Eur Child Adolesc Psychiatry (2015) 24:729–730
DOI 10.1007/s00787-015-0737-x

EDITORIAL

Neurobiological research in child and adolescent psychiatry: does the pendulum swing back to more attention on developmental psychopathology?

Veit Roessner[1]

Published online: 27 June 2015

At the turn of the millennium, Berrios [1] as one of the first authors published a statement regarding the upcoming disenchantment with progress in psychiatry in terms of neurobiological research findings. He described three waves of enthusiastic hope for the understanding of mental disorders triggered by the introduction of new powerful research techniques: during the nineteenth century in relation to optical microscopy and neuropathology, during the twentieth century in relation to EEG, psychopharmacology, air ventriculography and CAT scan and during the last decade (i.e. 1990s) in relation to neuroimaging (e.g., MRT, MEG), computer- and electronic-based neuropsychology and molecular genetics. But he, like others in the following years [2, 4, 5], criticized the predominance of the indeed fascinating high-tech research with the consequence of "attracting all the research monies and in creating many an academic reputation; and also noxious in that they effectively condemned clinicians as fuddy-duddies" [1]. This critique is fueled inter alia by the increasing and in 2011 "…almost unmanageable number of neuroimaging studies with different single findings, showing differences in brain responses in patients with or without medications compared to healthy controls" [4] for almost every disorder. The same holds for other high-tech methods such as molecular genetics or the "omics" methodology leading to the impression of often contradictory results of neurobiological findings in mental disorders [5].

Therefore, there are more and more admonishing voices that "…neurobiological research strategies and results do not preclude the necessity to define reliable diagnostic criteria in daily clinical routine as well as clear and clinically relevant disorder categories" [4]. Already in 1999, Berrios [1] sent a message condensed in the title of his article "Towards a new descriptive psychopathology: a sine qua non for neurobiological research in psychiatry". But while psychopathology had an undisputed role as an important clinical and research tool over decades, it took more and more a backseat in the recent two decades that are characterized by increasing influence of operationalized psychiatric diagnoses, evidence-based guidelines and neuroscientific considerations on the identity of psychiatric disorders. Some opinion leaders even argued that psychopathology will sooner or later be fully replaced by neuroscientific concepts [5].

But taking into account that these problems with neurobiological findings may very well result from poor psychopathological standards or from insufficient or misleading operational diagnostic entities, one of the neurobiological answers to this challenge could be the idea of 'functional psychopathology', trying to develop correlative or causal links not between nosological entities and neurobiological findings, but between the latter and psychopathologically defined syndromes [5].

The present issue of ECAP is a prototypic picture of these developments. Only 1 [7] out of 11 child and adolescent psychiatric studies present neurobiological results to the readership. Its finding that GRIN2B variants predict children with the worst outcome in attention functioning among children exposed to low SES follows the research strategies proposed by some of the admonishers of a preponderance of neurobiological research.

Particularly in the field of child and adolescent psychiatry, the above-mentioned idea of 'functional psychopathology' should be extended to 'developmental

✉ Veit Roessner
Veit.Roessner@uniklinikum-dresden.de

[1] Department of Child and Adolescent Psychiatry, TU Dresden, Fetscherstrasse 74, 01307 Dresden, Germany

psychopathology' as described by Cicchetti and Toth [2]. They highlight that 'developmental psychopathology' as a discipline "…has made significant contributions toward the understanding of risk, psychopathology, and resilience in individuals across the life course. The overarching goal of the discipline has been to elucidate the interplay among biological, psychological, and social-contextual aspects of normal and abnormal development. In addition to directing efforts toward bridging fields of study and aiding in elucidating important truths about the processes underlying adaptation and maladaptation, investigators in developmental psychopathology have been equally devoted to developing and evaluating methods for preventing and ameliorating maladaptive and psychopathological outcomes. Increasingly, efforts are being made to conduct investigations at multiple levels of analysis and to translate basic research knowledge into real world contexts" [2]. In summary, it is not only genes and environments, but also the cumulative developmental history of the individual, that influence how future development will unfold [11]. In this context, also child psychiatric epidemiology has its established position as discussed recently in ECAP [12, 13]. But then, again, the question of sample size, number of parameters under investigation and elaborateness of methods applied comes into discussion [8] and closely related to this of research budgets and their allocation [9]. Regardless of this, all articles of the present issue of ECAP look on certain developmental influences, e.g., by looking on the role of parenting for emotional and behavioral resilience to multiple risk exposure in early life [3] or childhood friendships and psychological difficulties in young adulthood in an 18-year follow-up study [10]. This may reflect the beginning of a paradigmatic shift with less focus on 'pure' neurobiological research to more broader and multifaceted methodology of research in child and adolescent psychiatry, including neurobiological parameters. But, in the unlikely event that there will be a more comprehensive and clearer picture of causal factors, their interplay and the optimal treatment strategy for the individual child, unfortunately still the gaps between science, policies, services and the needs of children and adolescents affected by mental disorders and their families have to be closed [6].

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