



## King's Research Portal

*Document Version*  
Peer reviewed version

[Link to publication record in King's Research Portal](#)

*Citation for published version (APA):*

Salazar de Pablo, G., Jordá, C. P., Vaquerizo Serrano, J. D., Moreno, C., Cabras, A., Arango, C., Hernández, P., Veenstra-VanderWeele, J., Simonoff, E., Fusar-Poli, P., Santosh, P. J., Cortese, S., & Parellada, M. (in press). Efficacy of Pharmacological Interventions for Irritability and Emotional Dysregulation in Autism Spectrum Disorder and Predictors of Response: A Meta-analysis of Placebo-Controlled Randomized Controlled Trials. *Journal of the American Academy of Child and Adolescent Psychiatry*.

### **Citing this paper**

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

### **General rights**

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

### **Take down policy**

If you believe that this document breaches copyright please contact [librarypure@kcl.ac.uk](mailto:librarypure@kcl.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.

# **Efficacy of Pharmacological Interventions for Irritability and Emotional Dysregulation in Autism Spectrum Disorder and Predictors of Response:**

## **A Meta-analysis of Placebo-Controlled Randomized Controlled Trials**

Gonzalo Salazar de Pablo, MD, PhD<sup>1,2,3</sup>, Carolina Pastor, MD<sup>4,5</sup>, Julio Vaquerizo-Serrano, MD<sup>2,3,6</sup>, Carmen Moreno, MD, PhD<sup>2</sup>, Anna Cabras, MD<sup>7</sup>, Celso Arango, MD, PhD<sup>2</sup>, Patricia Hernández, MD<sup>2</sup>, Jeremy Veenstra-VanderWeele, MD, PhD<sup>8,9</sup>, Emily Simonoff, MD, PhD<sup>3</sup>, Paolo Fusar-Poli, MD, PhD<sup>1,10,11</sup>, Paramala Santosh, MD, PhD<sup>3</sup>, Samuele Cortese, MD, PhD<sup>12,13,14</sup>, Mara Parellada, MD, PhD<sup>2,\*</sup>

### **Affiliations:**

<sup>1</sup>Dr Salazar de Pablo and Prof Fusar-Poli are with the Early Psychosis: Interventions and Clinical-detection (EPIC) Lab, **Department of Psychosis Studies**, Institute of Psychiatry, Psychology & Neuroscience, King's College London, UK;

<sup>2</sup>Dr Salazar de Pablo, Dr Vaquerizo-Serrano, Dr Moreno, Prof Arango, Dr Hernández and Dr Parellada are with the Institute of Psychiatry and Mental Health, **Department of Child and Adolescent Psychiatry**, Hospital General Universitario Gregorio Marañón, School of Medicine, Universidad Complutense, Instituto de Investigación Sanitaria Gregorio Marañón (IiSGM), CIBERSAM, Madrid, Spain;

<sup>3</sup>Dr Salazar de Pablo, Dr Vaquerizo-Serrano, Prof Simonoff, and Prof Santosh are with the **Department of Child and Adolescent Psychiatry**, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK;

<sup>4</sup>Dr Pastor is with the University of Pittsburgh Medical Center, Pittsburgh, and the Western Psychiatric Institute and Clinic, Pittsburgh, Pennsylvania;

<sup>5</sup>Dr Pastor is with the **Psychiatric Department**, Hospital Universitario 12 de Octubre, Madrid, Spain;

<sup>6</sup>Dr Vaquerizo-Serrano is with the **Department of Psychosis Studies**, Institute of Psychiatry, Psychology, and Neuroscience, King's College London, UK;

<sup>7</sup>Dr Cabras is with the **Department of Neurology and Psychiatry**, University of Rome La Sapienza, Rome, Italy;

<sup>8</sup>Dr Veenstra-VanderWeele is with the **Department of Psychiatry**, Columbia University, New York, NY, USA;

<sup>9</sup>Dr Veenstra-VanderWeele is with the New York State Psychiatric Institute, New York, NY, USA;

<sup>10</sup>Prof Fusar-Poli is with the **Department of Brain and Behavioral Sciences**, University of Pavia, Pavia, Italy;

<sup>11</sup>Prof Fusar-Poli is with OASIS service, South London and Maudsley NHS Foundation Trust, London, UK;

<sup>12</sup>Prof Cortese is with the Centre for Innovation in Mental Health, Academic Unit of Psychology, Clinical and Experimental Sciences (CNS and Psychiatry), Faculty of Medicine, University of Southampton, UK;

<sup>13</sup>Prof Cortese is with the New York University Child Study Center, New York, NY, 10016, USA;

<sup>14</sup>Prof Cortese is with the Division of Psychiatry and Applied Psychology, School of Medicine, University of Nottingham, Nottingham, UK.

**Correspondence to:** Dr Mara Parellada, Department of Child and Adolescent Psychiatry, Institute of Psychiatry and Mental Health, Hospital General Universitario Gregorio Marañón School of Medicine, IiSGM, CIBERSAM, Complutense University of Madrid, Madrid, Spain. Email:

**Financial disclosure statement:** Dr Salazar de Pablo has received honoraria from Janssen Cilag. Dr Moreno has been a consultant to or has received honoraria from Janssen, Angelini, Servier, Nuvelution, Otsuka, Lundbeck and Esteve. Dr Arango has been a consultant to or has received honoraria or grants from Acadia, Angelini, Gedeon Richter, Janssen Cilag, Lundbeck, Otsuka, Roche, Sage, Servier, Shire, Schering Plough, Sumitomo Dainippon Pharma, Sunovion, and Takeda. Prof Fusar-Poli has received grant support from Lundbeck and honoraria fees from Angelini, Menarini and Lundbeck. Prof Santosh has been a consultant to or has received honoraria or grants from Anavex Life Sciences, GW Pharma, and Newron. Dr. Veenstra-VanderWeele has served on Advisory Boards for Roche, Novartis, and SynapDx. He has received research funding from Roche, Novartis, SynapDx, Janssen, Forest, and Seaside Therapeutics. He has received editorial stipends from Wiley and Springer. Prof Cortese declares reimbursement for travel and accommodation expenses from the Association for Child and Adolescent Central Health (ACAMH) in relation to lectures delivered for ACAMH, Canadian AADHD Alliance Resource (CADDRA), British Association of Psychopharmacology (BAP), and from Healthcare Convention for educational activity on ADHD. Dr Pastor, Dr Vaquerizo-Serrano, Dr Cabras, Dr Hernández and Prof Simonoff have no conflicts of interest to declare

**Acknowledgments:** None.

**Funding:** Dr Salazar de Pablo, Vaquerizo-Serrano and Pastor are supported by the Alicia Koplowitz Foundation. Dr Moreno, Prof Arango and Dr Parellada are supported by the Spanish Ministry of Science and Innovation, Instituto de Salud Carlos III, European Regional Development Fund 'A way of making Europe', Centro de Investigación Biomédica en Red Salud Mental, Madrid Regional Government; and Fundación Mutua Madrileña. Prof Fusar-Poli is supported by PSYSCAN. Prof Simonoff is supported by the UK medical research Council, UK RI, EU IMI and the NIHR biomedical research centre. Prof Santosh is supported by Reverse Rett, through Action Medical Research.

**ORCID profiles:**

Gonzalo Salazar de Pablo, MD, PhD: 0000-0002-6992-0767

Carolina Pastor, MD:

Julio Vaquerizo-Serrano, MD:

Carmen Moreno, MD, PhD: 0000-0003-0541-4846

Anna Cabras, MD: 0000-0003-2391-8247

Celso Arango, MD, PhD: 0000-0003-3382-4754

Patricia Hernández, MD:

Jeremy Veenstra-VanderWeele, MD, PhD: 0000-0002-6349-1076

Emily Simonoff, MD, PhD: 0000-0002-5450-0823

Paolo Fusar-Poli, MD, PhD: 0000-0003-3582-6788

Paramala Santosh, MD, PhD: 0000-0003-4830-5893

Samuele Cortese, MD, PhD: 0000-0001-5877-8075

Mara Parellada, MD, PhD: 0000-0001-7977-3601