Editorial

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Editorial: Factualities – establishing empirical truths in child psychology and psychiatry

As a psychology student, I was taught that acquiring knowledge involves running through the so-called empirical cycle (De Groot, 1961), an iterative process of observation (collecting facts), induction (hypotheses formulation), deduction (formulation of specific predictions), testing, and evaluation (theory building). Despite its age, this model, with its clear distinction between exploratory research (systematic observation, hypothesis generation) and verification research (testing a priori hypotheses in new data), has lost nothing of its value as leading guideline of empirical research. Quite on the contrary, the reproducibility crisis in science (e.g. Baker, 2016) has clearly illustrated the consequences of not adhering to the empirical cycle. The empirical cycle serves the purpose of converting surmises into test results, which lays the foundations of evidence-based practices. In a world full of fake news, empirical evidence is more important than ever.

The empirical cycle has a downside as well: it describes an iterative process without natural end point. Science is conceived of as an ever-continuing expansion of empirical knowledge and theories, not the establishment of facts that can serve as an input for clinical or policy decisions. Otherwise stated, the empirical cycle does not provide guidelines for the determination of whether the weight of evidence regarding a specific question is sufficient to consider the knowledge as factual. As such, the endless nature of the empirical cycle makes a lot of sense: every answer evokes new questions, and what is true today may not be true anymore tomorrow. Replication is essential, and so is investigating to what extent reported effects are generalizable to other age groups, times, cultures, or clinical characteristics. Nevertheless, the question when we know enough about a particular topic can be very relevant at times, because beyond a certain point, the added value of more research starts to decline, the cost-benefit balance becomes less favourable, and effort and means can better be invested elsewhere.

Several research findings in child psychology and psychiatry have evidently reached a factual status by now. We do not have to test once again whether psychiatric symptoms tend to co-occur; we know they do, just like we know that abused children have an increased chance to encounter mental health problems later in life. However, it is not always obvious when an assumed association may be considered well-established. Clarity on when scientific evidence has passed the stage of to-be-tested hypotheses is desirable; policy decisions require straightforward recommendations, and climate and vaccination debates have demonstrated the importance of generally accepted criteria for determining when evidence is conclusive. Statistically, this might be done by, among other things, Bayesian sequential meta-analyses with stopping rules (Spence, Steinsaltz, & Fanshawe, 2016). Setting up criteria for these stopping rules can be an interesting process, which touches on the raison d'être of empirical research.

Whereas we may be too hesitant to declare a notion factual at times, the opposite may occur as well. At least as relevant as the question whether we are overtesting things is the question whether the ideas that are assumed to be true and hence not tested anymore may be misperceptions. In his thought-provoking book *Factfulness*, Hans Rosling, Rosling Ronnlund, and Rosling (2018) depicted a number of reasons why – highly educated – people can hold persistent opinions on the condition of the world that are entirely incorrect. One of these reasons is the negativity instinct: the fact that negative news is much more likely to spread around than positive news, which creates an overly negative impression of the world. Another reason is the single perspective instinct, the tendency to look at problems from always the same perspective.

Both the negativity and the single perspective instinct are, in my view, germane to our field. Child psychologists and psychiatrists tend to focus on messages suggesting that the burden of children´s mental health problems calls for more – clinical – intervention and research, rather than on reports that the majority of children are doing quite well. Illustrative in this respect is that the majority of reports on the mental health consequences of Covid-19 emphasized the hard times that some children and adolescents go through, rather than that the majority do not experience substantially increased problems, and a sizable proportion even fare better than before the pandemic (e.g. Ford, John, & Gunnell, 2021). The inclination to focus on problems is natural considering the clientele of mental health services. Mental health problems can cause children to suffer deeply, and ways to improve their situation deserve everyone's fullest attention and efforts. Besides, there are

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various valid reasons to be worried about children's development. The world is changing at an increasingly rapid pace, and certainly not just for the good, and children are exposed to considerably more, and potentially damaging stimuli than a couple of decades ago. Yet, the negativity and single perspective instinct may cause an excessive focus on problems, which gets in the way of a realistic perception of the world.

A common belief with regards to child mental health is that the prevalence of psychiatric disorders is sky-high among young people and increasing rapidly; the term 'epidemic' has been linked to a wide range of disorders. Cautious notes that 'this increase most likely represents changes in the concepts, definitions, service availability, and awareness' (e.g. Fombonne, 2009, p. 597) of these disorders do not have the same sticking power as the notion that things are bad and getting worse; a fine example of the negativity instinct in action. It cannot be denied that the lifetime prevalence of psychiatric disorders is high: in the National Comorbidity Survey Replication – Adolescent Supplement (NSC-A) about half of the adolescents were estimated to have a lifetime diagnosable mental illness according to the DSM-IV, of whom 44% (22% of all adolescents) had experienced severe distress or impairment (Merikangas et al., 2010). These are discouraging findings indeed, at least from the perspective that every disorder is one too many. From a different perspective, however, these figures indicate that over three quarters of the adolescents have never experienced disabling mental health problems in their lives, despite the challenges of growing up in a complex world. Considered this way, the prevalence rates signify remarkable resilience. Another frequently held perception is that youth diagnosed with a psychiatric disorder are unhappy. Whereas this is often true for disorders with a strong affective component such as major depression and generalized anxiety, many other disorders may not be linked to well-being that closely: Dutch adolescents with a current diagnosis of, for instance, alcohol abuse, ADHD, conduct disorder, and specific phobia reported being equally happy as those without the disorder (Oldehinkel, 2020). These findings are by no means reason to stop trying to improve young people's mental health, but still worth noting to prevent an overly one-sided view.

In short, it is a thorny road to search for empirical facts, in our field perhaps even more than elsewhere; and this search requires continuing evaluation and justification of what is investigated and why. The articles included in this issue of JCPP cover a wide range of topics, but all authors did an excellent job in explaining the rationale of their study and providing a nuanced interpretation of the findings, and it is a pleasure to introduce their work. To start with, *Hawes and Dadds* present a promising new perspective and process model on resistance to change in parenting interventions in their practitioner review. *Lebowitz, Zilcha-Mano, Orbach, Shimshoni, and Silverman* applied machine learning to examine moderators of responses to two treatments for childhood anxiety, cognitive behavioural therapy, and supportive parenting. Their results represent an important step towards increased treatment efficacy. *Jung* et al. related psychophysiological and neural responses to aversive sensory stimulation in youth with ASD and typically developing controls, to ascertain whether psychophysiological responses could be used to measure sensory over-responsivity in individuals who cannot participate in MRI. Their findings suggest a tentative 'yes'. *Olino, Michelini, Mennies, Kotov, and Klein* addressed a highly relevant topic in our field of research: mood-state biases in maternal reports of their children's emotional and behavioural problems. Their reassuring message is that studies of youth psychopathology do not appear to be compromised by maternal report biases. The goal of producing more robust evidence drove the study of *Postema* et al., who investigated brain left-right asymmetry in ADHD in 39 datasets encompassing 1,933 people with ADHD and 1,829 unaffected controls, the largest sample size ever for this question. The effects found were small at the most, making altered structural brain asymmetry an unlikely biomarker for ADHD. Irritability is often treated as unitary, but has a tonic and a phasic dimension. *Silver and colleagues* showed that tonic and phasic irritability predicted different forms of psychopathology: whereas high tonic irritability predicted distress disorders, phasic irritability predicted externalizing disorders. This calls for separate assessment of both forms of irritability. The JASPER (Joint Attention, Symbolic Play, Engagement, and Regulation) intervention aims to increase the ability of initiated joint engagement with a social partner in children with ASD, and so to improve their communication and language skills. *Shih, Shire, Chang, and Kasari* found empirical evidence for this hypothesized pathway. Although most children with ASD retain their diagnosis, others may have a more dynamic course. *Tunç* et al. found that children who switched diagnostic labels from 24 to 36 months had an intermediate phenotypic profile, and emphasize the dynamic nature of early ASD diagnosis. *Xi and colleagues* contributed to this issue with a first and fascinating exploration of the gut microbiota profile of children with a tic disorder as compared to healthy controls, and the effect of dopamine receptor antagonists therein. Finally, Terhaag and colleagues explore sex, ethnic, and socioeconomic inequalities in emotional difficulties over childhood and adolescence using longitudinal cohort studies in the UK and Australia. The contributors´ efforts and skills have yielded a highly readworthy selection of the many fact-finding endeavours in our field. I hope you will find it informative and enjoyable.

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