

Response to: Treatment adherence may be the key to online Exposure and Response Prevention for paediatric tics

Chris Hollis (*FRCPsych*)^{1,2,3,4}, Charlotte L Hall (*PhD*)^{1,3}, Louise Marston (*PhD*)⁵, on behalf of the ORBIT Trial team

Affiliations:

¹NIHR MindTech MedTech Co-operative, Institute of Mental Health, School of Medicine, University of Nottingham, Innovation Park, Triumph Road, Nottingham, UK

²NIHR Nottingham Biomedical Research Centre, Institute of Mental Health, University of Nottingham, Innovation Park, Triumph Road, Nottingham, UK

³Mental Health and Clinical Neurosciences, School of Medicine, University of Nottingham, Nottingham, UK

⁴Department of Child and Adolescent Psychiatry, Nottinghamshire Healthcare NHS Foundation Trust, South Block Level E, Queen's Medical Centre, Nottingham, UK

⁵Research Department of Primary Care and Population Health and Priment CTU, University College London, Upper 3rd Floor, Royal Free Campus, Rowland Hill Street London, UK

Corresponding author:

Professor Chris Hollis

Chris.hollis@nottingham.ac.uk

Institute of Mental Health, Mental Health and Clinical Neurosciences, School of Medicine, University of Nottingham, Innovation Park, Triumph Road, Nottingham, NG7 2TU, UK

We thank Wang and colleagues for their endorsement of the ORBIT trial^{1,2} and acknowledging the significance of the findings. We are grateful for the opportunity to clarify the issue of adherence within the trial, which we believe to be a strength of this study.

We agree with Wang and colleagues that the small difference in adherence between the psychoeducation group (105/112; 94% completers) and the ERP group (99/112; 88% completers) may be due to the additional demands of engaging in ERP therapy as opposed to an education focused intervention. Although, it should be noted that both interventions consisted of 10 web-based chapters, and the chapter lengths were matched to be roughly equal. Participants in the psychoeducation group completed a median of 9 chapters and those in the ERP group, 8 chapters with more than a quarter of participants in both groups completing all chapters. We agree with Wang and colleagues that adherence may be lower in clinical practice. However, ORBIT was designed as a pragmatic trial with minimal participant exclusions and minimal researcher contact during the treatment to closely mirror clinical practice. Wang and colleagues suggest a post-hoc analysis of the primary outcome restricted to treatment completers. We believe this would be unhelpful in predicting real-world effectiveness of the intervention. We conducted an intention to treat (ITT) analysis (including both treatment completers and non-completers) which avoids overoptimistic estimates of the efficacy of the intervention resulting from the removal those who are non-adherent.

We are grateful to Wang and colleagues for the opportunity to highlight a related paper from this trial³ which explores engagement with the intervention as part of a process evaluation following Medical Research Council (MRC) guidelines.^{4,5} Using principal component analysis, we created a composite measure of participants' engagement with the intervention. This engagement factor was used as a variable in Spearman's Rho correlation with contextual factors as independent variables to examine factors which may impact engagement. In

response to Wang and colleagues, comorbidities had no significant relationship with engagement. The participant's gender, socioeconomic status, age, baseline scores, parental education or tic medication status were also unrelated to engagement. Multiple linear regression modelling found two significant predictors of engagement; site (London participants were more engaged than Nottingham) and parental engagement (participants with parents who completed more chapters were more engaged). These findings provided support for the inclusion of parental chapters to facilitate their child's engagement with therapy.

References

1. Hall C, Davies E, Andrén P, et al. Investigating a therapist-guided, parent-assisted remote digital behavioural intervention for tics in children and adolescents—'Online Remote Behavioural Intervention for Tics'(ORBIT) trial: protocol of an internal pilot study and single-blind randomised controlled trial. *BMJ open* 2019; **9**(1): e027583.
2. Hollis C, Hall CL, Jones R, et al. Therapist-supported online remote behavioural intervention for tics in children and adolescents in England (ORBIT): a multicentre, parallel group, single-blind, randomised controlled trial. *The Lancet Psychiatry* 2021; **8**(10): 871-82.
3. Khan K, Hollis C, Hall CL, et al. Fidelity of Delivery and Contextual Factors Influencing Children's Level of Engagement: Process Evaluation of the Online Remote Behavioral Intervention for Tics Trial. *Journal of Medical Internet Research* 2021; **23**(6): e25470.
4. Khan K, Hollis C, Hall CL, et al. Protocol for the Process Evaluation of the Online Remote Behavioural Intervention for Tics (ORBIT) randomized controlled trial for children and young people. *Trials* 2020; **21**(1): 1-10.
5. Moore G, Audrey S, Barker M, et al. Process evaluation of complex interventions. *UK Medical Research Council (MRC) guidance* 2014: 1-133.