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REPLY

Response to Mottron

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In the face of the enormous amount of evidence that autism as currently diagnosed can be linked to a wide variety of central nervous system and gene dysfunctions, researchers and funders still try more or less desperately to find a single dysfunction that would provide neurobiological validity for autism. In clinical (including clinical research) practice, the almost religious belief in "autism-specific diagnostic instruments" mixed with the unwarranted claims for early behavioral interventions leading to extremely positive results, has released an avalanche of "specialist" autism diagnostic centers (clinical, private, and clinical research orientated) and a pandemic rise in registered autism prevalence rates.

Laurent Mottron eloquently argues for a drastic change to the way individuals with autism should be diagnosed/worked-up in order to qualify for inclusion in research studies. He proposes, it would seem, that two "experts" should decide on who is a *prototypical* case of autism and include only such cases in high-quality autism research studies. I am very much in favor of leaving the current pathways to autism diagnosis (read the overuse of ADI and ADOS at the expense expert judgment by experienced clinicians), but there are some outstanding issues before we take the road suggested.

Unitary models of autism brain or gene dysfunction have not really addressed all the conflicting evidence in the field, and efforts to find a single unifying dysfunction have led the field away from research to explore individual variation and micro-subgroups. As I and others have argued elsewhere, "autism must be taken apart in order to find neurobiological treatment targets" (Waterhouse et al., 2016; Waterhouse & Gillberg, 2014). Many autism (and particularly autism spectrum disorder [ASD]) research projects—as currently designed—have come to the end of the road. The ASD diagnosis can be important for "explaining a child's condition," for psychoeducational purposes, and possibly for assigning a child and family for some non-intensive behavioral—and possibly pharmacological—intervention. But ASD research has not provided anything resembling a diagnosis-specific medical treatment, or a consistent early predictor, or a unified life course. If the ASD diagnosis also lacks biological and construct validity, a shift away from studying current ASD-defined samples would be warranted.

Several new research strategies are needed. The belief that there is a single defining ASD brain—or gene—dysfunction must be relinquished. Individuals with autism should be diagnosed in the context of a setting where all Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations (ESSENCE, Gillberg, 2010, 2021) are considered using relevant screening methods (e.g., Hatakenaka et al., 2017; Kadesjö et al., 2004). Researchers should explore individual variation in gene and brain measures within autism (and cover a whole range of symptoms that are currently believed not to be part of the so-called "spectrum"/ASD).

So, I agree wholeheartedly with Laurent Mottron as regards the need to take a new path, but I have some urgent questions regarding his model: 1. Who will be the arbiter in terms of choosing the reliable experts? How many of those can there be in the world? Should there be an internationally approved gallery of experts, and should they be expert in child, adult or both? 2. Do the experts have to agree in order for cases to be included in a study? 3. How should the initial screen be done? What instruments would be appropriate? And, last, but not least 4. How should we proceed with the autism diagnosis in the real clinical world (that does not have top quality research linked to it)? How do we train all the young clinically inexperienced "autism experts" so that they can contribute to the diagnosis of *prototypical autism and other ESSENCE?*

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