

## Methylation of the glucocorticoid receptor gene NR3C1: a summary for clinicians working with children and families

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**Aims.** It has been shown that the glucocorticoid receptor NR3C1 gene can be methylated (“switched off”) in response to early adversity. Methylation has also been linked to physiological changes in the body’s response to stress by changing the sensitivity of the hypothalamic-pituitary-adrenal (HPA) axis. In adults, associations have been made between NR3C1 methylation and borderline personality disorder, depression and post-traumatic stress disorder. Environmental and social co-variables increase with lifespan so establishing cause and effect is difficult. Studies in children, then, may illuminate patterns to inform current hypotheses.

This paper reviews the literature on children and adolescents linking glucocorticoid gene receptor NR3C1 to the psychopathology of mental illness. Findings are presented in an accessible manner to engage people less familiar with genetics and to inform frontline clinicians of this quickly growing area of research.

**Method.** MEDLINE and PsychINFO were searched for relevant peer-reviewed original research using the following keywords and associated mesh terms: NRC31, glucocorticoid receptor gene, methylation, epigenetics, child, adolescent, trauma, psychopathology, gene expression.

**Result.** 14 studies were identified involving 5475 young people. Degree of NR3C1 methylation was associated with severity of early life adversity. Methylation was linked with psychopathology including borderline personality disorder, internalising symptoms and externalising symptoms with sex differences. The most consistent association was with depression. Methylation seems to modulate the interaction between environment and genetics with the suggestion that the effect may be protective in some cases. However, longitudinal genetic sampling was only conducted in one study.

**Conclusion.** Heterogeneity of studies in the epigenetics field are discussed but should not detract from future possibilities. The hope is to identify therapeutic targets or monitor response to treatment as we work to better understand the biology of developmental psychology, mental illness and resilience. There is a growing understanding that epigenetic modifications likely change over time and clinical significance is most likely dictated by changes at multiple gene locations. Thus future research may need to move away from single gene research typically employed in favour of longitudinal whole genome studies in larger population studies.

It is time that clinicians integrate the concepts of “epigenetic adaptation to environmental stress” with “nature vs. nurture” in their psychoeducation with families. To understand that one’s problems might be the symptom of environmental mismatch, and potentially reversible too, can bring validation and hope to families.

## Autistic and pseudo-autistic traits in ongoing complex trauma

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**Aims.** To compare the neurodevelopmental profiles of Albanian street children to those predicted by the Coventry grid.

**Background.** A street children’s centre had requested help to meet children’s emotional needs. No program exists for children experiencing ongoing complex trauma. With input from widely-experienced consultant psychiatrist and consultant psychologist, a very low-intensity program of coping skills was piloted. Extensive anonymised notes were taken as part of the piloting.

The Coventry grid is a clinical tool comparing patterns of difficulties typically seen in autistic spectrum disorder (ASD) versus attachment difficulties. It’s based on clinical experience and invites ongoing feedback.

**Method.** 12 Children aged 5–12 years completed the two-week program. The notes were examined for their relevance to areas of the Coventry Grid.

**Result.** The children showed both traits typical of ASD and of attachment problems. Identifying emotions was impossible for the youngest group (5–7 years); while the older groups could say whether someone was likely to feel “good” or “bad” but struggled to differentiate further.

Fantasy and symbolic play were hard for the younger children. If asked to imagine a situation, they replied “but that’s not happening”. One child constantly hugged a stuffed doll, but couldn’t use it for play. Both younger groups found it hard to imagine a safe-place, though they could say what they wanted in it (chocolate and a working lightbulb). The oldest group all chose a real place related to the centre.

Generalising was difficult for all the children. The older children could say whether a story character was a good friend, but not apply this to real life. The youngest children were told a story about a dangerous stranger. Afterwards, the children said they would still go away with strangers as only the man in the story had said he wanted to harm children.

The younger children were diffusely attached, but the boys’ eye contact, gesturing, and language were normal in all age groups. All children formed friendships easily, played in a group and were intensely loyal to siblings. They didn’t show restricted interests, distress at changes to routine or sensory difficulties. They showed good awareness of the widely divergent social rules at the centre and at home.

**Conclusion.** The children showed a mix of traits usually associated with attachment difficulties and those usually associated with ASD. They may be different from UK clinic samples as they continued to experience severe trauma.

## Representation of #CAMHS on social media platform TikTok

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**Aims.** The video-based free social media app, TikTok, has grown in popularity during the COVID-19 pandemic, with half of British children using Tik Tok regularly. With more than 2 billion downloads, it was the most downloaded app of 2020. Child and Adolescent Mental Health Services (CAMHS) is currently found on TikTok via the hashtag #CAMHS. The aim of this study was to explore how CAMHS is represented on TikTok through reviewing the hashtags associated with CAMHS and exploring the themes of videos with the #CAMHS hashtag.

**Method.** The Tik Tok app was downloaded and a search for the hashtags which featured the word #CAMHS was undertaken.

A thematic analysis of the top 100 most popular uploaded videos featuring the #CAMHS was conducted. The number of likes, views and shares of the videos featuring each theme was recorded. **Result.** Videos with the hashtag #CAMHS had 203.9 million views, followed by: #camhsmeme(s) totalling 43.1 million views, #camhsjokes with 21.4 million views and #camhskids, 12.5 million views. The top 100 most popular videos represented 24% of total viewed videos with the hashtag #CAMHS.

The most popular recurrent themes associated with the hashtag #CAMHS in our sample were: raising awareness of mental health symptoms and management (40% of videos), reference to self-harm (27% of videos) and negative perception of CAMHS (27% of videos).

Raising awareness of mental health symptoms and management had the most likes (3,694,700) and views (17,435,900). This was followed by videos with themes of reference to self-harm (3,006,300 likes and 14,382,700 views). The most shared themes were: reference to suicide (shared 56,763 times) and videos which portrayed a theme of negative perception of CAMHS (40,628 shares). Videos with themes of a negative perception of CAMHS also garnered 1,762,500 likes and 8,666,900 views.

**Conclusion.** CAMHS is actively represented on TikTok through freely accessible unregulated videos. Videos with themes of raising awareness of mental health symptoms and management can potentially allow young people to share their experiences. Nonetheless, popular hashtags such as #CAMHSmemes and #CAMHSjokes, as well as videos featuring themes of negative perception of CAMHS, could potentially undermine the reputation of CAMHS to existing and future service users. The content of these videos should be taken seriously by CAMHS clinicians as it can potentially provide an insight into service users' experiences of CAMHS on a scale that has not been observed before. Presently these videos are not screened or modulated by the NHS CAMHS service.

### Case series suggesting an association between sertraline and urinary side effects in a Sheffield child and adolescent mental health services (CAMHS) population

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**Aims.** To suggest a link between sertraline and urinary side effects in a Sheffield Child and Adolescent Mental Health Service population.

**Background.** Evidence suggests that Serotonin has an important role in bladder control through central and peripheral neurological pathways. Increased serotonergic activity leads to parasympathetic inhibition, which results in urine retention. It is through this mechanism of action and their effect on pre-synaptic serotonin 1A and peripheral 5-HT<sub>3</sub> receptors that SSRIs were observed to have anti-enuretic effect. At low 5-HT concentrations, micturition is inhibited whereas at high levels, an excitatory effect is achieved. This may suggest a dose-dependent relationship between Sertraline and urinary side effects.

**Method.** Inclusion criteria:

Under 18 years of age

On Sertraline

Reported urinary side effects

Exclusion criteria:

Above 18 years

Not on Sertraline

Associated urinary problems

Did not report urinary side effects

Clinical records of eligible patients were accessed to gauge temporal relationship between initiation of sertraline and reported urinary side effects.

**Result.** Three cases were identified in the authors' clinical practice at Sheffield CAMHS that were suggestive of a link between sertraline and urinary side effects.

**Conclusion.** It's important for clinicians to bear in mind the genitourinary side effects of SSRIs, which may be debilitating for patients in the CAMHS population. It's equally important for us as clinicians to educate young people and their parents about these potential side effects and how they can be managed. It has also been observed that higher doses of Sertraline have shown a possible link between onset of urinary side effects.

### Impact of psychiatric comorbidities on emergency surgical patients' outcomes

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**Aims.** Psychiatric disorders are increasingly prevalent and present as a comorbidity in many hospitalized patients. Studies have demonstrated that the presence of comorbid psychiatric conditions (CPC) is associated with worsened inpatient outcomes. Emergency surgical admissions and the impact of CPC on their outcomes has not been studied in Ireland to date. This study aims to provide a comprehensive analyses of the relationship between a wide range of psychiatric comorbidities and surgical presentations.

**Method.** The Hospital In-Patient Enquiry (HIPE) and prospectively maintained electronic patient records were used to identify all surgical emergency admissions between 31st August 2019 and 1st September 2020 to Mayo University Hospital, Ireland. Patient demographics, comorbidities, primary diagnoses, length of stay (LoS), discharge destination, and surgical interventions were recorded. Subgroup analyses were performed examining LoS variation in the type of surgical presentation. Physical comorbidities were scored using the Charlson Comorbidity Index (CCI). Statistical calculations were performed using SPSS.

**Result.** A total of 995 admissions were recorded. The presence of CPC increased the overall mean LoS by 1.9 days ( $p = .002$ ). This trend was observed in both operative and conservative management. Significant increase in LoS was noted in patients with a comorbid depression (2.4 days,  $p = .003$ ), dementia (2.8 days,  $p = .019$ ), and intellectual disability (6.7 days,  $p = .007$ ). Subgroup analysis revealed greater LoS in patients with CPC diagnosed with non-specific abdominal pain (1.4 days,  $p = .019$ ), skin and soft tissue infections (2.5 days,  $p = .040$ ), bowel obstruction (4.3 days,  $p = .047$ ), and medical disorders (18.6 days,  $p = .010$ ). The odds of nursing home or convalescence as a discharge destination was 2.44 (95% CI: 1.37–4.35,  $p = 0.002$ ) in patients with CPC and the odds of self-discharge against medical advice in this population was 4.89 (95% CI: 1.43–16.70,  $p = 0.005$ ). No significant difference was observed in mortality and readmission rates.

**Conclusion.** Psychiatric comorbidities significantly impact length of hospital stay and influence discharge planning in surgical inpatients. Greater vigilance is required in providing care for patients