

## Editorial

# Not Just Small Adults - The Need for Developmental Considerations in Psychopathology

**Schultze-Lutter F\* and Schmidt SJ**

Department of Child and Adolescent Psychiatry and Psychotherapy, University of Bern, Switzerland

\*Corresponding author: Schultze-Lutter F, University Hospital of Child and Adolescent Psychiatry and Psychotherapy, Research Department of Child & Adolescent Psychiatry, Bolligenstrasse 111, Haus A, 3000 Bern 60, Switzerland

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## Editorial

Mental disorders are a major threat to the well-being of children and adolescents, affecting 12% of the 6- to 11-year-olds and 21% of the 12- to 18-year-olds worldwide [1]. While, unsurprisingly, neurodevelopmental disorders are reported as rather frequent in childhood and adolescence—revealing pooled prevalence rates of 5.7% for any disruptive disorder and 3.4% for attention-deficit hyperactivity disorder—the most frequent diagnosis, at 6.5%, is of any anxiety disorder. The pooled prevalence of any depressive disorder is 2.6% [1], and unipolar depressive disorders are the main cause of Disability-Adjusted Life Years (DALYs) in both 10- to 14- and 15- to 19-year-olds [2]. In its contribution to DALYs, depression is followed in the older group by schizophrenia; bipolar disorders and panic disorders are the fourth and eighth, respectively, most important causes of DALYs in 15- to 19-year-olds [2]. These data underline the importance of mental disorders considered to “more commonly manifest in adolescence and young adulthood (e.g., bipolar, depressive and anxiety disorders)” [3, p.13] already in children and adolescents. Yet, their diagnostic criteria are commonly derived from and validated for adult patients and, with few exceptions (such as disruptive mood dysregulation disorder, newly introduced in the 5<sup>th</sup> edition of the Diagnostic and Statistical Manual of Mental Disorders, DSM-5 [3]), are applied to children and adolescents with little, or even no, consideration for the potential characteristics of the developmental process.

Applicable only to 6- to 17-year-olds, disruptive mood dysregulation disorder was included in DSM-5 to counteract the perception of severe, non-episodic irritability as a manifestation of pediatric mania, and the resulting rise in the rates of diagnosis of bipolar disorders in child and adolescent patients [3]. A core feature of disruptive mood dysregulation disorder is a persistently irritable and angry mood, accompanied by severe recurrent temper outbursts. However, irritability is also described in children as an expression both of manic episodes within bipolar II disorders and of major depressive disorder; and while disruptive mood dysregulation disorder can coexist with the diagnosis of the latter, lifetime diagnosis of a bipolar disorder excludes its diagnosis [3]. Thus, in case of an irritable child, much will depend on the perception of the persistence

or fluctuation of the irritability as well as on its accompanying symptoms; qualitative guidance to distinguish (hypo)-manic, depressive and mood dysregulated irritability at particular ages across childhood and adolescence is not provided in the DSM-5.

The same lack of developmentally appropriate guidance for diagnosis and symptom evaluation can be observed with a diagnostic category that is “thought to reflect developmental processes that manifest early in life” [3, p.13]: schizophrenia spectrum and other psychotic disorders, and the related section III diagnosis of an attenuated psychosis syndrome. Despite increasing recognition of distinct features and potentially lower clinical significance of some of the characteristic symptoms in schizophrenia-spectrum psychosis with an early onset before the age of 18, diagnostic criteria are the same across the lifespan. Their core features include hallucinations, delusions, and disorganized speech; of these, (attenuated) hallucinations will be considered here, as an example against the background of developmental considerations.

Hallucinations are perceptions in the absence of external stimuli that are experienced in a fully awake state as real perceptions located in the external objective space. They are distinguishable from illusions, which involve the misperception of an external stimulus. They also differ from pseudohallucinations (or attenuated hallucinations in terms of the attenuated psychosis syndrome), which are not under voluntary control, but do not mimic real perception—that is to say, are eventually recognized as being generated in one’s own mind. Furthermore, hallucinations are distinct from imagery, which does not mimic real perception and is under voluntary control—such as imaginary friends that can well persist into adolescence [4]. Thus, impaired (or not yet fully matured) source monitoring has been considered to play an important role in the development of positive symptoms, in particular of hallucinations [5,6].

Source monitoring is the complex process of making decisions about the source of a memory that requires the availability and coordination of many cognitive skills [7]. Three source monitoring processes are distinguished: external source monitoring, internal or self-monitoring and reality monitoring (i.e., discrimination between internal and external sources of information) [5]. Source monitoring decisions are based on memory characteristics recorded, such as perceptions, contextual information or emotional reactions and heuristic or more controlled judgement processes [5]. Until approximately age 10, children perform worse than adults on many source-monitoring tasks, possibly because, before that age, the frontal lobe has not matured sufficiently to enable the necessary complex and effortful decisions [7]. However, a child should have been able to reliably distinguish between internal and external events, before it could be considered to have psychotic (pathological) hallucinations—i.e., to falsely perceive an internal stimulus as an external one. This might question the validity of the diagnosis of a psychotic

hallucination in children younger than 10 years of age [5-7].

Unsurprisingly against this background, hallucinatory experiences were more frequently reported by children and young adolescents than adults [8-11]. In a Dutch study of verbal hallucinations in 7- to 8-year-olds recruited from the general population, 347 of the 3870 interviewees (9%) reported hearing voices within the previous year. Yet, in only 15% of cases, verbal (pseudo)-hallucinations were associated with substantial suffering and problem behaviors [8]. Five years later, verbal (pseudo)-hallucinations had remitted in 76% of 170 re-interviewed young adolescents with earlier reports of hearing voices, while they were newly reported by only 9% of the 167 re-interviewed adolescents without such an earlier report [9]. Persistence of verbal (pseudo)-hallucinations was predicted by an external attribution of the voices, a multitude of voices, the presence of other psychotic symptoms (in particular odd behavior, unusual thought content, and visual hallucinations), problematic behaviors, and/or lower school performance at baseline. Furthermore, persistent as well as newly reported verbal (pseudo)-hallucinations at the age of 12 to 13 were associated with further problem behavior, i.e., with Child Behavior Checklist scores at follow-up frequently being in the clinical range [9]. Another six years later, of the 293 re-interviewed young adults, now aged 18-19 years, altogether 18% (n = 6) of those having reported hearing voices at 5-year follow-up (n = 33) and only 6% (n = 9) of those having reported hearing them at baseline (n = 145) still reported verbal (pseudo)-hallucinations. These were associated with higher levels of other psychotic experiences and other psychopathology as well as with traumatic events, but not with high levels of current stress or cannabis use [10]. These findings indicate that verbal (pseudo)-hallucinations in early childhood are mostly transitory, but gain clinical relevance when they persist into adolescence and are accompanied by other (attenuated) psychotic symptoms, affective symptoms, and environmental risk factors, particularly adverse events.

These findings are supported by a Swiss, cross-sectional general population study of the effect of age on the prevalence and clinical significance of attenuated psychotic symptoms in 8- to 40-year-olds [11]. Altogether, 5% of the 698 interviewees reported perception-related Attenuated Psychotic Symptoms (APS), i.e., unusual perceptual experiences in terms of positive features of a schizotypal personality disorder and attenuated hallucinations with insight into their abnormal nature. A strong age effect on prevalence was detected for two age groups with a split around the age of 16: in 8- to 15-year-olds, perceptive APS were significantly more frequent than in 16- to 40-year-olds, with no difference in frequency within these two age groups [11]. Thus, as indicated by both cross-sectional and longitudinal data, the majority of perceptual abnormalities in childhood and young adolescence seem to be of a transitory, non-pathological nature, unrelated to psychotic disorders; however, their potentially specific differential characteristics still need to be examined in more detail.

An attempt to do this was made by Hlastla and McClellan (2005), who studied psychotic phenomena unrelated to psychosis or development of psychosis-in a child and adolescent patient sample [12]. Compared to the psychotic symptoms of patients with schizophrenia or bipolar disorder, the 7- to 18-year-old patients

with so-called "atypical" psychotic symptoms, who did not develop frank psychosis over two years, were more likely to report childhood adversities, in particular physical neglect and abuse. Their reports of psychotic symptoms were extremely elaborate, closely linked to certain situations, and/or clearly directed to secondary gain from their psychotic symptoms. Furthermore, patients with "atypical" psychotic symptoms did not exhibit odd behaviors or disorganized speech. Their social problems mainly involved peers and they exhibited little reactive and aggressive behaviors, and hardly any social withdrawal, and/or social anhedonia [12].

This example on age-related research of and developmental considerations on hallucinatory phenomena illustrates the importance of considering developmental stages in psychopathology and the need for more research in this area. This will improve timely differential diagnoses and treatment indication of 'adult disorders' in child and adolescent psychiatry—in order to avoid both overdiagnosis and unwarranted, potentially harmful treatment, and belated diagnosis and long duration of untreated disorder likely resulting in poorer outcome [13,14]. This line of research might also provide deeper insight into the neurocognitive and neurobiological processes involved in the development of severe psychiatric symptoms.

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