# Newcastle **Educational Psychology Service**

## **Theoretical** and Practical **Strategies for ADHD** in **Schools**



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## **Short Introduction to ADHD Training**

#### What is ADHD?

 Attention deficit hyperactivity disorder is a condition that describes children whose inattention, impulsiveness and/or hyperactivity is such that it interferes with their daily functioning. (George Still, 1902).







George Still was a Paediatrician and is responsible for the first recorded mention of ADHD. At the time, he referred to ADHD as: "an abnormal defect of moral control in children" – something we certainly don't ascribe to today! However, the description he wrote of ADHD above is still very much relevant. He also noted that children with ADHD are still very intelligent. His work proves that ADHD is not a newly emerging phenomenon. Medical and Psychological research into ADHD is over a century old.

## A Clinical Diagnosis

- ADHD is a <u>clinical diagnosis</u> that must be given by <u>a certified ADHD</u> specialist.
- According to the DSM-IV and ICD —
   11. To be diagnosed patients must show signs of inattention and/or hyperactivity and impulsivity in multiple settings over a period of at least 6 months that impacts their ability to function.





ADHD *must* be diagnosed by a certified specialist. This is not always a medical doctor, but it is always a clinical professional with qualifications and experience that allows them to diagnose ADHD specifically.

The main documents relevant to the diagnosis of ADHD are:

The Diagnostic and Statistical Manual of Mental Disorders (currently in its fourth edition and referred to as DSM-IV) produced by the American Psychiatric Association

and...

The International Classification of Diseases (produced by the World Health Organization and currently in its eleventh revision).

Both manuals are verisimilar and both state explicitly that behaviours relating to inattention, hyperactivity and impulsivity must be observed over multiple settings, over a period of six months or more and must impact the persons ability to function in the academic, occupational or social lives.

### What is ADHD?

- It is unclear what causes ADHD, NHS England
  - It may be genetic
- There may be some physical differences between the brains of those with and without
- Premature birth?
- Epilepsy? Brain injury?
- With no clear biological cause, many argue that ADHD is a social construct caused by western society and our education system (Gerald Coles, 1989; Sammi Timimi and Eric Taylor, 2004).







The NHS' own website provides numerous potential biological causes for ADHD that can be seen in the slide above. While this does provide substantial evidence for a physical or biological cause of ADHD. The evidence is not complete. See below:

#### **Genetic Basis**

There is evidence that ADHD does run in families but no specific gene or cluster of genes have been identified that might cause ADHD.

#### **Brain Imaging**

Evidence from brain imaging studies does suggest physical differences in the brain between typical and ADHD patients. In particular, the cortex and prefrontal cortex have been found to be thinner in patients with ADHD on average. These areas of the brain are thought to be involved in many executive functioning processes (more information on those later). However, physical size difference in the brain is not always caused by biology and can be caused by behaviour. A study by E. A. Maguire in 2000 found that London taxi drivers had structural changes that made parts of their brain related to direction and co-ordination much larger than that of the typical patient. This was a result of their occupation and not pathological. Furthermore, the size of a particular

part of the brain is not always indicative of cognitive or behavioural difference. For example, on average, women have slightly smaller brains overall than men, but this does not lead to any difference in intelligence or function.

#### **Premature Birth and Epilepsy**

There does appear to be a correlation between premature birth and epilepsy and the likelihood of developing ADHD. However, there is a saying in Psychology. Correlation and not causation. This means that just because they often occur frequently together does not mean that one causes the other. Even if one does cause the other, a correlation provides no indication of which causes the other to happen.

#### **Brain Injury**

It has been known for patients to develop ADHD following a brain injury. This does support the evidence found in brain imaging scans above as often the brain injuries are similar to the physical differences found in typical and ADHD patients' brains. Thankfully, brain injury is a relatively rare occurrence but this does also mean that the data available is limited and often multiple parts of the brain and a person's functioning are affected. This means it cannot be conclusively determined that a difference in a specific part of the brain causes ADHD.

As a result of the difficulties found in examination of these biological causes, many theorists suggest that ADHD does not have a biological cause and instead is a social construct. This can be argued quite successfully, but the biological evidence cannot be ignored or easily explained away. Ultimately, we just do not know.

It is important to understand that even if ADHD does not have a physical or biological cause, that does not mean it is not real. There are plenty of social constructs that cause changes in our thoughts and behaviour – test anxiety and grief are excellent examples of this. Neither has a biological cause but no one would deny the reality of the emotional and cognitive states associated with them.

# What does ADHD look like?

- ADHD is often split into three areas.
   What do you think each could look like in the classroom? Let's discuss and generate some ideas.
- Inattentive
- Hyperactive
- Impulsive







Think carefully about your own learners – both with an without ADHD – what do you think inattentiveness, hyperactivity and impulsiveness looks like? Do your impressions match the descriptions below?

<u>Inattentive</u> children have difficulty paying attention to small details, are easily distracted and may find it difficult to organise or finish even routine tasks.

<u>Hyperactive</u> children may fidget, squirm or feel the need to be constantly in motion or talking.

<u>Impulsive</u> children may appear unable to take turns, interrupt others, make decisions without thinking or have little-to-no sense of danger.

These symptoms may occur independently or together. In most cases when they are separate, inattention tends to appear on it's own, whilst hyperactivity and impulsivity tend to appear together (DSM-IV American Psychological Association, 2013).

### Keep Medication in Mind





Be sure to keep in mind that children who are medicated for ADHD often suffer sideeffects from their medication that can be distressing.

Medication is now considered to be the first-line treatment for cases of severe or moderate ADHD according to NICE guidelines (The document the NHS uses as a guide for best practice in treatment). This is especially true when they have only recently begun the medication and the correct dosage for them is not yet known, or at the beginning of the academic year when many of them will have been off their medication over the summer (this is at the instruction of the prescriber and not parental choice!)

Common side effects of the most common medications used in the UK include: high blood pressure, headaches, nausea, diarrhoea, loss of appetite, trouble sleeping, aggression, drowsiness, dizziness, mood swings, fatigue, dry mouth and abdominal pain.

Just because a child has been medicated for ADHD does not mean their diagnosis will no longer impact their learning.

#### Executive Function

- Executive Function is the name for not one, but many different thought processes. These include but are not limited to:
  - Connecting past experiences to present actions Forward-planning

  - Organisation
  - Prioritisation
  - Attention
  - Working memory
     Inhibition

(Malenka, Nestler, and Hyman, 2009; Diamond, 2013; Chan, Shum, Toulopoulou and Chen, 2008)







**Executive Function/Functions/Functioning is the name for multiple different thought** processes. It is not an easily or consistently defined subject in Psychology – though not for lack of people trying! People with ADHD suffer deficits in their executive functions. This does not mean that they cannot acquire the associated skills and controls above, but it does mean that it will likely be harder for them to pick them up and some of them may never be mastered.

The best way to remember what skills might be used in executive function is to think about the words 'executive' and 'function'. It sounds like some sort of fancy black-tie dinner party! Now think about all the skills you would need to use in order to host such a party; those are all your executive function skills!

## Strategies to Promote the Inclusion of Learners with ADHD.

 There are some simple strategies included on your handout but some particularly pertinent ones are included here:

#### Classroom Routines:

- Instructions
- Feedback

#### Teaching and Learning:

- Game-based Learning
- Gamification





There are a multitude of practical strategies to help you in the classroom included in this booklet. In the training however, we focus on those that might be new, interesting, unusual or particularly important for you to try. As you can see above, these are split into your daily classroom routines and the very basics of your teaching practice, as well as over-arching teaching and learning approaches that may help you with your lesson planning.

#### Classroom Routines: Instructions.

- · Simple and single task-based.
- Focused on doing, not 'not-doing'. For example: "Listen quietly" instead of "Stop talking".
- Threefold On the board, on the page and out of the mouth.
- Clear, at the top and easy to refer back to.
- Include visual cues.
- Be paid attention to otherwise be prepared to go over and instruct them individually.
- Have key words highlighted or have the time for learners to highlight them on their own.





We are sure that many of these strategies will be familiar to you. The fact is that the majority of useable strategies for children with ADHD are the same as those of quality first teaching. There are a couple that are still important to note however:

Instructions should be focused on 'doing' and not 'not doing'. This might seem like a very subtle change but when we consider the role of executive functioning in children with ADHD, it is a small change that makes a huge difference. Inhibition (stopping yourself from performing a behaviour) is part of executive function. As a result, children with ADHD can often struggle to inhibit (or 'not do') their behaviours. By instructing them to perform a different behaviour, rather than to stop their current behaviour, you are easing the toll this takes on executive functions and playing to their strengths.

Threefold instructions are a life-saver but can be especially useful for children with ADHD. With instructions visible on the board, at the top of the page they are working on and coming out of your mouth exactly the same, you give three chances to pay attention to them while only having to explain what to do yourself once. When the inevitable hand goes up asking what to do and you can simply refer them back to the board or the page while you attend to more urgent needs.

### Classroom Routines: Feedback

- Simple and single task-based.
- Responded to immediately with dedicated time in-lesson for effective response.
- Positive and relatively sparse to avoid higher need for executive functions (Redifer, Bae and Zhao 2021).
- Be explicitly clear in where and how learners are expected to respond.
- Always be formative even in instances when a grade is attached.



According to the Education Endowment Foundation's own systematic literature review and guidance reports (June, 2021), feedback in the lowest cost, highest impact and most strongly evidence-based activity that you can engage your learners in to make progress.

We are sure that how you conduct feedback is already excellent, but there are some points here once again that are particularly pertinent when taken in a psychological context.

The first to note is that research suggests that positive feedback requires less demand on executive function to process. This would mean that ADHD learners are more likely to be able to respond effectively to feedback that is framed positively. This does not mean it cannot contain corrections or suggestions for improvement, it simply means that feedback, whether verbal or written, should be positive and supportive in tone.

The second point of note is that feedback should always include formative comments or strategies even when a grade is given. Research shows all students, not just those with ADHD, pay more attention to a grade when a grade is given than any comments

or strategies for improvement or praise when both are present. The same research also suggests that students need formative comments as well as a summative grade to progress (Guskey, 2008). This means that when your feedback includes a grade it will likely be less effective than when it does not in terms of progression. As the grade is likely to command attention, and as students with ADHD are less able to control their attention, this effect is likely made worse for those learners.

# Teaching and Learning: Game-based Learning and Gamification







Studies suggest that children with ADHD spend significantly more time playing video games than their peers and are more likely to develop a video game addiction (Masi, Abadie, Herba, Emond, Gingras and Ben, 2021; Wan and Chiou, 2006). This is surprising given that video games demand a significant amount of attention and dedication to play and ADHD children are often inattentive. However, research is emerging that suggests video games have the capacity to increase attention control in people with ADHD (Alqithami, 2021).

With this research in mind, we should take a look at adapting our teaching into to ways that evidence suggests are more engaging for our learners with ADHD. Gamebased Learning and Gamification are teaching and learning approaches to lesson planning that utilise the nature of games and video games in the classroom in order to promote student engagement and progress. Further research is beginning to appear in both the cases of Game-based Learning and Gamification that indicates they are beneficial to learners with ADHD speifically (Ronimus, Kujala, Tolvanen and Lyytinen, 2014; Alqithami 2021).

#### **Game-Based Learning**

Very simply, Game-based learning is learning that occurs while playing a game. It is similar to learning through play, but far more structured and less exploratory. A great resource for this is blooket.com.

Blooket allows you to design your own multiple choice quizzes, or use quizzes others have already made, but then turns those quizzes into video games. A whole class can play the game against each other and even the teacher using phones, tablets or laptops. It is completely free.

While the vast majority of research on Game-based learning has occurred using video games, board games and other types of game should, in theory, be effective.

Whatever game is being played, it should be structured according to the principles of Gamification in order for it to have the desired effect of increased attention in learners with ADHD.

#### <u>Gamification</u>

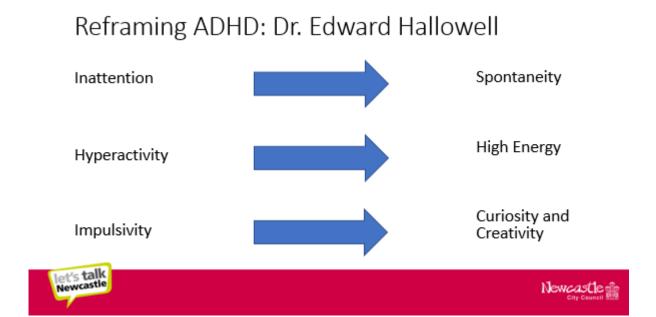
Gamification is the attempt to create the experience of gaming in non-gaming contexts (Hamari, 2019). This is done by taking common elements of video game design and applying them in that given situation. These elements are most commonly but not limited to:

- Points
- Badges
- Leaderboards
- Performance Graphs
- Meaningful Stories
- Avatars
- Teammates (Dixon, Khaled and Nacke, 2011)

Not all of these elements are useful in education but some are particularly pertinent to lesson design and learners with ADHD.

The following video game features are considered particularly influential for learners with ADHD:

- Points and Badges provide an immediate sense of reward and praise.
   Importantly however, these must be earned and meaningful. You do not earn points or badges in a video game if you do not complete the level. They must also be immediately available at the point of praise.
- Low-stakes and no consequences. When you die in a video game you just reload and try again. This is a growth mindset.
- Avatars. Computer game avatars are the generated character that represents the player. The avatar changes and grows as the player does and is a visual means of progress tracking. Class dojo is a great resource for this as well as points and badges tracking but there is no reason learners can't design their own avatar.
- Teammates co-operation in games is essential, interdependent, role-based, choice-based and effective. In order to beat the boss, one player MUST take the hits, another player MUST deliver as many hits as they can and another player MUST heal the other players' wounds for example. Each player chose their role going in. One player cannot do it on their own because the boss is just too powerful and they cannot fulfil all the roles at once. Group working in the classroom should be similarly structured.
- Meaningful stories. A good narrative drives engagement. In lesson terms, this means being able to see where a lesson occurs in a sequence of learning and the clear, desirable and useful goal at the end.



Dr. Edward Hallowell is an American paediatrician who has produced a significant and practical body of work on ADHD. In particular, he is excellent at explaining ADHD to his young patients and their families.

Going back to the idea of ADHD as a social construct, it is useful to think of the aspects of ADHD under these new terms. If ADHD really could be the result of our education system not adapting to learners' needs, it is important ot begin valuing the perspectives and behaviours of those with ADHD as something to be cherished and valued rather than catered for an controlled.

Read the follwing from Hallowell, as he describes ADHD to a young patient, and consider your own perspective:

"Having ADHD is where your brain is like a Ferrari race-car engine. It is very powerful. With the right care, you will win many races in your life. But there is one problem – you have bicycle brakes. Your brakes are not strong enough to control the powerful brain you've got. So, sometimes, you race past the places where you mean to stop or you ignore instructions you mean to hear."

## Other Useful Resources

- For SENCOs, Headteachers and exam arrangements look to the ADHD foundation website. ADHD Foundation
- For the latest research on ADHD and schools take a look at the ADHDUK website. ADHD UK | ADHD UK
- For some uplifting new perspective please take a look at Dr. Hallowell's website: Home - Dr. Hallowell (drhallowell.com)
- For game-based learning and gamification easy wins take a look at <u>Blooket</u> and <u>ClassDojo</u>
- For game-based learning and gamification research and theory try:
   Gamification in Education: What is it & How Can You Use It? | True Education
   Partnerships
- For more practical strategies for ADHD in the classroom there are plenty in the following sections of this booklet! Here
- Please get in touch with your school EP or <a href="lara.lillico@newcastle.gov.uk">lara.lillico@newcastle.gov.uk</a> for further training. We would have loved to have included information on resilience, coping and self-regulation strategies in this training but we just didn't have the time!

## **Practical Strategies for ADHD Learners**

#### Communication

- Use clear, specific and consistent communication.
- Always address the child by name.
- Keep all instructions short and simple i.e. "Pick up your books please".
- Try to make eye contact wherever possible.
- Speak clearly and concisely, and maintain an even tone.
- Don't ask why, say what i.e. what should you be doing now.
- Also use when, then, and either, or i.e. "Nathan when you have put the book away then you can have a drink, when you have put the chair under the table then you can go".
- Then give your instructions in a simple step-by-step way, pausing between each step and perhaps giving them the chance to do each activity.
- Praise improves concentration skills in children with ADHD. When they do something well, tell them how pleased you are that they've done it. Praise in specific terms rather than generally.





#### **Rewards**

Rewards change behaviour, and children with ADHD respond very well to incentives tied to short-term targets.

- Agree certain achievable targets such as sitting still for 10 minutes (or less depending on how long the student can sit still in specific circumstances).
- Negotiate rewards with the child and vary them regularly to keep up the interest.
- Make sure the rewards are age appropriate.
- Try to catch them being good and take every chance to help the child recognise their achievement.
- Reward schemes could be used by any member of staff who works with the child. However, remember it's not just the reward that matters, it is often who gives the reward.
- Make your student feel he/she has a real talent. Create a feeling of success and it will boost confidence. Nothing succeeds like success!





#### **Inattention**

- To encourage attention, provide students with a brief outline of the lesson at the beginning.
- Give prompts that have been agreed with the student in advance.
- Try to include a variety of activities during the lesson.
- Reduce expectations of written work and use alternative ways of recording.



- Accommodate to the student's short attention span when planning activities.
- Teacher-directed learning improves attention, as opposed to independent work. Teaching note-taking increases the benefits of direct instruction, improving comprehension and on-task behaviour.
- Tasks that require active (as opposed to passive) responses may help hyperactive students channel their behaviours into constructive



responses. Students can be successful participants in lessons when asked to help (e.g. help with audio-visual aids, write important points on the chalk board, etc.).

- Present only one or two activities per page on worksheets and tests.

- Provide visual supports to aid task completion. They may be as simple as having the task written on the board and broken down into small steps, or

available as a printed handout. But avoid unnecessary pictures or visual stimuli.

Some situations will be more difficult for than others, e.g. effortful problemsolving tasks are especially problematic.



These situations should be anticipated and differentiated. When presenting a task that the teacher suspects might exceed the student's attentional capacity, reduce the task length and emphasise quality as opposed to quantity.

- Teachers could also provide checklists (e.g. how to prepare for the start of a lesson); timers (whether an individual sand timer, digital timers, timers projected onto the whiteboard) and red-green help cards (the green side means I'm OK, the red side means I need help).
- Teachers and TAs should ensure that instructions are broken down into small steps and repeated and rephrased as required. It is hard for a person with ADHD to retain multiple instructions in their heads, due to challenges with working memory. Ask the student to repeat their understanding of what has been said.
- Provide alternative environments for tests and exams.
- If attention seems to be waning, use special cue phrases agreed to stimulate interest. Such cues could include "Right, here we go"; "Wait for it"; "Now for the interesting bit"; "The next clip is amazing"; "We're nearly there now" and many more of your tried and trusted attention-grabbers.
- Walking round the classroom.

Instead of trying to get children with excessive motor activity to remain still, find them opportunities for regular seat breaks. Examples might include a trip to the office, a chance to sharpen a pencil, taking a note to another teacher, watering the plants, feeding classroom pets, or simply standing at a desk while completing classwork. Alternating seat work activities with other activities that allow for movement is essential.



- Give them a job or task that allows them to be active in a controlled way during the lesson, e.g. if something needs to be written on the whiteboard, ask them to do it.
- Positioning a young person next to, or close to, positive role models is an excellent idea.
- Some young people may benefit from a time-out card and a quiet space that they can go to, if things feel like they are becoming too much. This promotes emotional self-regulation and should be encouraged.
- It can help to have non-vocal music playing either in the background or through a headset device.
- Novelty: presentation of novel, interesting, highly motivating material will improve attention. For example, in-creasing the novelty and interest level of tasks through use of increased stimulation (e.g., colour, shape, texture) reduces activity level, enhances attention and improves overall performance.

#### Self-Help

- Parents, carers and schools should work together to teach young people self-help strategies. For example, what does "pay attention" or "you must focus" actually look like? Some young people may need to be explicitly taught what is expected of them – that they need to listen to what is being said, that they should try and look in the direction of the speaker and the board and attempt to "zone out" other distractions.



- Some students may benefit from having something to play with to aid their concentration, such as a tangle toy. These toys can cause problems, so implement key rules for their use. For example, that students only use the toys that are permitted in school, that they use them appropriately and keep them in their own hands and under the table. Consider the use of soft materials to avoid the noise.
- Some young people with ADHD may also need to be taught the benefits of delayed gratification, as well as how to regulate their emotional responses to situations. This could be done via a behaviour target that increases as the student's ability to wait increases.



- Organisation
- Developing a sequence of events is important so they can learn how to get organised. They need to understand that things are meant to happen in a certain order.
- Always begin with a simple overview of what you want them to achieve. Then create a framework, using check lists, with simple steps so that the student knows what is meant to happen next.
- Parents and schools should work closely together. For example, homework is explained in detail using a home-school online tool or is written in the student's planner. Some teachers may wish to email homework and messages to parents and carers.





#### **Seating Plans**

- Children with ADHD tend to get over-stimulated when working in group situations.
- Pair them with less distractible students who are likely to follow the teacher's instructions.



- Try to position young people with ADHD away from distractions (e.g. the window or door).
- Seat them away from distractions. Speak to them about where in the room they think they will learn best. This helps to give ownership and a sense of empowerment. It is also interesting to hear what they have to say, as some may volunteer that they work best seated alone or nearer the teacher. Some may prefer to sit near to the front, others at the back avoiding the distraction of having people seated behind them.



-It may be occasionally helpful to have them sit at a single desk or at a paired desk within the main classroom or have a workstation set up facing the wall and away from the main classroom area where they can learn can. This should be used as a support, not a sanction and the student should understand this.

-Classroom environment

changes can be helpful in reducing problematic behaviours and learning difficulties, but they are not sufficient by themselves. Thus, consequences may need to be available to reinforce appropriate or desired behaviours and discourage inappropriate or undesired behaviours.

#### **Behaviour**

- Children with
  ADHD often feel
  that they are
  being picked on.
  Catch them
  'being good' and
  show your
  approval.
- Be specific, it's best to tell them what they
- should be doing rather than what they shouldn't, e.g. instead of saying "Liam, can you stop talking and bothering Sadie?" say "Liam, please listen to me I want you to finish the writing in your book"
- Remind children in specific terms. They may not be doing what you've asked because they have forgotten the specific task. Instead of telling them to get on with their work, remind them of the actual task instructions.
- Rule reminders: the rules must be well defined, specific and frequently reinforced through visible support and clear consequences. Relying on the student's memory of rules is not sufficient. Visual rule reminders or cues should be placed throughout the classroom. It is also helpful if rules are reviewed before activity transitions and following school breaks.
- Appropriate and rich incentives should be used before sanctions. It is



important to give a lot of encouragement, praise and affection for appropriate behaviour because these students are easily discouraged.

- Relying on intangible rewards is not enough. Students with attentional problems need external criteria for success and a pay-off for increased performance.

- Reward systems can be helpful in improving both academic progress and behaviour, e.g. giving students a 'tokens' for appropriate behaviour. These tokens are exchanged for small tangible rewards or privileges at specified times. Rewards must be more powerful and delivered more immediately and frequently than is typically the case, but rewards used with these students lose their reinforcing power quickly and must be changed or rotated frequently. Working with parents on rewards increases their power.
- Sanctions and reprimands can damage the relationship between the student and teacher and lead to worsening behaviour so negative consequences should be used in a way that does not embarrass or put down students. When you use sanctions, remind the student of the classroom rules that everyone has to follow and that a consequence that is intended to help them learn and remember appropriate behaviours.
- The certainty of a sanction is important, if you say it you must follow through, and not give an increasing number of 'chances'.
- Sometimes dig for empathy for example if the child has knocked a pot of paint over a classmate, you could say: "I'm so upset/ disappointed that this paint has gone all over Emma and caused such a mess on the floor."
- Response-cost programs: verbal reprimands are sufficient for some students, but more powerful consequences are needed for others. A specific consequence involves giving a specific number of points at the start of each day. When a rule is broken or a specific problem behaviour is displayed, points are taken away. Thus, to maintain their points students must avoid breaking



the rule. At the end of the period or day, students are typically allowed to exchange the points they have earned for a tangible reward or privilege. The student should understand the purpose of the consequences in advance.

Time-out can be effective in reducing aggressive and disruptive actions, especially when these behaviours are strengthened by peer attention but should be used with only the most disruptive classroom behaviours and only when there are trained staff. Time out is not helpful when problem behaviour is aimed to avoid school work. A time-out area should be a pleasant environment, the student should be given no attention and time out should last for only a short time only. It is ended when the student is ready to return to the classroom. Discuss what went wrong and ask how the student will prevent the problem from arising again only when you can be certain the student is calm and receptive, or there is a risk of another outburst.



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