergent listeners as learners in mind. Part of this premise will be defended by advocating for the importance of scholarship of teaching and learning that draws from disciplines beyond what we might usually be comfortable with, providing insights that can help us view language problems from novel angles. Examining the neuroscience literature, unique properties of the ADHD-influenced brain will be identified and while doing so, the features that impact upon students' listening, in the EAP and HE context, will be discussed. It will be suggested that time perception differences may account for the problems ADHD listeners might have in processing phonological information and thus auditory information as speech. In arguing for the existence of a temporal dimension to the rule-based nature of speech and the differences diverse learners may have with that temporal processing, we can think about the effectiveness of our practices and consider ways to adapt or transform them according to those temporal principles.

Although EAP is used as an example practice context, it is hoped the insights from this discussion can be useful to other language learning and teaching fields.

Keywords: Executive functioning, time perception, neuroplasticity, remediation, auditory processing

INTRODUCTION

What is ADHD?

Before we discuss the prevalence of ADHD worldwide and the possibility of a reasonable percentage of our own students in EAP classrooms possessing traits, it is necessary to provide a brief description

of the condition. According to the American Psychiatric Association (APA), producers of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), Attention Deficit Hyperactivity Disorder (ADHD) is characterised by 'symptoms that include inattention (not being able to keep focus), hyperactivity (excess movement that is not fitting to the setting) and impulsivity (hasty acts that occur in the moment without thought)' (APA, 2023). Similarly, other descriptions in the literature describe the condition in relation to effects on the everyday functioning of individuals, namely how, for example, poor impulse control and inattention affect a person's ability to self-regulate their actions and behaviours and to control their *executive* functions necessary to perform tasks (e.g., Barkley, 2014).

Executive Functioning (EF) issues in adults with ADHD may be understood as 'a difficulty in self-management, including organization, planning, initiating and completing on a timely basis, tracking and shifting tasks, self-monitoring, and self-inhibition' (Solanto, 2015, p. 256). The causes of the condition, as seen in EF behaviours, may be found in the neurological processes that regulate those cognitive and physical acts. ADHD is therefore described in the literature as a neuro-developmental condition stemming from various parts of the brain and affecting others, and those responsible for the EFs (Arnsten, 2009; Qiu et al., 2009). One example region of the brain that may affect EFs is the temporal and parietal lobes and prefrontal cortex (PFC) as they control mechanisms for attention. They are responsible for 'orienting attentional resources in time/space' (Arnsten, 2009, p. 33). Another example is that of the basal ganglia responsible for impulse control (Qiu et al. 2009). The cerebellum is another region that if impaired can affect sensory processing (Petacchi, 2005), and possibly temporal processing alongside other regions of the brain (Toplak et al., 2017).

ADHD has often been connected to deficiencies in the dopaminergic system of the brain (e.g., Swanson, et al., 2007), responsible for regulating mood, emotions and delaying reward (Calabresi et al., 2007; Baik, 2020). This system, then, may have an effect on normal functioning in various settings, including in educational contexts in which problems with regulating one's behaviour can have detrimental effects. In simplest of terms, if not given reward, a dopamine *hit*, students with ADHD are unlikely to continue with an activity that is not providing that *feel good factor*. Deficiencies in the reward system may then go on to present as 'multiple addictive, impulsive, and compulsive behaviors' (Blum et al., 2008, p. 894) that may even be perceived as *bad* behaviour. Despite this, it is important not to reduce the causes of ADHD simply to dysregulation of the dopaminergic system but rather, as a neuro-developmental disorder that includes other brain regions and even brain structure itself (del Campo et al., 2013). The complexity of the condition in terms of its physiological bases reflects its intricate myriads of effects on one's daily life.

Prevalence in adults worldwide

Various studies have been conducted to give estimates as to the prevalence of ADHD in young and mature adults worldwide. One systematic review suggested a figure of up to 363.33 million or a percentage among those over 18 years old of 6.76% symptomatic adults in 2020, despite inconsistencies in criteria for identifying the condition (Song et al., 2021). Those that were diagnosed as a child and symptoms continuing into adulthood stands at a possible 2.58% (Song et al. 2021). The problem with estimates such as these is that the methods used to diagnose adulthood ADHD, focusing mainly on self-reporting and a DSM symptom threshold of six, are different from those in childhood that require a higher threshold and observation of behaviour (Sibley et al. 2016). Those adults with ADHD since childhood were often found to underreport their symptoms despite observers in, say, the family suggesting the continuance of them (Sibley et al. 2016). Sibley, et al. (2017) using parent and self-reporting measures found that around 60% of adults diagnosed as children were exhibiting signs of ADHD in adulthood. In way of a comparison a recent systematic review and meta-analysis suggested the percentage among children and adolescents at around 7.6% and 5.6% respectively (Salari et al., 2023). Studies suggest that the disorder may change or fluctuate across the life-cycle with differing symptoms and intensity as we age and encounter various life challenges (e.g., Sibley, et al. 2024). However, there is some evidence to suggest that, whilst partial remission can occur, complete remission seems unlikely in the majority of cases (Sibley, et al. 2022).

The argument for ADHD persistence into adulthood is strong, increasing the possibility of learners over the age of 18 experiencing symptoms in various contexts whether formally diagnosed or not.

Regional prevalence

If practising EAP in Anglo-phone countries, a large amount of the EAP cohort is from East Asia, the likelihood of receiving a significant percentage of adults in our classes with persistent and symptomatic ADHD is high. The number of Chinese students, in particular, attending UK universities, even during the Covid-19 restrictions in 2021-2022, stood at 151,690 from the mainland and 17,630 from Hong Kong (Universities UK, 2023). This would make Chinese students the majority of any national group from outside the UK, 22.3% of international students (Study In The UK, 2023).

A meta-analysis to estimate the prevalence of ADHD among children and adolescents in China yielded similar figures to that of the worldwide percentage standing at 6.26% (Wang, et al., 2017). For adults, the lack of studies, particularly on in the mainland, can only allow us to speculate as to its

prevalence among that age group. Mak et al., (2020) conducting a small-scale study in Hong Kong, suggest a high possibility of persistence (83.1%) of ADHD into adulthood with diagnoses made utilising *DSM-5* criteria. This could then equate to similar adult prevalence rates found elsewhere.

ADHD and listening

In this essay I will discuss how our attention to the problems of ADHD learners in developing their listening skills in the context of EAP learning environments is already lacking but any adjustment to our practices needs to be informed by explorations into the neuroscience literature that may provide evidence to support future pedagogical choices. Gaining a deeper understanding as to the mechanisms behind observed differences in listening may give us the knowledge that can greatly improve the learning experience of our students.

The literature to date on listening and listening skills development for students with ADHD in EAP contexts is mostly absent and in other EFL/ESOL contexts is particularly scant. Some, however, e.g., Kałdonek-Crnjaković (2022) have attempted to address this in EFL with a small-scale study focussing on all four language skills. The findings are consistent with those that are centred on L1 language learning issues e.g., McInnes et al., (2003) that problems of inattention, distraction and working memory are implicated in the successful development of listening abilities and skills. Whilst one does not doubt the role of attentional and working memory influence on listening, I will argue the case that *timing mechanisms* in the brain may actually be behind those executive function problems (see Toplak and Tannock, 2005) and if we focus our attention to those mechanisms rather than to behaviours influenced by them, we could potentially not only help our students improve their listening through remediation practices focused on the temporal features of auditory information, but also allow them to improve upon other cognitive functions important in managing their own learning.

EVALUATING EAP PRACTICES FOR THE ADHD LISTENER

Listening in EAP contexts

The contexts and scenarios in which our students are engaged in listening is quite clearly varied and nuanced depending on their points of contact with peers, lecturers and others, and the activities practised in those interactions. One might be familiar with the more structured activities such receptive skills practice in class, or active listening in seminar/discussion skills development, but

listening in EAP can also include tutorials, and out of class project work. Much of what we may focus on in class, in terms of listening skills in higher education contexts such as in lectures, is the development of strategies to enable the student to better process audio information (Field, 2011, p. 103). Whilst these strategies may be helpful, alone they do not directly address problems of audio processing, possibly stemming from brain differences such as those mentioned above and those below regarding time perception.

Listening in lectures

As an example of strategies to develop listening skills, I will use the lecture as a context in which they are practised. This is partly due to lectures still being a principal modality for communicating academic content in universities, also because, anecdotally, my own students, over the years, have commented on their struggles in that situation despite access to recordings.

Lectures require different attention and skills to other listening activities, one such skill would be that which requires the listener to 'concentrate on and understand long stretches of talk without the opportunity of engaging in the facilitating functions of interactive discourse, such as asking for repetition, negotiating meaning, using repair strategies, etc' (Flowerdew, 1994, p. 11). As we can already see, this skill is difficult for many listeners but for the ADHD listener it would be potentially more challenging due to problems of regulating attention. This is compounded with the need to practise the skill of notetaking whilst being exposed to other media beyond the spoken word, such as visual information (p. 12). The combination of information, both spoken and written word, that is essentially the same information may cause what is referred to as a *redundancy effect*, which means that extra pressure is passed to cognitive mechanisms like short term memory, although that information is simply duplicated through each of those modes, thus seemingly unnecessary, putting strain on the learner (Sweller et al., 2011).

Academic listening skills according to Flowerdew's (1994, p. 9) review of the literature, have been identified as requiring both 'linguistic processing' of information and 'application of the results of this linguistic processing to background knowledge and context.' Flowerdew (1994, p. 9) argues that the processes are rather more complex than had been observed and *any* hierarchical prioritisation, a view that uncritically interprets linguistic processing as 'low level' or 'bottom up' and that the broader contextual understanding as 'high level' or 'top down,' should be questioned. Progressively more current practice orientated publications such as Alexander et al., (2019) present this view. Flowerdew (p. 9) claims there is an assumption, that, due to the language level of our students, we will tend to focus our attention more on so-called higher-level processing. If attention to linguistic processing is piecemeal or based solely on lexical and semantic relations, then those efforts may be

less successful without phonological processing. De Chazal's (2014) suggestion of five tasks to support students in preparation for lectures is what many of us (EAP practitioners) are accustomed to utilising whether in teaching or in material design, but sub tasks within each task should incorporate a degree of phonological awareness and practice appropriate to the aims of the broader task. Without phonological awareness, the ability to predict upcoming information, from phoneme to phoneme, to syllable and beyond will be affected.

Five tasks suggested by De Chazal (2014)

- Task 1: Preparing for the lecture by reading a pre-lecture handout on the lecture topic
- Task 2: Listening for essential factual information
- Task 3: Academic language: a focused study of key language in the lecture, such as the language of association, speculation, and degree of certainty
- Task 4: Listening for association and evaluation in the lecture
- Task 5: Reprocessing information from a lecture using notes

As an example, 'reprocessing information from notes' would assume that information from the lecture was successfully processed in real time during the lecture. Or if we are to focus on lexical items that represent key language, language of association etc, then we will need to break down their phonological segments and to treat such items as auditory sequences, in 'chunks', that possess waveform qualities with distinctive transitions (see Tallal, 2004). To enable students to perform those tasks, attention to phonological processing is unavoidable. Much research to date (e.g., Raiker et al., 2017) has implicated problems of phonological processing with receptive abilities in those with ADHD, making associations with attentional traits and working memory. Few have explored the role of time in processing that information beyond possible associations with time perception and attention (see Gooch et al., 2010). The possible mechanisms behind those associations will be further discussed below.

Decoding the message: the temporal dimension

Whilst we may spend class time raising awareness of lexical and phonological features students will encounter in lectures that can help students to predict, anticipate and respond (take notes) effectively, the so-called 'lower level' processing such as phoneme articulation, noticing stress or intonation might not be low enough. 'Cracking the code of speech' as Graham (2011, p. 116) puts it, is reliant on rethinking, adapting and adjusting strategies so that they are indeed focused on breaking that code. The code may be based on information *below* that of simple phonemic awareness and practice but rather a *temporal* dimension that allows for effective phonetic

processing. This might include attention to auditory sequential processing through identifying the rule-based nature of acoustic information as mentioned above (Tallal, 2004). Those rules might be based on timing mechanisms in an utterance. Strategies that do not home in on the temporal fundamental of speech processing may 'miss a trick' in terms of enabling students to listen effectively in lectures especially when considering that there will likely be little in the way of support for 'the processing difficulties of the second language listeners in the audience' (Field, 2011, p. 102). We need to think about those strategies in terms of assumptions as to the extent to which the students in front of us have control of their temporal domain and thus managing information that needs processing in real time. The processing of auditory information may then *be a matter of time* (Tallal, 2004).

THE NEURO-SCIENCE LITERATURE AND THE PROBLEM OF TIME PERCEPTION

Time blindness?

Those with ADHD have reported and observed by peers and family members to possess inaccuracies in sensing time, presented in the form of impulsive responses, lack of patience, and tardiness (Topiak and Tannock, 2005; Barkley, 1997) but do these observations have a basis in the neuroscience? Personal accounts and observations may use terminology such as *time blindness* as is encountered on social media and in non-academic publications. A simple Google search of *ADHD and time blindness* brings an array of journalistic articles and public facing medical websites reporting on the alleged existence of the phenomenon especially among those with ADHD. YouTube and Tik-Tok is busy with ADHD creators describing their experiences of time-blindness, such as being constantly late for appointments, getting lost in a stimulating activity until the early hours on a weekday, when one has engagements in the morning. So, are people with ADHD actually perceiving time differently? I, the author, have ADHD and an example of my own experience of the time phenomenon goes something like this: I get up and have coffee, listen to a news podcast (miss most of it), sip hot coffee once, sip cold coffee the second time. In my mind only a few minutes have passed, but the podcast has finished, and 30 actual minutes have elapsed and now I'm late for the train. I was distracted, maybe, although I can't for the life of me remember what by. In other situations, it seems, distractions are not directly to blame, as the following example may suggest. I leave my house for the train which leaves at 07:01, so I must leave my house 10 minutes beforehand to not miss it. I leave 20 minutes before due to a panic I have every day, that is, how long does 10 minutes take?

And how is this connected to processing auditory information and listening?

TIME PERCEPTION

How is so-called time-blindness connected to processing auditory information and listening? The answer may rest in *time perception.* Time perception refers to the effective estimation, discrimination, reproduction and production of time intervals providing an 'ability to predict, anticipate, and respond to upcoming information' (Nejati and Yazdani, 2020, p. 900). The above examples of time-blindness may be considered relatively *normal* but the extent and frequency they occur, towards disorder level, may negatively affect one's basic executive functioning (Barkley, 1997; Smith et al., 2002) necessary to perform the four language skills effectively. And, particularly, as argued in this article, deficits in temporal processing likely interrupt the student's effective listening abilities and listening skills development. In reviewing the neuroscience, differences in time perception, an aspect of temporal processing along with motor-timing, between those described as normal, in terms of time perception, and those with ADHD have been identified and suggested as heavily influential on the presentation of the symptoms of ADHD centred on executive functioning (Smith et al., 2002; Nejati and Yazdani, 2020). Some would go further to suggest that such malfunctions in temporal control may produce 'cascading effects' onto 'other cognitive mechanisms' such as memory (Toplak and Tannock, 2005, p. 651).

Measuring time perception

The most common measurements utilised in the empirical literature are estimation and discrimination. Estimation requires that temporal information provided in time intervals is accurately estimated, and verbally reported, in terms of is duration by the recipient in a form of audio and/or visual stimuli (Barkley et al., 2001). Despite the fact that audio and visual stimuli utilise different cognitive mechanisms, deficits in temporal processing of information from those sources equally occur (Nejati and Yazdani, 2020). Whereas estimation requires the participant to estimate how long a particular interval was duration discrimination "involves the comparison of two brief intervals similar in duration (such as, 500ms vs. 600ms to determine which is longest or shortest" (Toplak and Tannock, 2005, p. 640).

Results from estimation and discrimination studies show not so dissimilar findings. Both Toplak and Tannock (2005) and Anobile et al., (2022) found that participants with ADHD failed to discriminate effectively in the millisecond range below 1000ms. Inaccuracy and imprecision were also found in time estimation tasks as suggested by Walg et al., (2017). A meta-analysis (Zheng et al., 2020) of 27

empirical studies claimed similar findings in terms of precision and accuracy and a tendency among participants with ADHD to overestimate time intervals.

Reproduction tasks require that participants reproduce or replicate a duration of time after being exposed to it (Barkley et al., 2001, p. 352). Results from such tasks indicate that ADHD participants produce accuracy and precision errors especially when increasing the duration (e.g., Dolek et al., 2021; Barkley et al., 2001). It is argued (e.g., Anobile et al., 2022) that reproduction tasks put more emphasis on working memory than simple estimation and discrimination tasks, as they tend to focus on intervals of over 1000ms, which is the supposed threshold for employing the cognitive mechanism (Toplak and Tannock, 2005).

A 'pure' time deficit and the 'internal clock'

Smith et al., (2002), utilising a discrimination task, found that a sample of children with ADHD needed 50 ms longer than a non-ADHD to discriminate between intervals, concluding that those with the disorder may possess 'a perceptual deficit of time discrimination' (p. 529). This 50ms deviation, when exposed to intervals of hundreds of milliseconds rather than longer intervals, can be indicative of what Anobile et al., (2022) claim in relation to loading on working memory, that those less than 1000ms do not activate the cognitive processes necessary to engage it, suggesting a *pure* time deficit (Smith, et al., 2002, p. 530). Walg et al., (2015) had similar findings but not in terms of overestimating the shorter intervals but rather an inefficiency in shifting between intervals of different durations whilst still over-estimating longer durations. Using a *retrospective* time estimation task, one that requires memory and 'passive information holding' as opposed to a *prospective* task that would require 'active online processing' (Nejati and Yazdani, 2020, p. 911), Walg et al., (2017) measured noticeable over-estimations among the ADHD sample suggesting 'a lower –processing speed' (p. 1181). This phenomenon cannot be attributed to working memory processes as no differences were found with the control group when testing explicitly for that cognitive function, but rather for another timing mechanism brought into play due to the retrospective task not focusing on the 'passage of time' itself (p. 1183). For Walg et al., (2017) the actual mechanism responsible is not certain but processing speeds may be attributable to the 'internal clock' or 'pacemaker' being faster in those with ADHD (p. 1183). The faster *clock* committing 'over-estimation errors' is clearly an issue when considering the need for accuracy and preciseness (Anobile et al., 2022).

TEMPORAL PROCESSING AND INFORMATION PROCESSING: A PROBLEM FOR LISTENING

Language development and time perception

Using the clock hypothesis as a basis, Wearden's (2008) review of literature on time perception suggested a plausible link between it and certain 'language disorders' e.g., dyslexia or aphasia. This was found to be most prevalent in 'the ability to discriminate time intervals' and 'the perception and control of speech' and may be connected to problems with 'rapid temporal processing' (p. 162). This active, *online, in the moment processing* is one I have already touched on above and is necessarily activated in certain language acts. Wearden (p. 163) cites research done on conversation as an example and how it requires 'turn-taking' and 'smooth transitions from the role of speaker and listener.' Such situational need for processing language may clearly affect those with particular language disorders but also those with ADHD as co-morbid disorders and learning difficulties are relatively prevalent among those who exhibit attention deficit traits (Brown, 2000). Indeed, such conditions are not mutually exclusive; those with ADHD may also be dyslexic. At the same time, some broader traits related more typically to dyslexia can also present in those with ADHD, even if dyslexia is not diagnosed, such as late language development (Smith et al., 2002, p. 537).

Temporal and phonological information processing

Despite a lack of an extensive literature, the connection between language developmental issues (e.g., dyslexia), ADHD, and temporal processing can, at least, be inferred at this point. What can be suggested from this, however, is that receptive and productive language skills may be impeded both in L1 And L2 users. Processing is further affected when considering that the target language is a second or additional language. A starting point may be in the acknowledgment of the temporally influenced nature of the processing of speech and how that affects the information processing. Again, we may return to Smith et al., (2002) description of a 50ms + inaccuracy in discriminating between intervals. The 50ms difference might seem insignificant (possibly add more for L2 learners) but not when we consider the basic units of speech that help convey meaning, thus they contain *information*, namely, phonemes. Smith et al., (2002, p. 537) claim that the typical phoneme will only be produced for 50ms, therefore, the listener will need to process it at and around that time. Clearly, those who cannot process that phoneme in the target time will likely not process its information and cause a domino effect on those that follow it.

The problem of processing speed is further elaborated on by Tallal (2004), again focusing more broadly on language and literacy disorders. Importantly, she connects the problem of time and speech perception with the need to recognise that 'speech does not comprise random chunks of

acoustic information but is organized in a rule-based sequential manner' (p. 724). Phonological segments rarely stand alone in an utterance but rather form a part of a '*sequential acoustic waveform'* with prominent transitions such as those that may occur when initiating a segment (p. 722), which may also be seen in those transitions to stressed syllables. Tallal (p. 722) uses the example of how attention to exaggeration of those acoustic changes during childhood language development trains the brain to *fire* acoustically sensitive neurons, in order to segment the ongoing waveform into recognisable patterns in time periods of milliseconds, allowing for accurate differentiation between phonemes, and in hundreds of milliseconds to approach multiple segments such as syllables. This would then further suggest that if one possesses a temporal processing deficit affecting their processing of auditory information then that will limit their 'ability to predict, anticipate, and respond to upcoming information' (Nejati and Yazdani, 2020, p. 900) necessary for effective listening.

NEUROPLASTICITY AND REMEDIATION

Phonemic awareness and auditory sequential processing

Language Learning Impairments (LLI), including dyslexia and certain speech impairments, have been found to be associated with ADHD (e.g., Martinusson and Tannock, 2006), whether causal in terms of factors relating to inattention or co-morbid conditions. As touched on above, attention to timing mechanisms as central to these impairments is relatively scant in the literature, however, evidence from targeted studies has shown a possible link between LLIs and such a mechanism. Results from this research indicate that those with LLIs, as opposed to those who do not, are inhibited in " their ability to discriminate between and to produce speech sounds that are characterized by brief, rapidly successive acoustic changes, such as the brief formant transitions (40msec) preceding the steady-state portion of the vowel, which are the sole differentiating feature between syllables such as /ba/ and /da/" (Tallal, 2004, p. 722). Manipulation in the formant transitions, or 'rapid acoustic changes in frequency and intensity,' of those particular syllables, to lengthen the transition above 40 ms, allowed for improved discrimination among participants (Tallal, 2004, p. 723). Sensitivity to those transitions has even been found to be influential in identifying the place of articulation of a phoneme (Walley, and Carrell, 1983).

Neuroplasticity, prediction and sequence learning

Impairments in auditory sequential processing may well be connected to abnormalities in the neuronal/synaptic activity in the brain responsible for effective learning and memory (Mancini et al., 2022). 'Neurons (also called neurones or nerve cells) are the fundamental units of the brain and nervous system, the cells responsible for receiving sensory input from the external world, for sending motor commands to our muscles, and for transforming and relaying the electrical signals at every step in between' (Woodruff, 2023). Synapses are the 'places where neurons connect and communicate with each other' and effective communication between neurons requires chemical neurotransmitters sending signals across those synapses (Caire et al., 2023). Neuroplasticity has been described as 'a process that involves adaptive structural and functional changes to the brain. It is defined as the ability of the nervous system to change its activity in response to intrinsic or extrinsic stimuli by reorganizing its structure, functions, or connections' (Puderbaugh, 2023). Neurons and synapses play a central role in plasticity, in the form of creating new neurons and the passing of information between neurons and the strengthening of connections between neurons via stimulation of synapses is an important factor in learning (Galván, 2010).

Learning is dependent on our experiences and our environment and may differ in terms of timing as and when an episode occurs (Galván, 2010). Stimulation of those neuro circuits to enable learning in the form of input may then be only relatively successful depending on their experience of that input. Our case for those with ADHD has already been sketched above regarding control of their temporal domain. The suggestion unfolding here is that potential interventions to stimulate plasticity may be beneficial in gaining that control and thus enabling better prediction of upcoming information.

Spike-timing-dependent-synaptic learning is a mechanism for *prediction plasticity* that demonstrates the effect of relative timing between input and output spikes in a neuron. Input synapses to a neuron are strengthened, while output synapses are weakened, creating a window of plasticity ranging from -40 to +40 milliseconds. This predictive capability may facilitate direction selectivity. Evidence of this mechanism in action has only been established for visual stimuli, but it is plausible that it could also apply to auditory information. The 40-millisecond time window is crucial for comprehending how the rapid fluctuations in formant transitions affect the temporal order of continuous speech even over longer time intervals than in the tens of milliseconds (Tallal, 2004, p. 724-725). This is significant because:

> Such a mechanism, when exposed to the rapid temporospectral changes that charcterize speech, would cause multiple neurons in the primary auditory cortex that fire simultaneously to bind together. Not only would such temporally contiguous, frequent patterns of feature activation build cell assemblies representing discrete phonemes, but such activity in one cortical

> circuit could, through converging projections, activate other cortical areas leading to a sequence of activations (p. 725).

If the different parts of this system are connected, then this could lead to the development of predictive rules for various phonological aspects of language, and even those of syntax (p. 725).

Adjusting and improving the rate of auditory sequential processing

Tallal's work on adapting the above findings into models that incorporated the dynamics of temporal changes in the acoustic waveforms of speech, evolved into a training programme that 'incorporated two 70-msec duration tones separated by a 500-msec silent inter-stimulus interval (ISI) between the end of the first tone and the beginning of the second tone in each sequence' (Tallal, 2004, p. 723). Once the participant is familarised with this process, 'the ISI between tones was systematically decreased for correct responses or increased for incorrect responses' (p. 723). This would continue until an individual threshold for each participant was reached (p. 723). Such interventions and their subsequent findings, according to Tallal (2004, p. 723), suggested that there were individual differences in Rapid Auditory Processing (RAP) in early childhood could be influential in their language development over time (p. 723). In terms of phonological processing, '[e]arly auditory deficits, differences or experiences are likely to affect the sharpness of phonological representations that are established through experience-dependent learning in infancy, leaving a lasting effect of phonological impairment' (Tallal, 2004, p. 724).

With such interventions, this *improvement* from hundreds of milliseconds down to tens of milliseconds, is of pronounced significance if we are to enable students to have more control of their temporal domain and thus their ability to predict, anticipate and respond to information that is at first phonological information. Moreover, if we are to suggest that the effects of control could limit the negative influence or 'cascading effects' on other cognitive functions (see Toplak and Tannock, 2005; Walg et al., 2017; Smith, 2002) then such *remediation* interventions can possibly have a greater influence on a successful learning experience.

DISCUSSION AND CONCLUSION: LANGUAGE TEACHING PROFESSIONALS AREN'T PSYCHIATRISTS BUT...

I believe that adapting and adjusting our practices in the ways described above can empower the listener to be able to thrive in a learning environment that on the face of it is far from conducive to nurturing neurodiverse brains. Examples of such interventions could be in awareness and practice of the temporal nature of transitions between phonemes to enhance a learner's ability to predict

upcoming phonological information. Tallal's (2004) work on increasing and steadily decreasing thresholds in terms of milliseconds could in its basic principles be incorporated into tasks that require listening for key information or others that require rapid processing of phonological information. For example, stressed syllables in that information could be temporally manipulated in similar ways as is suggested in her work with keen attention to transitions into and out of the stressed vowel.

…we *are* linguists and educators

If we are to consider the neuro-science theory and a return to our familiar practice in language education, how can we imagine it applied to everyday teaching and learning? The activity below, still influenced by the theory above, describes a potential awareness raising activity that can exemplify the manipulation of the velocity of consonants, formant transitions of vowels and even 'pauses' to identify the wave form shape of phonetic connections in and between syllables and possible ways to practice.

Example activity for the manipulation of formant transitions and pauses

Context

Imagine students are learning key words and phrases from materials for an upcoming lecture titled: *The effects of unhealthy diets on the body.* One of the lexical items is the adjective noun phrase 'excessive alcohol consumption' that will form part of a longer sentence in the lecture that includes key information and would need to be noted down by the student. Let us suggest that 'excessive' /ekˈses.ɪv/ requires more emphasis in the spoken phrase implying that there has already been information regarding alcohol consumption before exposure to this particular phrase. The adjective 'excessive' then becomes important information to be noted.

Manipulating velocity

Initial modelling with audio and visual aids, such as can exemplify the adjective at 'normal' speed and to highlight the transitions in the formation, emphasis and connection between syllables (see Figure 1 below).

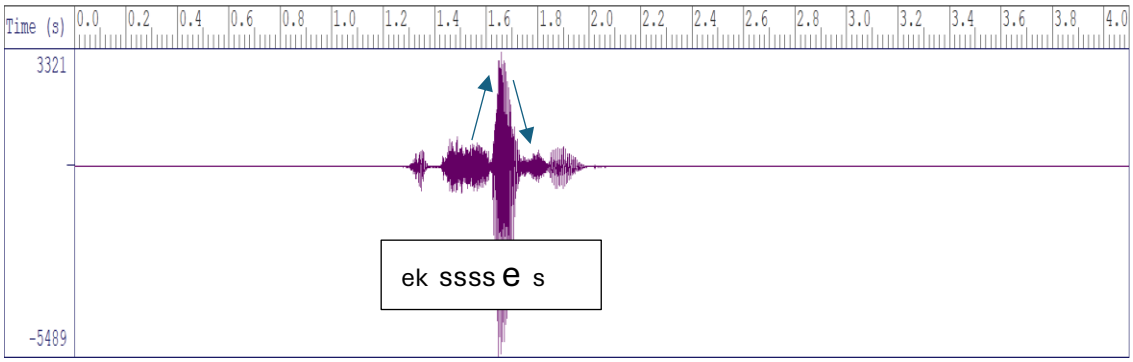

Figure 1: Normal speed and frequency (SFS/WASP Version 1.0)

The spectrogram can show the rising and falling frequencies from the steady state of the formant in each vowel in the three syllables of 'excessive', the relative times that the transitions take, as well as evident pauses between them. The arrows in this case are showing the formation transition process with the stressed syllable /ses/ only. The whole word (three syllables) timed from around 1.3 and 2.0 seconds suggests that it takes less than a second (around 700 milliseconds) to produce. The phonemic transcription /ek ssss e s ɪv/ below the graph (Fig. 1) is modified to show pauses between syllables (gaps with no phoneme)) and the beginning of the formant transition in /ses/ with multiple duplicates of /s/ to exaggerate that move. Again, its context and its function in helping with the stressed syllable is evident. Students might identify /ses/ due to the longer duration of /e/ because of the formant transition (around 200 milliseconds) initiated by the initial /s/. The whole syllable /ses/ is close to 400 milliseconds. The next step (see Figure 2 below) would allow each syllable to be significantly lengthened to be potentially noticeable.

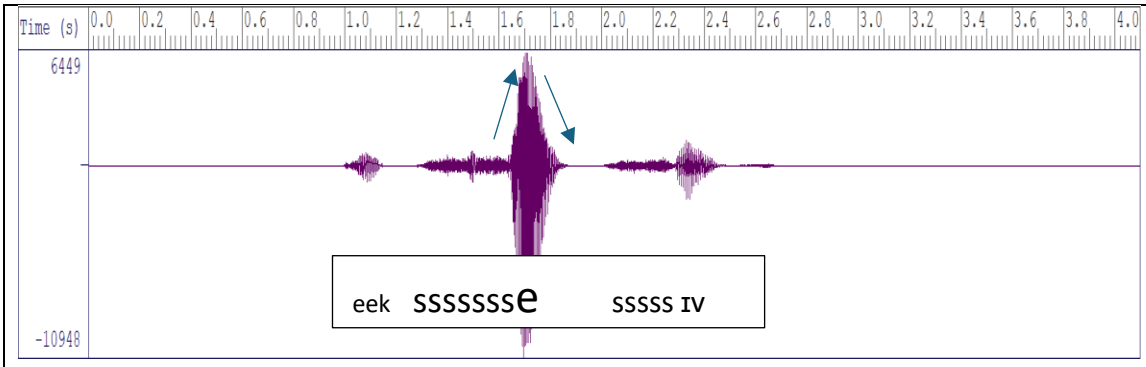

Figure 2: Manipulated speed and frequency (SFS/WASP Version 1.0)

The first syllable in the sequence /ek/ is now around 100 milliseconds, the pause after is similarly around 100 too. The consonant /s/ is manipulated to a length nearing 300 milliseconds to provide an obvious cue for the formant transition into /e/ in /ses/, a rise of close to 100. The fall in /e/ is then drawn out by a further 100 milliseconds and followed by a pause of another 100. This pause may or may not be emphasised as the fall from the formant in /e/ could seemingly push the final /s/ in /ses/ forward to aid the formation of the final syllable leaving the stressed syllable more like /se/. Emphasising the pause could help students to identify the final formant in /ɪ/. /s/ is lengthened to 200 milliseconds and the final /ɪv/ having the formant in /ɪ/ exaggerating in tens of milliseconds as it forms into /v/ which may be drawn out over 100. Each syllable including pauses is above 100 milliseconds giving more time to identify them independently yet potentially noticing their audible connections. The whole word is then well over one second long.

Increasing and decreasing duration

Having pre-recorded, say, four versions ranging from normal speed to a much slower speed teachers/students can play them starting with the slowest first to find at which recording/velocity towards the normal speed they cannot identify the three syllables. The process is repeated until the threshold gets closer to the recording at the normal speed. Students can even record themselves saying the word at different speeds too, this might be particularly engaging for those with ADHD as well as providing a personalised model of the articulation features between the syllables. Similar two syllable words e.g., 'excess' especially the version pronounced /ɪkˈses/ (stress on the second syllable in the sequence) may be treated the same way and find a point where they cannot be discriminated. The process can be repeated until a discrimination is made. Also, maybe more advanced, 'excessive' might be embedded in a longer utterance where it may or may not have prominence in the context or form a different grammar e.g., after verb 'to be' as in *is excessive*. This can show how the preceding /s/ in 'is' may be pronounced /z/ thus affecting the initial /e/ in the adjective. Again, the target word can be slowed and sped up as suggested previously.

The positives and potential pitfalls of interventions

Neuro-science informed intervention strategies, such as those suggested above, which can isolate the temporal aspects of the processing of audio information, might potentially help our students to learn to predict, anticipate and respond to upcoming information in rapid speech, typical in listening contexts such as lectures. The ability to predict subtle changes in sounds at the millisecond level will enable prediction of subsequent sounds and thus sequences across larger utterances. With regular

creative and research informed interventions in the learning process, the processing of audio information may reach *normal* speed for those whose rate may be slower or variable depending on stimuli. We would also need to consider the necessary time and attention given to such activities, how they would fit into normal sessions and/or potentially modifying curriculum to allow for focused listening/phonology sessions as well as materials and strategies for autonomous learning. Further research needs to be done to factor in the actuality that our learners are second language learners and the problems of processing that individuals in that cohort may have, with or without ADHD, not to mention other auditory processing differences or difficulties.

Interventions may also be problematic if we are to assume that many will not be diagnosed by a professional or even self-identify as having ADHD or any specific differences or difficulties, thus, to alter existing practices based on our unqualified observations of behaviours in our classes could be counterproductive to the aims of the interventions. One might imagine the time constraints of, say, pre-sessional courses and, or the general listening abilities of the majority of students in the class not requiring such alterations. Also, students may respond negatively to 'remedial' practices whether in class activities or even if in one-to-one interactions. Again, there is a problem in isolating students for *treatment* when we are not professionals in psychiatry or related fields.

Another important point to bring up is that in intervening, in such a way, are we trying to *correct* neurological differences in our students, pushing a kind of *ablism*, might we not attempt to adapt our practices to include those differences without seemingly corrective interventions? Of course, the idea that we are correcting' others' brains should be challenged, but interventions or even guidance in accessing resources that can help students develop strategies that can enable them to, say, listen for key information or take notes effectively are already embedded in our practices. To listen effectively in academic contexts requires students to function in an environment that may be one that is more suitable for neurotypical students, particularly an assumption as to how one perceives time and how they process temporally organised information. Whilst we should indeed think about how that could be adapted to include neurodiverse students it is unlikely that whatever changes are made will always be appropriate for everyone. It is important to remember, however, that when utilising generic skills development strategies to prepare students for listening in EAP/EFL the assumption inherent in those strategies, whether intentional or not, is that students process auditory information equally, the evidence suggests they do not.

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REFERENCES

Alcantara, J. I., Weisblatt, E. J. L., Moore, B. C. J., & Bolton, P. F. 2004. Speech-in-noise perception in high-functioning individuals with autism or Asperger's syndrome. *Journal of Child Psychology and Psychiatry.* [Online]. **45**(6), pp. 1107–1114. [Accessed 3 September 2023]. Available from: https://doi.org/10.1111/j.1469-7610.2004.t01-1-00303.x

Alexander, O., Argent, S., & Spencer, J. 2019. *EAP Essentials: a teacher's guide to principles and practice.* 2nd ed. Reading: Garnet Education.

Aljadani, A., Alshammari, T., Sadaqir, R., Eid Alrashede, N., Aldajani, B., Almehmadi, S., Altuhayni, A., & Abouzed, M. 2023. Prevalence and risk factors of attention deficit-hyperactivity disorder in the Saudi population: A systematic review and meta-analysis. *Saudi Journal of Medicine and Medical Sciences.* [Online]. **11**(2), pp. 126-134. [Accessed 5 September 2023]. Available from: https://doi.org/10.4103/sjmms.sjmms_528_22

Anobile, G., Bartoli, M., Pfanner, C., Masi, G., Cioni, G., & Tinelli, F. 2022. Auditory time thresholds in the range of milliseconds but not seconds are impaired in ADHD. *Scientific Reports.* [Online]. **12**(1), [Accessed 29 September 2023]. Available from: https://doi.org/10.1038/s41598-022-05425-2

American Psychiatric Association. (2023). *What is ADHD?* [Online]. [Accessed 12 September 2023]. Available from: https://www.psychiatry.org/patients-families/adhd/what-is-adhd

Arnsten, A. F. T. 2009. Toward a new understanding of attention-deficit hyperactivity disorder pathophysiology. *CNS Drugs.* [Online]**.** 23(Supplement 1). pp. 33–41. [Accessed 15 September 2023]. Available from: https://doi.org/10.2165/00023210-200923000-00005

Baik, J.-H. 2020. Stress and the dopaminergic reward system. *Experimental and Molecular Medicine.* [Online]. **52**(12), pp. 1879–1890. Available from: https://doi.org/10.1038/s12276-020-00532-4

Barkley, R. A., Murphy, K. R., & Bush, T. 2001. Time perception and reproduction in young adults with attention deficit hyperactivity disorder. *Neuropsychology.* [Online]**. 15**(3), pp. 351–360. [Accessed 15 September 2023]. Available from: https://doi.org/10.1037/0894-4105.15.3.351

Blomberg, R., Danielsson, H., Rudner, M., Söderlund, G. B., & Rönnberg, J. 2019. Speech processing difficulties in attention deficit hyperactivity disorder. *Frontiers in Psychology.* [Online]. **10**, pp. 1-14. [Accessed 29 September 2023]. Available from: https://doi.org/10.3389/fpsyg.2019.01536

Blum, K., Oscar Berman, M., Chen, T. J., Braverman, E., Waite, R., Downs, W., Arcuri, V., Notaro, A., Palomo, T., & Comings. 2008. Attention-deficit-hyperactivity disorder and reward deficiency syndrome. *Neuropsychiatric Disease and Treatment.* [Online]. **4**(5), pp. 893. [Accessed 15 September 2023]. Available from: https://doi.org/10.2147/ndt.s2627

Brown, T. E. 2000. *Attention-deficit disorders and comorbidities in children, adolescents, and adults*. Washington DC: American Psychiatric Press.

Caire MJ, Reddy V, Varacallo M. 2023. *Physiology, Synapse.* [Online]. [Accessed 2 November 2023]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK526047/

Calabresi, P., Picconi, B., Tozzi, A., & Di Filippo, M. 2007. Dopamine-mediated regulation of corticostriatal synaptic plasticity. *Trends in Neurosciences*. **30**(5), pp. 211–219. [Accessed 10 October 2023]. Available from: https://doi.org/10.1016/j.tins.2007.03.001

Cambridge Dictionary. 2025. 'Excessive,' in ***Cambridge Dictionary.*** [Online]. [Accessed 7 February 2025]. Available from: https://dictionary.cambridge.org/dictionary/english/excessive

De Chazal, E. 2014. *Prepare English language students for academic listening.* [Online]. [Accessed 30 August 2023]. Available from: https://www.britishcouncil.org/voices-magazine/prepare-english-language-students-academic-listening

Del Campo, N., Fryer, T. D., Hong, Y. T., Smith, R., Brichard, L., Acosta-Cabronero, J., Chamberlain, S. R., Tait, R., Izquierdo, D., Regenthal, R., Dowson, J., Suckling, J., Baron, J.-C., Aigbirhio, F. I., Robbins, T. W., Sahakian, B. J., & Müller, U. 2013. A positron emission tomography study of nigro-striatal dopaminergic mechanisms underlying attention: Implications for ADHD and its treatment. *Brain.* [Online]. **136**(11), pp. 3252–3270. [Accessed 12 October 2023]. Available from: https://doi.org/10.1093/brain/awt263

Field, J. 2011. Into the mind of the academic listener. *Journal of English for Academic Purposes.* [Online]. 10(2), pp. 102–112. [Accessed 2 October 2023]. Available from: https://doi.org/10.1016/j.jeap.2011.04.002

Flowerdew, J. 1994. Research of relevance to second language lecture comprehension - an overview. In: Flowerdew, J. ed. *Academic Listening Research Perspectives*. Cambridge: Cambridge University Press, pp. 7-30.

Galván A. 2010. Neural plasticity of development and learning. *Hum Brain Mapp.* [Online]. **31**(6), pp. 879-90. [Accessed 8 October 2023]. Available from: https://doi.org/10.1002/hbm.21029

Gooch, D., Snowling, M., & Hulme, C. 2010. Time perception, phonological skills and executive function in children with dyslexia and/or ADHD symptoms. *Journal of Child Psychology and Psychiatry.* [Online]**. 52**(2), pp. 195–203. [Accessed 20 September 2023]. Available from: https://doi.org/10.1111/j.1469-7610.2010.02312.x

Gomez, R., & Condon, M. 1999. Central auditory processing ability in children with ADHD with and without learning disabilities. *Journal of Learning Disabilities*. [Online]. **32**(2), pp. 150–158. [Accessed 18 October 2023]. Available from: https://doi.org/10.1177/002221949903200205

Graham, S. 2011. Self-efficacy and academic listening. *Journal of English for Academic Purposes.* [Online]. **10**(2), pp. 113–117. [Accessed 12 September 2023]. Available from: https://doi.org/10.1016/j.jeap.2011.04.001

Study In The UK. 2023. *International Student Statistics in UK 2023*. [Online]. [Accessed 30 August 2023]. Available from: https://www.studying-in-uk.org/international-student-statistics-in-uk/

Kałdonek-Crnjaković, A. 2022. How Do ADHD-Type Behaviours Affect Language Learning? Voices of In-Service EFL Teachers in Poland. In: L. McCallum. ed. *English Language Teaching: Theory, Research and Pedagogy*. [Online]. Springer: Singapore, pp. 191-206. [Accessed 22 September 2023]. Available from: https://doi.org/10.1007/978-981-19-2152-0_9

Martinussen, R., & Tannock, R. 2006 Working Memory Impairments in Children with Attention-Deficit Hyperactivity Disorder With and Without Comorbid Language Learning Disorders. *Journal of Clinical and Experimental Neuropsychology***.** [Online]. **28**(7), pp. 1073-1094, [Accessed 23 September 2023]. Available from: https://doi.org/10.1080/13803390500205700

Mak, A. D., Chan, A. K., Chan, P. K., Tang, C. P., Lai, K., Wong, S., Leung, P., Hung, S. F., Lam, L. C., & Lee, S. 2020. Diagnostic outcomes of childhood ADHD in Chinese adults. *Journal of Attention Disorders.* [Online]. **24**(1), pp. 126–135. [Accessed 2 September 2023]. Available from: https://doi.org/10.1177/1087054718802015

Mancini, A., De Iure, A., & Picconi, B. 2022. Basic mechanisms of plasticity and learning. In: Quartarone, A., Felice Ghilardi, M., & Boller, F. eds. *Handbook of Clinical Neurology vol. 184. 2nd Series.* [Online]. Oxford: Elsevier, pp.21-33. [Accessed 12 November 2023]. Available from: https://doi.org/10.1016/B978-0-12-819410-2.00002-3

McInnes, A., Humphries, T., Hogg-Johnson, S., & Tannock, R. 2003. Listening comprehension and working memory are impaired in attention-deficit hyperactivity disorder irrespective of language impairment. *Journal of Abnormal Child Psychology.* [Online]. **31**(4), pp. 427-433. [Accessed 15 September 2023]. Available from: https://doi.org/10.1023/a:1023895602957

Nejati, V., & Yazdani, S. 2020. Time perception in children with attention deficit–hyperactivity disorder (ADHD): Does Task Matter? A meta-analysis study. *Child Neuropsychology.* [Online]. **26**(7), pp. 900–916. [Accessed 20 September 2023]. Available from: https://doi.org/10.1080/09297049.2020.1712347

Puderbaugh M, Emmady P.D. 2023. *Neuroplasticity.* [Online]. [Accessed 5 November 2023]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK557811/

Petacchi, A., Laird, A. R., Fox, P. T., & Bower, J. M. 2005. Cerebellum and auditory function: An ale meta-analysis of functional neuroimaging studies. *Human Brain Mapping.* [Online]. **25**(1), pp. 118–128. [Accessed 23 September 2023]. Available from: https://doi.org/10.1002/hbm.20137

Qiu, A., Crocetti, D., Adler, M., Mahone, E. M., Denckla, M. B., Miller, M. I., & Mostofsky, S. H. 2009. Basal ganglia volume and shape in children with attention deficit hyperactivity disorder. *American Journal of Psychiatry.* [Online]. 166(1), pp. 74–82. [Accessed 23 September 2023]. Available from: https://doi.org/10.1176/appi.ajp.2008.08030426

Raiker, J. S., Friedman, L. M., Orban, S. A., Kofler, M. J., Sarver, D. E., & Rapport, M. D. 2017. Phonological working memory deficits in ADHD revisited: The role of lower level information-processing deficits in impaired working memory performance. *Journal of Attention Disorders.* [Online]. **23**(6), pp. 570–583. [Accessed 27 September 2023]. Available from: https://doi.org/10.1177/1087054716686182

Rubia, K., Overmeyer, S., Taylor, E., Brammer, M., Williams, S. C. R., Simmons, A., & Bullmore, E. T. 1999. Hypofrontality in attention deficit hyperactivity disorder during higher-order Motor Control: A study with functional MRI. *American Journal of Psychiatry.* [Online]. **156**(6), pp. 891–896. [Accessed 3 September 2023]. Available from: https://doi.org/10.1176/ajp.156.6.891

Roden, I., Könen, T., Bongard, S., Frankenberg, E., Friedrich, E. K., & Kreutz, G. 2014. Effects of music training on attention, processing speed and cognitive music abilities—findings from a longitudinal study. *Applied Cognitive Psychology.* [Online]. **28**(4), pp. 545–557. [Accessed 3 September 2023]. Available from: https://doi.org/10.1002/acp.3034

Salari, N., Ghasemi, H., Abdoli, N., Rahmani, A., Shiri, M. H., Hashemian, A. H., Akbari, H., & Mohammadi, M. 2023. The global prevalence of ADHD in children and adolescents: A systematic review and meta-analysis. *Italian Journal of Pediatrics.* [Online]. **49**(1). pp. 2-12. [Accessed 1 September 2023]. Available from: https://doi.org/10.1186/s13052-023-01456-1

Schafer, E. C., Mathews, L., Mehta, S., Hill, M., Munoz, A., Bishop, R., & Moloney, M. 2013. Personal FM systems for children with autism spectrum disorders (ASD) and/or attention-deficit hyperactivity disorder (ADHD): An initial investigation. *Journal of Communication Disorders.* [Online]. **46**(1), pp. 30–52. [Accessed 1 November 2023]. Available from: https://doi.org/10.1016/j.jcomdis.2012.09.002

Sibley, M.H., Mitchell, J.T., & Becker, S.P., 2016. Method of adult diagnosis influences estimated persistence of childhood ADHD: a systematic review of longitudinal studies. *The Lancet Psychiatry*. [Online]. **3**(12), pp. 1157-1165. [Accessed 13 February 2025]. Available from: https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(16)30190-0/fulltext

Sibley, M. H., Swanson, J. M., Arnold, L. E., Hechtman, L. T., Owens, E. B., Stehli A., Abikoff, H., Hinshaw, S. P., Molina, B. S. G., Mitchell J. T., Jensen P. S, Howard A. L., Lakes K. D., Pelham W. E. 2017. Defining ADHD symptom persistence in adulthood: optimizing sensitivity and specificity. *Journal of Child Psychology and Psychiatry*. [Online]. **58**(6), pp. 655-662. [Accessed 17 September 2023]. Available from: https://doi.org/10.1111/jcpp.12620

Sibley, M. H., Arnold, L. E., Swanson, J. M., Hechtman, L. T., Kennedy, T. M., Owens, E., Molina, B. S. G., Jensen, P. S., Hinshaw, S. P., Roy, A., Chronis-Tuscano, A., Newcorn, J. H., Rohde, L. A. 2022. Variable Patterns of Remission From ADHD in the Multimodal Treatment Study of ADHD. *The American journal of psychiatry*. [Online]. **179**(2), pp. 142–151. [Accessed 13 February 2025]. Available from: https://doi.org/10.1176/appi.ajp.2021.21010032

Sibley, M. H., Kennedy, T. M., Swanson, J. M., Arnold, L. E., Jensen, P. S., Hechtman, L. T., Molina, B. S. G., Howard, A., Greenhill, L., Chronis-Tuscano, A., Mitchell, J. T., Newcorn, J. H., Rohde, L. A., & Hinshaw, S. P. 2024. Characteristics and Predictors of Fluctuating Attention-Deficit/Hyperactivity Disorder in the Multimodal Treatment of ADHD (MTA) Study. *The Journal of clinical psychiatry*. [Online]. **85**(4), pp. 1-11. [Accessed 13 February 2025]. Available from: https://doi.org/10.4088/JCP.24m15395

Smith, A., Taylor, E., Warner Rogers, J., Newman, S., & Rubia, K. 2002. Evidence for a pure time perception deficit in children with ADHD. *Journal of Child Psychology and Psychiatry.* [Online]. **43**(4), pp. 529–542. [Accessed 20 September 2023]. Available from: https://doi.org/10.1111/1469-7610.00043

Söderlund, G. B., & Jobs, E. N. 2016. Differences in speech recognition between children with attention deficits and typically developed children disappear when exposed to 65 DB of Auditory Noise. *Frontiers in Psychology.* [Online]. **7**, pp. 1-11. [Accessed 21 September 2023]. Available from: https://doi.org/10.3389/fpsyg.2016.00034

Solanto, M. V. 2014. Executive function deficits in adults with ADHD. In: Barkley, R. A. ed. *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment.* New York: The Guilford Press, pp. 256-263.

Song, P., Zha, M., Yang, Q., Zhang, Y., Li, X., & Rudan, I. 2021. The prevalence of adult attention-deficit hyperactivity disorder: A global systematic review and meta-analysis. *Journal of Global Health.* [Online]. **11**. pp. 1-9. [Accessed 3 September 2023]. Available from: https://doi.org/10.7189/jogh.11.04009.

Sweller, J., Ayres, P., Kalyuga, S. 2011. *Cognitive Load Theory. Explorations in the Learning Sciences, Instructional Systems and Performance Technologies.* [Online]. Vol 1. New York: Springer. [Accessed 10 October 2023]. Available from: https://doi.org/10.1007/978-1-4419-8126-4_11

Tallal, P. 2004. Improving language and literacy is a matter of Time. *Nature Reviews Neuroscience.* [Online]. **5**(9), pp. 721–728. [Accessed 23 September 2023]. Available from: https://doi.org/10.1038/nrn1499

Toplak, M. E., & Tannock, R. 2005. Time perception: Modality and duration effects in attention-deficit/hyperactivity disorder (ADHD). *Journal of Abnormal Child Psychology.* [Online]. **33**(5), pp. 639–654. [Accessed 29 September 2023]. Available from: https://doi.org/10.1007/s10802-005-6743-6

Toplak, M. E., Dockstader, C., & Tannock, R. 2006. Temporal information processing in ADHD: Findings to date and New Methods. *Journal of Neuroscience Methods.* [Online]. **151**(1), pp. 15–29. [Accessed 29 September 2023]. Available from: https://doi.org/10.1016/j.jneumeth.2005.09.018

Universities UK. 2023. *International Student Data.* [Online]. [Accessed 30 August 2023]. Available from: https://www.universitiesuk.ac.uk/universities-uk-international/explore-uuki/international-student-recruitment/international-student-recruitment-data

Von Steinbüchel, N., Wittmann, M., Strasburger, H., & Szelag, E. 1999. Auditory temporal-order judgement is impaired in patients with cortical lesions in posterior regions of the left hemisphere. *Neuroscience Letters.* [Online]. **264**(1–3), pp. 168–171. [Accessed 3 October 2023]. Available from: https://doi.org/10.1016/s0304-3940(99)00204-9

Walg, M., Hapfelmeier, G., El-Wahsch, D., & Prior, H. 2017. The faster internal clock in ADHD is related to Lower Processing Speed: WISC-IV profile analyses and time estimation tasks facilitate the distinction between real ADHD and pseudo-ADHD. *European Child and Adolescent Psychiatry.* [Online]. **26**(10), pp. 1177–1186. [Accessed 30 October 2023]. Available from: https://doi.org/10.1007/s00787-017-0971-5

Walley, A., & Carrell, T., 1983. Onset spectra and formant transitions in the adult's and child's perception of place of articulation in stop consonants. *Journal of the Acoustical Society of America.* [Online]. **73**(3), pp. 1011-1122. [Accessed 18 October 2023]. Available from: https://doi.org/10.1121/1.389149

Wang, T., Liu, K., Li, Z., Xu, Y., Liu, Y., Shi, W., & Chen, L. 2017. Prevalence of attention deficit/hyperactivity disorder among children and adolescents in China: A systematic review and meta-analysis. *BMC Psychiatry.* [Online]. **17**(1). pp. 1-11. [Accessed 2 September 2023]. Available from: https://doi.org/10.1186/s12888-016-1187-9

Wearden, J. H. 2008. The perception of time: Basic research and some potential links to the study of language. *Language Learning.* [Online]. **58**(1), pp. 149–171. [Accessed 20 September 2023]. Available from: https://doi.org/10.1111/j.1467-9922.2008.00468.x

Zheng, Q., Wang, X., Chiu, K. Y., & Shum, K. K. 2020. Time perception deficits in children and adolescents with ADHD: A meta-analysis. *Journal of Attention Disorders.* **26**(2), pp. 267–281. https://doi.org/10.1177/1087054720978557

Pragmatic competence in multi-party talk: Teaching EAP students turn-initial language.

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ABSTRACT

One gap in EAP research is the language needed for turn-taking in multi-party academic talk. This language is important for pragmatic competence in speech, since it is used to manage the relationships within the discourse (Aijmer, 2011; Evison, 2013; Viana and O' Boyle, 2021). While studies by Evison (2013) and Bardovi-Harlig et al. (2015) investigate useful turn-taking language in academic speech generally, they do not investigate the use of such language specifically in multi-party settings. The purpose of the current study is therefore to determine which vocabulary used at turn openings in more interactive academic talk needs to be taught so that EAP students can both understand the stance of the other interlocutors and take the floor in multi-party talk on their academic courses. To this end, the data sets proposed by both Evison (2013) and Bardovi-Harlig et al. (2015) are re-evaluated using only the seminars and study groups in the Michigan Corpus of Spoken Academic English. The results of this evaluation show that the most prevalent turn-initial lexes are multi-faceted and semantically nuanced words such as *yeah* and *well*. These words, however, tend to be used either inappropriately or not at all by language learners (Aijmer, 2011; Polat, 2011; and Lo, 2013). Thus, EAP teachers need to be cognisant of both the appropriate words to teach and strategies for teaching them (see Bardovi-Harlig et al., 2015; Heron, 2019; Tomlinson, 2020; Williams, 1988; Wong and Waring, 2010). This paper therefore concludes with a brief overview of pedagogic strategies suggested in the literature, such as providing class time for students to notice the target language in context along with scaffolded practice (Ryan and Forrest, 2021).

KEYWORDS: English for Academic Purposes, pragmatic competence, discourse management, turn-initial tokens, multi-party talk

INTRODUCTION

English for Academic Purposes (EAP) might have developed since its origins in the 1970s (Bell, 2024; Ding and Bruce, 2017) but EAP literacy still tends to focus on reading and writing rather than speaking and listening (Ding and Bruce, 2017). Where the latter are the focus of instruction, the purpose is more likely to be improving the students' understanding and expression of content, rather than developing pragmatic competence, the ability to use language in a contextually appropriate way, in the target language (Cohen, 2017; Wright et al., 2022). Furthermore, whilst research into pragmatics in higher education has been conducted (cf. Youn, 2018) and there appear to have been 'a plethora of studies' (Farahani and Ghane, 2022, p. 50) on the subject of discourse management in writing, this is not the case with the language needed for turn-taking, such as for showing agreement or exemplifying (Farahani and Ghane, 2022).

This lack of pragmatic knowledge is likely to have a detrimental effect on EAP students and their learning, since it is crucial for engagement in multi-party talk (Bardovi-Harlig et al., 2015; Farahani and Ghane, 2022). Multi-party talk such as seminars forms part of most courses in higher education (Basturkmen, 1999; Bardovi-Harlig et al., 2015; Dang, 2018; Heron, 2019; Heron et al., 2021; Lin, 2015; Walsh et al., 2011) and requires competence in turn-taking, since it is the start of an utterance in English which contains the stance of the current speaker (Evison, 2013; Farahani and Ghane, 2022; Heron, 2019; Polat, 2011; Viana and O' Boyle, 2021; Wright et al., 2022), an understand of which enables appropriate next-turn preparation (Farahani and Ghane, 2022; Young, 2018). However, it has been shown that language learners 'develop pragmatic competence very slowly' without instruction (Caprario, 2020, p. 127; see also Ryan and Forrest, 2015, 2021) and if EAP teachers are to provide adequate instruction, they need to have the knowledge to support their students but this is not currently the case (see Bardovi-Harlig et al., 2015; Heron, 2019; Tomlinson, 2020; Williams, 1988; Wong and Waring, 2010).

In view of the importance of pragmatic competence for learning during academic multi-party talk such as seminars, the aim of this study is to determine which words or phrases are most likely to be used to take the floor in these circumstances, so that EAP students can both understand and actively participate in all forms of group work. Such information appears to be available in the literature but either the researchers have chosen a discreet set of tokens to analyse (e.g. Farahani and Ghane, 2022), have looked for expressions which perform a pre-determined set of functions (e.g. Bardovi-Harlig et al., 2015) or have searched both the interactive and monologic speech events in the corpus

(e.g. Evison, 2013). The totality of the data acquired would therefore benefit from being collated and verified as useful for pragmatic competence in academic speech events with multiple parties. To this end, the current study takes the data from the three most comprehensive studies identified in the literature (Bardovi-Harlig et al., 2015; Evison, 2013; Haselow, 2019) and searches for all suggested turn-initial tokens in the seminars and study groups in the Michigan Corpus of Academic Spoken English (MiCASE)[1] to determine which are most prevalent. This shows that the most useful vocabulary for taking the floor in academic multi-party talk is words such as *yeah* to show agreement and *well* to show disagreement. However, as such vocabulary has 'subtleties in usage and shades in meanings' (Lo, 2013, p. 21), it may be challenging for language learners to acquire, so the literature is also drawn upon for pedagogic interventions, such as EAP students being given scaffolded observations of naturally occurring interactions, so that they can acquire a fuller understanding of their linguistic choices.

DATA ON TURN-INITIAL LEXIS IN THE LITERATURE

For the purposes of the current study three research projects have been used. The first study is by Evison (2013), the purpose of which is to improve the knowledge base of the Common European Framework of Reference with regard to turn-taking. The study uses CANCAD, the academic sub-corpus of the Cambridge and Nottingham Corpus of Discourse in English (CANCODE)[2], to analyse the turn-openings in a variety of academic settings (see Table 1), including lectures and PhD supervisions as well as speech events which are either more interactive or have more participants such as seminars and group tutorials. Evison (2013) then compares the data from CANCAD with that found in CANCSOC, the social language sub-corpus of CANCODE and finds that the words most likely to be uttered first upon taking the floor in social situations are broadly the same as those uttered at the start of a turn in academic contexts (Evison, 2013): the results show that the twenty forms most likely to be turn-initial are used in this position in 64.11% of utterances in CANCAD and 59.43% in CANCSOC.

[1] Simpson, R. C. , Briggs, S. L. , Ovens, J. , and Swale, J. M. 1997-present. *Michigan Corpus of Academic Spoken English*. [Accessed 15 June 2022]. Available from: https://quod.lib.umich.edu/m/micase/

[2] *The Cambridge and Nottingham Corpus of Discourse in English* © CUP 2025. Further information available from: https://www.cambridge.org/elt/corpus/default.htm [Accessed 28 May 20225]. This corpus is not publicly accessible and is therefore not used in the current study

Turn-initial items	Raw frequency
yeah	1,339
and	522
I	498
yes	490
right	477
it	313
but	280
so	276
well	261
you	253
that	245
no	238
okay	219
oh	182
the	177
because	131

Table 1: Sixteen most frequent turn-initial words in CANCAD[3] (Evison, 2013).

The second study is by Bardovi-Harlig et al. (2015) and its purpose is to develop teaching materials for the instruction of pragmatics in academic discussions, with a focus on expressions to show agreement, disagreement and to ask for or provide clarification. To obtain the data for this study, they search the whole of MiCASE, from lectures through to seminars, and ascertain that most frequent turn-initial expressions are as shown in Table 2.

Turn-initial item	Raw frequency
Yeah but	233
What I mean	195
Okay but	170
That's right	167
You're saying	165
You're right	139

[3] CANCAD is quarter of a million words.

That's true	118
I agree (with/but)	69
Do you mean/what do you mean	67
I have a question	65
What you're saying	63
I don't think so	56
Good point	34
Your point	33
Sounds good	25
In other words	23

Table 2: Sixteen most frequent expressions to indicate agreement, disagreement or clarification in MiCASE[4] (Bardovi-Harlig et al., 2015).

The third study, by Haselow (2019), is different from those by Evison (2013) and Bardovi-Harlig et al. (2015) insofar as it looks at the order of items in clusters of words (e.g. *yeah well because*) at the start of turns in social interactions. It uses the unscripted sections of British social English from the International Corpus of English sections S1A-S2B[5] (ICE-GB) but is useful for the current study in view of Evison's (2013) finding that turn-taking language in academic settings is comparable to that in social settings. Indeed, a comparison of Haselow's (2019) data in Table 3 with Evison's (2013) findings in Table 1 supports the observation that turn-initial language is similar in both settings.

Item	**Raw frequency**
yeah	2,520
yes	2,149
so	1,848
oh	1,596
well	1,518
I mean	1,013
no	701
but	567
I think	542
okay	452
because	446
and	322
anyway	134
then	109

[4] The whole of MiCASE totals 1.8 million words.

[5] *ICE-GB* © UCL 1999-2011 is available from: https://www.ucl.ac.uk/english-usage/projects/ice-gb/ This corpus is not accessed in the current study. The section of the corpus examined by Haselow (2019) is three quarters of a million words.

actually	98
you know	49

Table 3: Sixteen most frequent turn-initial tokens in ICE-GB (sections S1A-S2B) (Haselow, 2019).

There are, however, several challenges in using the data from these three studies to help EAP students develop their pragmatic competence in the act of turn-taking. As already mentioned, one is that both Evison (2013) and Bardovi-Harlig et al. (2015) use the entirety of their chosen corpus to gather data, which means that the results may be inaccurate for multi-party interactions in academia. Secondly, Evison (2013) counts only the first token rather than an entire phrase (e.g. only *I* instead of *I mean),* which means that some similarities between the corpora may be missed. Thirdly, Bardovi-Harlig et al. (2015) look at only the functions of agreement, disagreement and clarification, whereas interlocutors may also need other functions in academic multi-party talk, such as changing the focus of the discussion. Fourthly, whilst the data from Haselow (2019) bears some resemblance to that in Evison's (2013) study, it needs to be verified in an academic corpus before it can be used in EAP teaching materials, otherwise materials writers will fall into the trap of using 'educated guesswork and hunches' (Williams, 1988, p. 53) rather than writing materials 'which reflect the world as it actually is' (Tomlinson, 2020, p. 13). In other words, EAP instruction could be improved by teachers in this field having access to data for which there is evidence of usefulness.

METHODOLOGY

In view of the considerations mentioned above, the current study uses the seven seminars and eight study groups in MiCASE, which is an open access corpus, freely available on the internet. The seminars are in the disciplines of Philosophy, French Cinema, English Composition, Public Policy, Politics of Higher Education and Buddhist Studies and the eight study groups are in Maths, Objectivism, Chemical Engineering, American Family, Biochemistry, Introduction to Biology and a group dedicated to discussing the students' theses.

Each of these items documented by Evison (2013), Bardovi-Harlig et al. (2015) and Haselow (2019) is entered into the search engine of MiCASE to determine how frequently they are uttered in the seminars and study groups, which appear to be the most interactive multi-party speech events it contains. Then each event is manually searched to count the number of tokens which are turn-initial. If the turn-initial language is a single word, it is discounted if not said in full in order to reduce the

chance of misinterpretation, for example if an interlocuter says *y-*, which could not only be *yes* or *yeah* but any other word starting with the phoneme /y/. Likewise, if an expression (e.g. *I mean)* is incomplete, it is discounted.

RESULTS

As shown above, Evison (2013) investigates the initial tokens in an utterance in academic speech generally. When this data is re-examined in only the MiCASE seminars and study groups[6], the sixteen most frequent items used as initial tokens are shown to be the same (see Table 4). The difference is in the order of frequency. For example, the first-person singular pronoun *I* is the third most frequent turn opening in Evison (2013) but second in the current study.

Turn-initial items	**Raw frequency**
yeah	1,015
I	963
oh	700
okay	549
so	518
well	425
right	423
it	378
that	315
no	276
you	260
and	254
but	230
the	164
because/cuz	105 (because 56)
yes	78

Table 4: Evison's (2013) sixteen most frequent turn-initial items in MiCASE seminars and study groups

On the other hand, a re-evaluation of the Bardovi-Harlig's (2015) data results in quite different findings from the original study, as shown in Table 5. In other words, the results of the re-evaluation show that such lexical items are rarely found in turn-initial position in academic multi-party talk and therefore appear to be less beneficial for EAP students to be taught than the items observed in Evison's (2013) study.

[6] The seminar and study group sections of MiCASE total a quarter of a million words.

Item	Raw frequency
Yeah but	42
I don't think so	12
That's right	11
That's true	8
I agree (with/but)	6
Okay but	5
You're right	4
Do you mean/what do you mean	4
I have a question	3
Sounds good	2
Good point	1
What I mean	1
What you're saying	0
In other words	0
You're saying	0
Your point	0

Table 5: Bardovi-Harlig et al.'s (2015) sixteen most frequent turn-initial items in MiCASE seminars and study groups

In contrast to Bardovi-Harlig et al.'s (2015) data but similar to Evison's (2013), the current study shows that Haselow's (2019) data, as detailed in Table 6, are largely useful to teach on EAP courses. The exceptions may be words such as *actually* and *anyway*, which appear infrequently as turn-openers in the MiCASE seminar and study groups.

Most frequent turn-initial items	Raw frequency
yeah	1,015
oh	700
okay	549
so	518
well	425
no	276
and	254
but	230

I think	193
because/cuz	105 (because 56)
yes	78
I mean	44
then	23
you know	22
actually	10
anyway	2

Table 6: Haselow's (2019) sixteen most frequent turn-initial items in MiCASE seminars and study groups

DISCUSSION

In contrast to the findings of Evison (2013) and Haselow (2022), Bardovi-Harlig et al. (2015) propose a range of expressions. These are either formulaic, such as *in other words,* or more semantically transparent, such as *what I mean,* as shown in Table 2. Prioritising the acquisition of such items is, however, questionable. As the data in Tables 4, 5 and 6 demonstrate, when the language suggested by Evison (2013), Bardovi-Harlig et al. (2015) and Haselow (2019) respectively is compared in MiCASE seminars and study groups, it becomes clear that, aside from *I think* and *I mean,* expressions are uncommon turn openings.

There is also a marked contrast between the frequency of items at the top of Table 6 and those at the bottom. A similar phenomenon can be seen in Table 4, although to a lesser extent. In other words, whilst there is no doubt that *yeah* is important for pragmatic competence in academic multi-party talk, tokens such as *actually* and *anyway* (Table 6) may be no more useful than expressions such as *I don't think so* or *sounds good* (Table 5). Even taking into account the variation between corpora (cf. Biber et al., 1999), dedicating time in the classroom to vocabulary for which is there is little evidential basis supports the concerns of authors such as Williams (1988) and Tomlinson (2020), as highlighted earlier in this paper. Erroneous vocabulary will not help the participants in academic multi-party talk. They are emotionally involved rather than simply exchanging information (Evison, 2013; Viana and O' Boyle, 2021) and the turn opening 'is characterised as a site of engagement with non-transactional needs' (Evison, 2013, p. 5). Helping EAP students to understand the impact of the more frequently uttered words and phrases must therefore be the most appropriate strategy for improving pragmatic competence.

The impact of such expressions is the illocutionary force, the underlying socially constructed meaning. The potential impact of misusing or misunderstanding these expressions is 'interpersonal misunderstandings' (Al Hamdany and Picard 2015, p. 50; see also Chapman 1982; and Cohen, 2017) and a breakdown in communication (Bardovi-Harlig et al., 2015; Cohen, 2017). In other words, if listeners fail to assess the underlying socially constructed meaning of the current speaker or the current speaker fails to choose an expression with the desired illocutionary force, the consequence could be an inappropriate next turn and the need for repair work, which at best would reduce the amount of time available for learning.

Thus, the current study proposes that EAP students be given the opportunity on their courses to develop their understanding and ability to use the lexical items documented in the study by Evison (2013) for taking the floor in academic multi-party talk. That is to say, the participants in academic multi-party talk are more likely to need a pronoun, a conjunction, the discourse markers *oh* and *well* or the adverbs *yeah* and *no* than formulaic expressions such as *in other words.* These small words are important for pragmatic competence, without which rapport, followed by learning outcomes, may be affected.

The issue of rapport is fundamental to success in multi-talk. Subtle differences in illocutionary force can affect the social appropriateness and acceptability of an utterance (Polat, 2011; Romero Trillo, 2002). Thus, pragmatic errors can then lead to awkwardness and other negative emotions, which may inhibit learning (Al Hamdany and Picard, 2015; Caprario, 2020; see also Spencer-Oatey and Dauber, 2016). A study by Kasper in 1984 had already highlighted this phenomenon and concluded that students needed to be supported in their mastery of the pragmatic as much as the semantic meaning of utterances. Thus, it is imperative that pragmatics forms part of the teaching of vocabulary and communication skills on EAP courses.

Teachers and language learners have three overarching needs. The first is to understand the relevance of turn-initial language in academic multi-party talk. The second is an awareness of not just the kind of language that is most likely to occupy first position in an utterance in such speech events but also the nature of this language. The third is to have the mechanisms for teaching and learning such language.

Firstly, teachers and learners would benefit from understanding the salience of the turn opening with regard to response preparation in English. That is, the opening expression tells the listener broadly what the rest of the turn is about (Young, 2018), whether it is adding contradictory information or showing affiliation, for example. From this point, it is then possible and necessary to start preparing the response, otherwise it may not be ready in time for the potential respondent to take the floor at the next opportunity (Levinson, 2016; see also Ryan and Forrest, 2015 and 2021; and Tanaka, 2008). Thus, the more familiar interlocutors are with the vocabulary at turn-openings, the more easily they can either process a response on time or facilitate a timely response from others involved in the discussion.

Secondly, Ryan and Forrest (2021) describe turn-taking as dominated by 'contingent possibilities rather than firm rules' (p. 103). This can be illustrated with the examples of *well* and pronouns such as *you*. According to Aijmer (2011) and Polat (2011), *well* has several functions. In turn-initial position, it can mean that (1) the speaker is deliberating what to say; (2) the speaker is reluctant to answer a question; (3) the speaker either only half-heartedly agrees or in fact disagrees with the prior speaker; (4) the speaker is asking, in a face-saving manner, the prior speaker to reconsider what was said. With regard to pronouns, their meaning is determined by who is talking to whom (O'Boyle, 2014), for example. This means that, while the vocabulary items Evison (2013) and Haselow (2019) highlight are very common in spoken English (cf. the *Longman Dictionary of Contemporary English,* 2003), EAP students may still be unfamiliar with their multifarious uses and nuances in meaning.

This difficulty is demonstrated in a range of studies. Turn-initial vocabulary which has been shown to be difficult to acquire includes *well* (Aijmer, 2011; Polat, 2011; and Romero Trillo, 2002), *I think* (Baumgarten and House, 2010), *yeah* (House, 2013; and Lo, 2013) and *agree* (Kashida and Chan, 2015). Further, studies by Polat (2011) and then Kizil (2017) suggest that even motivated learners who have a high level of exposure to spoken English do not readily acquire this functional language (see also Cohen, 2017). When students are therefore unwilling or unable to find opportunities to interact in English, this could have an even greater negative bearing on the development of the students' turn-taking ability (cf. Kesckes et al., 2018 for discussion on differences between students). Polat's (2011) and Kizil's (2017) conclusion is therefore that there is value in conspicuously teaching these items of vocabulary.

'Conspicuous teaching' could mean teachers providing noticing tasks, which both Bardovi-Harlig et al. (2015) and Ryan and Forrest (2015, 2021) demonstrate to be effective in improving pragmatic competence. In addition to this, when the students are in discussion it may be to their advantage to focus less on the language needed to express content so that they have more mental space for pragmatic considerations (Kesckes, 2007, cited in O' Boyle, 2014). Another strategy suggested in the literature is writing a reflection after a speaking activity. This has a potential two-fold benefit in that students can learn both through observation (Caprario, 2020) and through teachers' responses to these reflections (Ryan and Forrest, 2021).

CONCLUSION

This study has investigated the most useful vocabulary for EAP students to learn for their pragmatic competence in academic multi-party talk. To this end, it has analysed the turn-initial lexical items proposed by Bardovi-Harlig et al. (2015), Evison (2013) and Haselow (2019) and determined that the most useful tokens to master in this context are pronouns, conjunctions, the discourse markers *oh* and *well* and the adverbs *yeah* and *no.*

Whilst these words may seem familiar, they have many functions and meanings, which makes them difficult to acquire sufficiently well to facilitate turn-taking. It is therefore necessary for EAP teachers to be aware of their importance and to provide opportunities for their successful acquisition. It is also important for teachers to remember that turn-taking involves listening as well as speaking and that therefore pragmatic comprehension is as necessary as being able to choose the correct word at the correct time. If then their students become more adept at understanding the relational aspects of talk and how to display this in turn-taking, this will empower the students to increase their learning through multi-party talk on their academic courses.

Choice of vocabulary is one aspect of pragmatic competence. Others, such as prosody, have not been covered in this paper but are also likely to have a bearing on communicative outcomes. It would therefore be of benefit for teachers to be cognisant of these additional aspects and for them to dedicate time within lessons to such tuition. After all, their students deserve the opportunity to reach their potential and to do so without pragmatic failures.

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REFERENCES

Aijmer, K. 2011. Well I'm not sure I think… The use of well by non-native speakers. *International Journal of Corpus Linguistics.* [Online]. **16**(2), pp. 231-254. [Accessed 24 July 2024]. DOI: https://doi.org/10.1075/ijcl.16.2.04aij

Al Hamdany, H. and Picard, M. 2015. Narratives of Iraqi adult learners: Experiences of spoken register in English for academic purposes programs at an Australian University. *Journal of Adult and Continuing Education.* **21**(1), pp. 48-71.

Bardovi-Harlig, K., Mossman, S. and Vellenga, H. E. 2015. Developing corpus-based materials to teach pragmatic routines. *TESOL Journal*. **6**(3**)**, pp. 499-526.

Basturkmen, H. 1999. Discourse in MBA seminars: Towards a description for pedagogical purposes. *English for Specific Purposes*. **18**(1), pp. 63-80.

Baumgarten, N. and House, J. 2010. I think and I don't know in English as a lingua franca and native English discourse. *Journal of Pragmatics*. **42**(5), pp. 1184-1200.

Bell, D. E. 2024. *English for Academic Purposes: Perspectives on the Past, Present and Future.* [Online]. Bristol: Multilingual Matters. [Accessed 7 October 2025]. Available from: https://doi.org/10.21832/BELL4488

Biber, D., Johanson, S., Leech, G., Conrad, S. and Finegan, E. 1999. *Longman Grammar of Spoken and Written English.* Harlow: Longman.

Caprario, M. 2020. Developing pragmatic competence in English academic discussions: An EAP classroom investigation. *Lodz Papers in Pragmatics.* **16**(1). pp. 123-152.

Chapman, R. 1982. Developing awareness of register in English. *System.* **10**(2), pp. 113-118.

Cohen, A.D. 2017. Teaching and Learning Second Language Pragmatics In: Hinkel, E. (ed). *Handbook of Research in Second Language Teaching and Learning*. Volume 3. [Online]. New York and London: Routledge, pp.428–452. [Accessed 4 June 2025]. Available from: https://doi.org/10.4324/9781315716893

Dang, T.N.Y. 2018. The nature of vocabulary in academic speech of hard and soft sciences. *English for Specific Purposes*. **51**, pp. 69-83.

Ding, A. and Bruce, I. 2017. *The English for Academic Purposes Practitioner. Operating on the Edge of Academia.* Cham, Switzerland: Palgrave Macmillan.

Evison, J. 2013. A corpus linguistic analysis of turn-openings in spoken academic discourse: an EAP classroom investigation. *English Profile Journal.* [Online]. [Accessed 19 June 2024]. Available from: https://doi:10.1017/S2041536212000049

Farahani, M. V. and Ghane, Z. 2022. Unpacking the function(s) of discourse markers in academic spoken English: a corpus-based study. *The Australian Journal of Language and Literacy.* **45**, pp. 49-70.

Haselow, A. 2019. Discourse marker sequences: Insights into the serial order of communicative tasks in real-time turn production. *Journal of Pragmatics.* **146**, pp. 1-18.

Heron, M. 2019. Pedagogic practices to support international students in seminar discussions. *Higher Education Research and Development,* **38**(2), pp. 266-279.

Heron, M., Dippold, D., Hosein, A., Khan Sullivan, A., Aksit, T., Aksit, N., Doubleday, J. and McKeown, K. 2021. Talking about talk: tutor and student expectations of oracy skills in higher education. *Language and education*. **35**(4), pp. 285–300.

House, J. 2013. Developing pragmatic competence in English as a lingua franca: Using discourse markers to express (inter)subjectivity and connectivity. *Journal of Pragmatics.* **59**, pp 57-67.

Kashida, H. and Chan, S. H. 2015. A little bit about: Differences in native and non-native speakers' use of formulaic language. *Australian Journal of Linguistics*. **35**(4), pp 297-310.

Kasper, G. 1984. Pragmatic comprehension in learner-native speaker discourse. *Language learning*. **34**(4), pp.1–20.

Kecskes, I., Sanders, R. E. and Pomerantz, A. 2018. The basic interactional competence of language learners. *Journal of Pragmatics.* **124**, pp. 88-105.

Kizil, A. S. 2017. The use of metadiscourse in spoken interlanguage of EFL learners: A Contrastive analysis. *4th Teaching & Education Conference, 24 April 2017, Venice.* [Online]. Prague, Czech Republic: International Institute of Social and Economic Sciences, pp. 121-134. [Accessed 29 May 2025]. DOI: https://doi.org/10.20472/TEC.2017.004.010

Levinson, S. C. 2016. Turn-taking in human communication – Origins and implications for language processing. *Trends in Cognitive Sciences*. **20**(1), pp. 6-14.

Lin, C.-Y. 2015. Seminars and interactive lectures as a community of knowledge co-construction: The use of modifiers. *English for Academic Purposes.* **38**, pp. 99-108.

Lo, C. H. Y. 2013. Turn-initial *yeah* in nonnative speakers' speech: A routine token for not-so-routine interactional projects. *Working Papers in TESOL & Applied Linguistics,* **13**(2), pp. 21-35.

Longman Dictionary of Contemporary English. The Living Dictionary. 4th ed. 2003.

O' Boyle, A. 2014. 'You' and 'I' in university seminars and spoken learner discourse. *Journal English for Academic Purposes.* **16**, pp. 40-56.

Polat, B. 2011. Investigating acquisition of discourse markers through a developmental learner corpus. *Journal of Pragmatics.* **43**(15), pp. 3745-3756.

Romero Trillo, J. 2002. The pragmatic fossilization of discourse markers in non-native speakers of English. *Journal of Pragmatics*. **34**(6), pp. 769-784.

Ryan, J. and Forrest, L. 2015. Teaching turn-taking. *Modern English Teacher*. [Online]. **24**(4), pp. 69-71. [Accessed 11 March 2025]. Available from: https://www.researchgate.net/publication/282606082_Teaching_turn-taking

Ryan, J. and Forrest, L. 2021. 'No chance to speak': developing a pedagogical response to turn-taking problems. *Innovation in language learning and teaching*. [Online]. **15**(2). pp.103–116. [Accessed 11 March 2025]. Available from: https://doi.org/10.1080/17501229.2019.1687709

Spencer-Oatey, H. and Dauber, D. 2017. The gains and pains of mixed national group work at university. *Journal of Multilingual and Multicultural Development*. 38(3), pp. 219-236.

Tanaka, H. 2008. Delaying Dispreferred Responses in English: From a Japanese Perspective, *Language in Society.* **37**(4), pp. 487-513.

Tomlinson, B. 2020. Is material development progressing? *Language Teaching Research Quarterly.* **15**, pp. 1-20. [Online]. [Accessed 15 October 2025]. Available from: https://files.eric.ed.gov/fulltext/EJ1270211.pdf

Viana, V. and O' Boyle, A. 2021. Corpus research in spoken academic discourse. In Viana V. and O' Boyle A. eds. *Corpus Linguistics for Academic Purposes.* [Online]. London: Taylor and Francis. [Accessed 4 June 2024]. Available from: https://doi.org/10.4324/9781003245988

Walsh, S., Morton, T., and O'Keefe, A. 2011. Analysing university spoken interaction: A CL/CA approach. *International Journal of Corpus Linguistics.* **16**(3), pp. 325-345.

Williams, M. 1988. Language taught for meetings and language taught in meetings: Is there anything in common? Applied Linguistics, 9(1), pp 45-58.

Wong, J. and Waring, H. Z. 2010. Conversation analysis and second language pedagogy: A guide for ESL/EFL teachers. New York: Routledge.

Wright, C., Tsakalaki, A. and Lin, M. 2022. "Now I hear what you say" - How short EAP courses can foster successful academic interactional strategies. *Journal of English for Academic Purposes.* **55**, pp. 101074.

Youn, S. J. 2018. Task-based needs analysis of L2 pragmatics in an EAP context. *Journal of English for academic purposes*. **36**, pp.86–98.

Young, D. 2018. Contrastive models for turn-taking in English and Japanese. *The Language Teacher.* [Online]. **42**(3), pp. 9-12. [Accessed 15 January 2020]. Available from: https://jalt-publications.org/sites/default/files/pdf-article/42.3tlt-art2.pdf