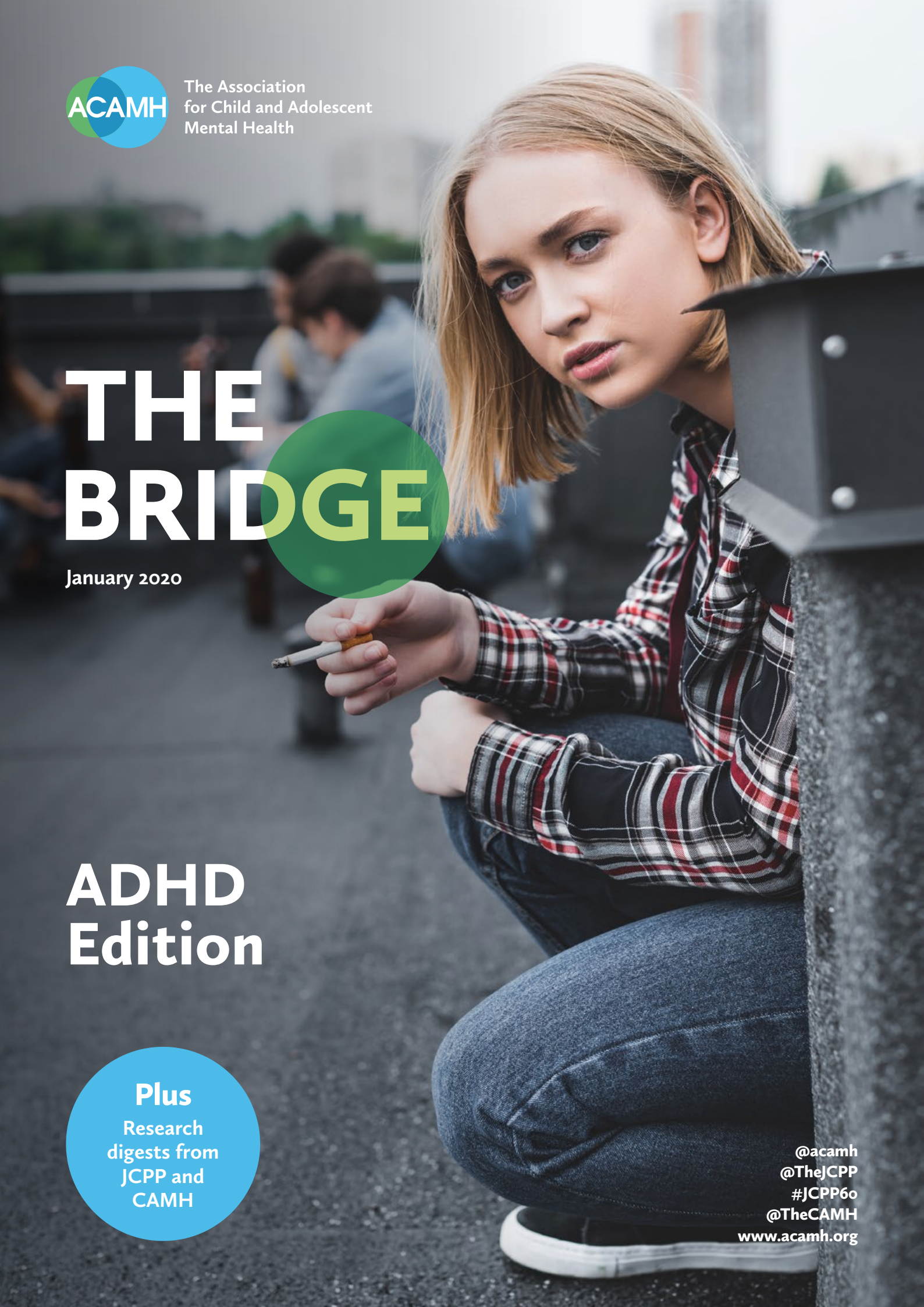

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THE BRIDGE

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ADHD Edition

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Research digests from JCPP and CAMH

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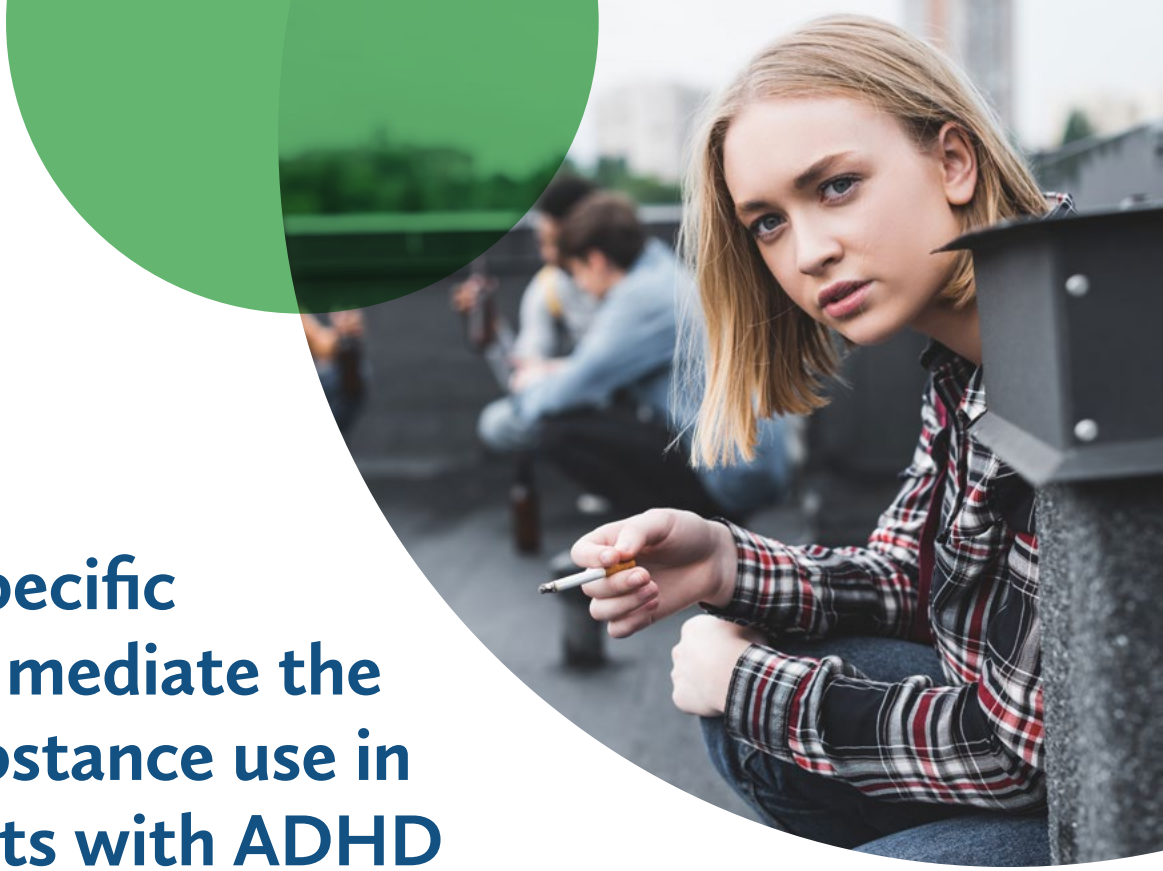
The Bridge Editor

I am Dr. Juliette Kennedy, Editor of The Bridge, and a Consultant Child and Adolescent Psychiatrist working clinically in a North Yorkshire CAMHS team. I am Associate Director of Medical Education in the trust I work in, also Training Program director for CAMHS higher training in Yorkshire.

The Bridge presents the most clinically-relevant research from our two peer-reviewed journals: Child and Adolescent Mental Health and The Journal of Child Psychology and Psychiatry, as well as interesting and important studies from the wider literature. Please let us know what you'd like to see in upcoming editions by sending an email to me at: **researchdigests@acamh.org**

Research highlights in this edition are prepared by Dr Jessica K Edwards. Jessica is a freelance editor and science writer, and started writing for 'The Bridge' in December 2017.



Gender-specific pathways mediate the risk of substance use in adolescents with ADHD

By Jessica K. Edwards

Data suggest that children with attention-deficit/hyperactivity disorder (ADHD) are more likely to start smoking tobacco and/or marijuana earlier in childhood than unaffected children, and then escalate use during adolescence[1,2]. Now, a study by researchers at the University of Minnesota has examined the mediating pathways underlying this association between childhood ADHD and later substance-abuse problems. The study involved two large twin cohorts comprising 2,164 individuals who were prospectively assessed from 11 years-of-age[3]. Longitudinal structural equation models were developed to examine whether peer impairment (assessed at age 14 years), internalizing behaviours and/or adolescent ADHD symptoms mediate later problems with tobacco and/or marijuana use. In girls, they found evidence for direct effects of childhood ADHD on tobacco/marijuana use in late adolescence and indirect effects through adolescent ADHD symptoms. In boys, however, they found that peer impairment predominantly mediated the ADHD effects on marijuana problems. Notably, they found that early substance problems prospectively mediated the relationship between ADHD and later problems in both boys and girls. Understanding the factors that mediate the associations between ADHD and substances such as tobacco and marijuana, and whether they differ by gender, could help develop effective interventions. Based on these data, the researchers recommend that girls might benefit from targeted coping strategies for ADHD symptoms while boys might benefit from increasing opportunities to affiliate with prosocial peers, to reduce the subsequent risk for substance problems.

Referring to:

Elkins, I.J., Saunders, G.R.B., Malone, S.M., Wilson, S., McGue, M. & Iacono, W.G. (2018), Mediating pathways from childhood ADHD to adolescent tobacco and marijuana problems: roles of peer impairment, internalizing, adolescent ADHD symptoms and gender. J. Child Psychol. Psychiatr. 59: 1083-1093. doi: 10.111/jcpp.12977.

References:

[1]Sibley, M.H. et al. (2014), The role of early childhood ADHD and subsequent CD in the initiation and escalation of adolescent cigarette, alcohol, and marijuana use. J. Abnorm. Psychol. 123: 362–374. doi: 10.1037/a0036585.

[2]Molina, B.S.G. et al. (2018), Substance use through adolescence into early adulthood after childhood-diagnosed ADHD: Findings from the MTA longitudinal study. J. Child Psychol. Psychiatr. 59: 692–702. doi: 10.1111/jcpp.12855.

[3]Iacono, W.G. et al. (1999), Behavioural disinhibition and the development of substance-use disorders: Findings from the Minnesota Twin Family Study. Dev. Psychopathol. 11: 869–900. doi: 10.1017/s0954579499002369

Guidelines on service transition for young people with ADHD

By Jessica K. Edwards

Attention-deficit/hyperactivity disorder (ADHD) affects up to 5% of children and adolescents in the UK[1]. Recent research has led to the increasing recognition that ADHD can often be a life span disorder[2], meaning that a subset of affected children will eventually need to transition to adult services. Unfortunately, much research has highlighted the difficulties experienced by young people in transitioning from children's to adult services[3]. This difficulty is exacerbated by a lack of services and guidelines for young adults with ADHD[4,5]. In 2018, the National Institute of Health and Care Excellence (NICE) updated its guidelines for ADHD (NG87) from earlier versions published in 2008 and 2016. Strikingly, no changes were made with regards to transition recommendations, although the document does refer to a 2016 NICE guideline (NG43) that provides general guidance for health and social care transitions.

Earlier this year, Helen Eke and colleagues from the University of Exeter undertook a Systematic review published in Child and Adolescent Mental Health on the transition from children's to adult services for those living with ADHD in England. They first aimed to identify guidelines for ADHD transition in England and then compared these guidelines with the updated 2018 NICE advice. After searching 10 electronic databases, they identified only 16 documents: most documents based their recommendations for transition on the existing NICE guidelines and only a few independent guidelines were found. Importantly, the NG87 guideline was the only transition guideline that is publically available. With a low rate of successful transitions reported (~15%)[6], the researchers conclude that ADHD-specific guidelines should be made available and accessible to the public to better inform those experiencing transition and make the process as smooth as possible.

Referring to:

Eke, H., Janssens, A. & Ford, T. (2019), Review: Transition from children's to adult services: a review of guidelines and protocols for young people with attention deficit hyperactivity disorder in England. Child Adolesc. Ment. Health. 24: 123-132 doi: 10.111/camh.12301.

See also:

https://www.nice.org.uk/guidance/ng87
https://www.nice.org.uk/guidance/ng43
NG43

References:

[1]Faraone, S.V. et al. (2015), Attention-deficit/hyperactivity disorder. Nat. Rev. Dis. Primers. 1: 15027. doi: 10.1038/nrdp.2015.20.

[2]Tatlow-Golden, M. et al. (2017), Transitioning from child and adolescent mental health services with attention-deficit hyperactivity disorder in Ireland: Case note review. Early Interv. Psychiatry. 12: 505-512. doi: 10.1111/eip.12408.

[3]Singh, S.P. et al. (2008), Transitions of care from child and adolescent mental health services to Adult Mental Health Services (TRACK Study): A study of protocols in Greater London. BMC Health Serv. Res. 8, 135. doi: 10.1186/1472-6963-8-135.

[4]Embrett, M.G. et al. (2016), Effectiveness of health system services and programs for youth to adult transitions in mental health care: A systematic review of academic literature. Adm. Policy Ment. Health. 43, 259–269. doi: 10.1007/s10488-015-0638-9.

[5]Seixas, M. et al. (2012), Systematic review of national and international guidelines on attention-deficit hyperactivity disorder. J. Psychopharmacol. 26, 753–765. doi: 10.1177/0269881111412095.

[6]Singh, S.P. et al. 2015. Transition from child to adult mental health services needs barriers experiences and new models of care. World Psychiatry. 14: 358-361. doi: 10.1002/wps.20266.

Emotional impulsivity and deficient emotional self-regulation might be core symptoms of ADHD

By Jessica K. Edwards

A large proportion of children with attention-deficit/hyperactivity disorder (ADHD) exhibit notable emotion-related problems (or "emotional symptoms")[1]. These emotional symptoms seem to associate with poor quality of life, impaired social adjustment and reduced marital status[2,3]. Furthermore, children with ADHD and emotional symptoms are more likely to have hyperactivity/impulsive symptoms that continue into early adulthood than those who do not present with these problems[4]. Addressing the underlying emotional mechanisms in affected patients could, therefore, have a marked impact on quality of life. Whether these emotional symptoms should be considered integral to ADHD (and thus incorporated into the diagnostic nomenclature)[1] or rather as an associated trait[5], however, is hotly debated.

In 2019, Stephen Faraone and colleagues compiled a Practitioner Review for the Journal of Child Psychology and Psychiatry that aimed to clarify the nature of emotional symptoms in ADHD. The researchers first identified that a large number of terms are used to describe the role of emotional symptoms observed in ADHD, which could lead to clinical confusion. Such terms include emotional lability (EL), emotional reactivity, emotional impulsivity (EI), emotional instability, emotional dysregulation, deficient emotional self-regulation (DESR), distress tolerance, frustration discomfort and irritability.

They then evaluated how the emotional symptoms in ADHD differ from those observed in other mood disorders. Here, they found that EI and DESR might be sufficiently specific for ADHD to function as diagnostic criteria, while irritability should not be considered a symptom of ADHD. Poignantly, the researchers point out that impulsive and poorly regulated cognition and behaviours are already in the diagnostic criteria for ADHD, yet corresponding impulsive and poorly regulated emotions are not. The fact that only a subset of patients with ADHD exhibit emotional dysregulation and that another subset of individuals without ADHD can also present with emotional dysregulation, however, is a challenge to address before contemplating changes to the diagnostic criteria. Faraone et al. assert that more accurate identification and description of EI and DESR would likely benefit those with ADHD as well as those with other psychiatric disorders.

The researchers reiterate that few symptoms in psychiatry are fully specific, and that this fact should be considered when deciding whether emotional symptoms should form part of the core disorder in ADHD. Going forward, they explain that improvements to available treatments to effectively manage EI and DESR are now needed. They also recommend that a new measurement tool or assessment instrument is created that can capture the multi-dimensional nature of emotional symptoms in ADHD. A useful tool would be able to identify emotional symptoms in young people with ADHD and better monitor any change in emotions with treatment.

Referring to:

Faraone, S.V., Rostain, A.L., Blader, J., Busch, B., Childress, A.C., Connor, D.F. & Newcorn, J.H. (2019), Practitioner Review: Emotional dysregulation in attention-deficit/hyperactivity disorder – implications for clinical recognition and intervention. J. Child Psychol. Psychiatr. 60: 133-150. doi: 10.111/jcpp.12899.

Glossary:

Emotional impulsivity (EI): Impulsivity is broadly defined in the DSM-V as actions that are poorly conceived, prematurely expressed, unnecessarily risky, and inappropriate to the situation. EI specifically was defined by Barkley in 20151 as difficulties with emotion generation that is highly impulsive.

Deficient emotional self-regulation: Defined by Barkley in 20151 as difficulties with the self-regulatory functions that effectively manage emotional experience to rein in behaviour from accelerating to problematic degrees.

References:

[1]Barkley, R.A. et al. (2015), Emotional dysregulation is a core component of ADHD. In R.A. Barkley (Ed.), Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment (4th edn). New York: Guilford Press.

[2]Anastopoulos, et al. (2011), Self-regulation of emotion, functional impairment, and comorbidity among children with AD/HD. J. Atten. Disord. 15: 583–592. doi: 10.1177/1087054710370567.

[3]Surman, C.B. et al. (2013), Understanding deficient emotional self-regulation in adults with attention deficit hyperactivity disorder: A controlled study. Atten. Defic. Hyperact. Disord. 5: 273–281. doi: 10.1007/s12402-012-0100-8.

[4]Biederman, J. et al. (2012), Longitudinal course of emotional self-regulation CBCL profile in youth with ADHD: Prospective controlled study. Neuropsychiatr. Dis. Treat. 8:267–276. doi: 10.2147/NDT.S29670.

[5]Copeland, W.E. et al. (2015), Normative irritability in youth: Developmental findings from the Great Smoky Mountains Study. J. Am. Acad. Child Adolesc. Psychiatry. 54: 635–642. doi: 10.1016/j.jaac.2015.05.008.

New developmentally appropriate diagnostic criteria need to be established to identify ADHD early in preschoolers

By Jessica K. Edwards

Attention-deficit/hyperactivity disorder (ADHD) typically emerges during preschool years and in a subset of children, can persist into adolescence[1]. Early identification might help promote a favourable ADHD trajectory[2], but the current predictors of ADHD persistence are insufficient. In 2019, Jeffrey Halperin and David Marks compiled a Practitioner Review for the Journal of Child Psychology and Psychiatry on ADHD in preschool children. Their review provides up-to-date information on how to evaluate and treat ADHD in preschoolers and an assessment of the latest findings from randomized controlled trials of non-pharmacological and pharmacological interventions.

Stand out findings include; that while hyperactive-impulsive symptoms extend down to age 3 years, inattention symptoms that are defined by the DSM-V1, less accurately differentiate between preschoolers with and without ADHD. In addition, data suggest that pre-schoolers who do not meet the full diagnostic criteria for ADHD are more likely to develop the disorder or experience other ongoing difficulties than outgrow it[3,4]: Halperin and Marks recommend that clinical attention is given to this group of children with sub-threshold ADHD, to intervene early where necessary, and to encourage a healthy trajectory.

In terms of treatment recommendations, the researchers consider that Behavioural Parent Training should be the first-line treatment for ADHD in preschoolers. Although they acknowledge that medication can reduce symptom severity, the efficacy and safety profiles of medication for ADHD are less desirable in preschoolers compared to those of school age[5]. They thus propose that this treatment modality is reserved for those who do not show sufficient improvement after behavioural intervention.

Going forward, Halperin and Marks hope to see the establishment of appropriate diagnostic criteria for preschoolers with ADHD and the identification of moderators of treatment responses. Most importantly, they explain that new interventions are needed that have long-lasting benefits, such that they can alter the long-term trajectory of ADHD in children.

Referring to:

Halperin, J.M. & Marks, D.J. (2019), Practitioner Review: Assessment and treatment of preschool children with attention-deficit/hyperactivity disorder. J. Child Psychol. Psychiatr. 60: 930-943. doi: 10.111/jcpp.13014.

See also:

Center for Medicare & Medicaid Services (2015). Stimulant use and related medications: Use in pediatric patients. Available from: https://www.cms.gov/Medicare-Medicaid-Coordination/Fraud-Prevention/Medicaid-Integrity-Education/Pharmacy-Education-Materials/Downloads/stim-pediatric-factsheet11-14.pdf.

Glossary:

Behavioural Parent Training: An integrated program typically involving family systems theory, social learning principles, and operant conditioning to address behavioural issues in pre-school and school-age children. As described by Halperin and Marks, most programs incorporate positive reinforcement, ignoring of low-level, benign provocation, and application of clear, consistent, and constructive consequences in response to undesirable behaviour.

References:

[1]American Psychiatric Association (2013), Diagnostic and statistical manual of mental disorders, 5th ed. Washington, DC: American Psychiatric Association.

[2]Sonuga-Barke, E.J. et al. (2010), Developmental phenotypes and causal pathways in attention-deficit/hyperactivity disorder: Potential targets for early intervention? J. Child Psychol. Psychiatr. 51: 368–389. doi: 10.1111/j.1469-7610.2009.02195.x.

[3]Law, E.C. et al. (2014), Attention-deficit/hyperactivity disorder in young children: Predictors of diagnostic stability. Pediatrics, 133, 659–667. doi: 10.1542/peds.2013-3433.

[4]Lahey, B.B. et al. (2016), Predictors of adolescent outcomes among 4-6-year-old children with attention-deficit/hyperactivity disorder. J. Abnorm. Psychol. 125: 168–181. doi: 10.1037/abn0000086

[5]Riddle, M.A. et al. 2013. The preschool attention-deficit/hyperactivity disorder treatment study (PATS) 6-year follow-up. J. Am. Acad. Child Adolesc. Psychiatry. 5 2: 264–278. doi: 10.1016/j.jaac.2012.12.007.

Should emotion dysregulation be considered a core component of ADHD?

By Jessica K. Edwards

New data from researchers in the USA suggest that emotion dysregulation[1] should be included as a core component of attention-deficit/hyperactivity disorder (ADHD) rather than viewed as comorbidity. Nigg et al., addressed this long-standing debate by performing a genetic risk analysis in a carefully characterized case-control cohort of 514 children aged 7-11 years, defined as children with ADHD or non-ADHD. They computed genome-wide polygenic risk scores for ADHD and depression genetic liability for all participants, and derived well-validated measures of irritability[2] and emotion dysregulation. They found that emotion dysregulation as a trait was more related to the polygenic risk for ADHD than the polygenic risk for depression. In addition, they found that the relevant emotion dysregulation domain for ADHD genetic risk included irritability, but also extends beyond it to approach-related dysregulation. Their conclusions provide support for a heterogeneity model of ADHD, as originally proposed by Nigg et al. in 2004[3]. By this model, ADHD can entail early life breakdowns in regulation of both negative (anger) affect and approach (sensation seeking) motivation, in addition to primary breakdowns in control.

Referring to:

Nigg, J.T., Karalunas, S.L., Gustafsson, H.C., Bhatt, P., Ryabinin, P., Mooney, M.A., Faraone, S.V., Fair, D.A. & Wilmot, B. (2019), Evaluating chronic emotional dysregulation and irritability in relation to ADHD and depression genetic risk in children with ADHD. J. Child Psychol. Psychiatr. doi: 10.111/jcpp.13132.

Glossary:

Emotion dysregulation: van Stralen1 defines emotion dysregulation as an inability to modulate emotional responses, resulting in extreme responses of an internalizing or externalizing nature that would be considered inappropriate for the developmental age of the person.

Irritability: Stringaris and Taylor2 define irritability as a proneness to excessive anger, in terms of the frequency, duration, intensity, ease of elicitation and/or uncontrollability.

Polygenic risk score: The cumulative effects of a number of genes that might individually have a small effect on susceptibility; the score is used to predict the likelihood of displaying a particular trait or disease with a genetic component.

Approach-related dysregulation: Approach indicates the propensity to move toward a desired stimulus. Perturbed approach regulation might manifest as sensation seeking or surgency sensation seeking, which in some situations can entail taking physical and/or social risks for the sake of the experience.

References:

[1]van Stralen, J. (2016), Emotional dysregulation in children with attention-deficit/hyperactivity disorder. Atten. Defic. Hyperact. Disord. 8:175-187. doi: 10.1007/s12402-016-0199-0.

[2]Stringaris, A. & Taylor, E. Oxford University Press; New York: 2015. Disruptive Mood. Irritability in Children and Adolescents.

[3]Nigg, J.T. et al. (2004), Temperament and attention deficit hyperactivity disorder: The development of a multiple pathway model. J. Clin. Child Adolesc. Psychol. 33: 42–53. doi: 10.1207/S15374424JCCP3301_5.

Age-related immaturity in the classroom can lead to ADHD misdiagnosis

By Jessica K. Edwards

Researchers from Australia, France, the USA and the UK have come together to compile a 2019 Annual Research Review for the Journal of Child Psychology and Psychiatry on the correlation between a late birth-date (relative to the school year) and risk of attention-deficit/hyperactivity disorder (ADHD). Martin Whitely and colleagues conducted a systematic review of the literature for studies exploring the relationship between birth date and ADHD diagnosis, and found 19 studies conducted in 13 countries that covered more than 15.4 million children. In 17/19 studies, they found a higher proportion of ADHD cases in children with a late birth date. Interestingly, the two studies that did not report this effect were conducted in Danish populations. In Denmark, it is not uncommon for children who are considered to be immature, to delay starting school — a practice known as 'academic redshirting'. As the researchers note, this point raises an interesting question as to whether academic redshirting might indeed prevent or disguise late birth-date effects in the classroom.

Importantly, Whitely and colleagues found that the youngest children in a classroom are at an increased risk of being medicated for ADHD, even in jurisdictions with a low diagnosis and/or prescribing rate. The researchers assert that this data challenges the notion that low rates indicate sound diagnostic practices. As pointed out by Sonuga-Barke et al. in their accompanying commentary, it could be considered a positive finding if the disproportionate number of young-for-class children with ADHD, is due to a perceptual bias. To adjust this issue, teachers could simply adjust their teaching practice and judgement to account for the maturity of the child, relative to their classmates. Going forward, Whitely et al. explain that both teachers and clinicians should remain alert to the potential of age-related immaturity being misdiagnosed as ADHD.

Referring to:

Whitely, M., Raven, M., Timimi, S., Jureidini, J., Phillimore, J., Leo, J., Moncrieff, J. & Landman, P. (2019), Annual Research Review: Attention deficit hyperactivity disorder late birthdate effect common in both high and low prescribing international jurisdictions: a systematic review. J. Child Psychol. Psychiatr. 60: 380-391. doi: 10.111/jcpp.12991.

See also:

Sonuga-Barke, E.J.S. & Pasco Fearon, R.M. (2019), Commentary: 'Ready of not here I come': developmental immaturity as a driver of impairment and referral in young-for-school-grade ADHD children. A reformulation inspired by Whitely et al. (2019). 60: 392-394. https://doi.org/10.1111/jcpp.13039.

Glossary:

Academic redshirting: the practice of delaying the entry of an age-eligible child into school to give additional time to the child to grow emotionally, physically and cognitively.