



# Epistemological issues in neurodivergence and atypical cognition: introduction

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Received: 12 July 2022 / Accepted: 12 September 2022 / Published online: 19 April 2023  
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## Abstract

This is the introduction of the Synthese Topical Collection Epistemological Issues in Neurodivergence and Atypical Cognition written by the guest editors. In order to justify the relevance of the topic, a minimum context is given on the notions of neurodivergence as well as some brief remarks on the neurodiversity advocacy movement. This serves as a basis to establish the importance of increasing the scope of epistemology to include issues that do not fit in the descriptions of typical subjects and cognitive processes.

**Keywords** Neurodiversity · Epistemology · 4E cognition · Delusion · Epistemic Injustice · Rationality · Philosophy of psychiatry

There are a number of recent tendencies in contemporary epistemology both to widen the scope of the phenomena under study, and to provide a greater level of detail—empirical and otherwise. These can be seen in the growing inclusion of realistic, or even real-life examples, as well as imagined or idealized scenarios—not only in the case of epistemologists relying strictly on the case method, but also of those looking to illustrate the workings of a proposal. We welcome this development, both from a theoretical and an ethical point of view; since it strikes us as both methodologically sound and a move towards a greater inclusion of varieties of human experience.

Even more, the variability of human cognition has become the focus of several undertakings in epistemology as well as in related areas concerned with epistemic-normative notions. Among these efforts, we see proposals to address atypical mental states such as delusions, and false memories in dementia patients; but also, widespread phenomena, such as confabulations, which were previously absent from epistemological inquiries. In order to portray this tendency, we use the term ‘atypical’ not only

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in the sense of unusual, but also in a broader sense, as not prototypical.<sup>1</sup> With this in mind, we have included in this topical collection philosophical research on cognition that is atypical not necessarily with an emphasis on neurology, but in so far as it is related to peculiar cognitive environments (such as algorithmic recommendations for internet users) or cognitive tools such as assistive technologies (as those employed in special education).

Along these strands of research, epistemological questions have begun to be addressed in the philosophical literature that concern not any specific type of atypical mental phenomenon, but the issue of variability itself. In these cases, the related notions of 'neurodiversity' and 'neurodivergence' have been invoked, particularly in research dealing with the topic of epistemic injustice.<sup>2</sup>

Since both these notions are central in connection with this issue we will briefly describe some of the most important historical factors that led researchers in various fields (from sociology, psychiatry, and cultural studies to philosophy), as well as the neurodiversity movement, to begin to investigate cognitive variability. In the next section we offer an attempt to explain the most common understandings of the terms 'neurodiversity' and 'neurodivergence'. This will serve as a context for their use in many of the works collected in this volume, including those that challenge the usual understanding of these terms.

## 1 Some recent history on neurodiversity

The terms 'neurodiversity', 'neurodivergence' and 'atypical cognition' have a number of different meanings in various disciplinary contexts, e.g., in the fields of philosophy, (both cognitive and clinical) psychology, psychiatry, among others. Their histories are also embedded in disciplines such as cultural studies, sociology, and anthropology. These terms appear in discussions around issues such as cognitive deficits, impairments, disorders, disabilities, and anomalies (Silvers, 2003).

Historically, the first person to use the term 'neurodiversity' was Judy Singer (1999), an autistic social scientist whose hope in coining the term was to replace talk about so-called cognitive/neural disorders, impairments, deficits, etc. (conditions like ADHD, Autism, or Dyslexia) with a discourse concerning the diverse neurological conditions that are, in her view, the result of "the normal variations in the human genome." (*Disabled-World.com*, 2020).<sup>3</sup>

In other contexts, 'neurodiversity' dropped the reference to variations in the human genome<sup>4</sup> or in the *neural* phenotype, and was used in a wider sense to refer to any *cognitive and/or neural variation*; and it was also used as part of a political movement

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<sup>1</sup> An excellent example of a treatment of both kinds of phenomena can be found in Bortolotti, 2020.

<sup>2</sup> See for instance Lekić Barunčić (2019).

<sup>3</sup> An important antecedent is Mad Activism or Mad Pride. It was formed in Toronto in 1993 with the aim to affirm and reappropriate "mad identity." It has gradually become a global movement and is the origin of the associated field of Mad Studies. See Rashed (2019).

<sup>4</sup> It is now known that the genetic factors involved in the development of most of these conditions, as well as the epigenetic and environmental factors) form extraordinarily complex developmental networks in which all these factors are inextricably intertwined.

that united some autists, their families, some clinical practitioners, etc.; a social phenomenon known as ‘The Neurodiversity Movement’ (Kapp, 2020). Indeed, most of the members of this movement claimed that referring to some cognitive and/or neural variations as ‘impairments’, ‘disabilities’, ‘disorders’, etc. already had negative connotations that were exclusively *socio-culturally induced*—not induced by any condition found in the individual by herself—and were associated to forms of subjugation, abuse, and manipulation (Tremain, 2001).

Not everyone in psychological theory and clinical practice was in agreement with the view that all cognitive or neural disorders and impairments were the result exclusively of socio-cultural factors—i.e., that they were exclusively socio-cultural “artifacts”. They argued that some cognitive and/or neural conditions are so severe that they cannot, under any realistic or feasible socio-cultural circumstances, be considered as “normal variations” of the cognitive, neural, or behavioral human phenotype. Simon Baron-Cohen (2019), for example, thinks that some psychiatric disorders are best conceptualized mainly under the “medical model” as actual disorders that are principally found in individuals regardless of their social context. According to Baron-Cohen, some of them are “[autistic] individuals who struggle substantially in any environment, who may have almost no language, exhibit severe learning difficulties, suffer gastrointestinal pain or epilepsy, appear to be in anguish for no apparent reason or lash out against themselves or others” (Baron-Cohen, 2019, p. 2), while other conditions fit more nicely within the “neurodiversity model”—conditions like Asperger’s syndrome, or dyslexia.

Furthermore, sometimes ‘neurodiversity’ simply refers to the existence of variation (in a biological sense) in neural/cognitive phenotypes; and in this sense it is widely accepted as a biological fact that these kinds of variations exist.<sup>5</sup> The substance of the discussion likely arises when some clinicians, patients or researchers assert (or deny) that the *distinctions* between normal vs abnormal, (typical vs atypical, disabling vs enabling, healthy vs pathological) variations in cognitive/neural phenotypes are either *objective*, or *socially harmful*, or *clinically useful*, or the result of factors found only (or mostly) in the *individual subject*.

As we mentioned above, there are two main models concerning some of these issues:

### 1.1 The medical model

According to this model, most (if not all) the conditions listed in, for example, the DSM-V are abnormal individual variations of the human cognitive, neural and/or behavioral phenotype; they are true pathologies that engender certain disabilities in the individual; pathologies that have to be *cured* or at least *treated*. The social correlates of these pathologies—rejection, stigmatization, social exclusion, denial of some rights

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<sup>5</sup> The existence of cognitive variations is a bit more problematic; the problem lies in the way in which they can be conceptualized, given that cognitive phenotype is mostly functional in nature, so that it appears that a cognitive variation would have to be a variation in the function which individuates the cognitive phenotype, i.e., a functional variation in the function that individuates the phenotype—a paradoxical sounding game of words. For a solution to this conundrum and a full proposal concerning the way in which functional cognitive phenotypes can vary and be compared, see García (2010).

and opportunities—are (harmful and negative) consequences of the pathologies but are not constitutive of them.

This model need not deny that a change in social attitudes towards the pathology would be desirable in many different ways. It simply denies that the pathology itself would go away simply by enacting the relevant social changes.

## 1.2 The social model

Those who accept this model assert that all (or most) so-called “disorders” listed in the standard manuals basically are social constructs; they are neither pathological nor abnormal. Indeed, the very labels “disorders,” “pathologies,” “abnormal,” “divergent phenotypes,” “deficits,” “anomalies,” and so on, are all a part of this exclusionary social artifact that reinforces the denial of rights and opportunities to many people who are *simply different* in some cognitive, neural and/or behavioral respects.

The defenders of this model—usually supporters of the Neurodiversity Movement and/or Mad Activism<sup>6</sup>—have argued that the subjects having these conditions (e.g., autism, dyslexia, ADHD, obsessive–compulsive disorder, dyspraxia, etc.) do not suffer from an illness that needs to be cured; it is society at large that has to change in its own narrow, discriminatory ways, and to open “spaces” available for everyone to flourish.

Some researchers—cognitive psychologists, philosophers, anthropologists and sociologists—and some parents or tutors of the subjects who have more serious forms of autism, ADHD, obsessive–compulsive disorder, as well as those who have been diagnosed with schizophrenia, psychosis, major depression, etc., argue that some of the main tenets of the Neurodiversity Movement do not apply to them—do not address their concerns, their learning and living difficulties, etc. They need medical treatment and insurance, they have tremendous obstacles to overcome that are mostly due to their own neural, cognitive and/or behavioral condition. On the other hand, when you think of the less severe cases of autism—so called high-functioning autists—and of dyslexia, dyspraxia and the milder forms of obsessive–compulsive condition, the Social Model seems more adequate and more inclusive than the Medical Model.

These considerations have led some people to defend a *hybrid* position:

## 1.3 The hybrid model

Some subjects presenting neural, cognitive and/or behavioral variations that are not (or not very) harmful to society and to themselves —i.e., subjects that can learn to lead mostly independent social lives— should be considered mainly under the Social Model; which in part means that their social surroundings and relevant institutions (schools, jobs, public transportation, public awareness, etc.) have to be designed in such a way that they are included in society like most so called “cognitive- and neuro-typicals”. Following Russell (2020), let us call these subjects that are high functioning merely ‘*Neurotypical*’ or ‘*Neurodiverse*’.

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<sup>6</sup> For an unusual critique of the social model developed from Mad Activism, see Nabbali (2009).

On the other hand, those subjects that suffer from more severe forms of cognitive and/or neural variation and clearly require medical and psychological treatment, as well as extra care from others, fall more clearly under something like the Medical Model. These are individuals—known sometimes as ‘*Neurodivergent*’—that cannot fully take care of themselves, may have significant cognitive and sometimes even motor impairments, and most of them require life-long medical supervision since their conditions tend to be chronic and degenerative. Someone like Baron-Cohen (2019), as well as some philosophers, defend this hybrid position.

There are various problems with the Hybrid Model (Russell, 2020). One of the criticisms is that there appears to be no objective criterion to distinguish Neurodiverse from Neurodivergent subjects. Having a psychiatric diagnosis as, e.g., severely autistic or schizophrenic, is not sufficient to be neurodivergent since part of the issue between the Social and the Medical Models concerns the nature of the conditions: whether all of them are intrinsically social constructs (that are made to look pathological, like homosexuality used to be), or whether all of them are “true pathologies”—whatever this means. Indeed, another relevant discussion concerns the distinction between cognitive/neural pathologies and normal cognitive/neural conditions. As Russell (2020, 290) states: “‘Neurotypical’ is a very dubious construct, and by default then so is ‘Neurodivergent’. Is there anyone who is really, truly neurotypical?”.

Given that the norm in nature is variation, *normality* concerning the human brain (and/or human cognitive capacities) can be understood in at least two ways:

- a. As a statistical construct, which indicates somewhat arbitrarily who is inside the neural or cognitive norm, as who is outside; or
- b. As implicitly or explicitly presupposing a model of neural or cognitive normality (e.g., the brain or cognitive processes of a white anglo-saxon male in his twenties).

Both options include a good measure of arbitrariness that does not satisfy those who want an “objective” criterion of what is and what is not pathological in a cognitive and neural respect. Of course, this problem appears not only in clinical psychology and psychiatry, but also in all or most branches of medicine. Even if one can identify the main anatomical and physiological features that are characteristic of a certain bodily condition (say, diabetes type I), whether and when the condition is normal or healthy or typical of humans is a different matter.<sup>7</sup>

A second problem that some people voice with respect to the Hybrid Model is that, in political and social terms, it is *divisive* since (as we saw) it would separate those persons diagnosed with severe forms of autism spectrum disorder, schizophrenia, dyslexia, obsessive–compulsive disorder, etc., from those who are “high functioning” and can acquire the skills to lead mostly independent lives.<sup>8</sup>

<sup>7</sup> In philosophy of medicine, there is a proposal to understand the distinction healthy/pathological as involving the difference between functional/dysfunctional (e.g., a dysfunctional pancreas in the case of diabetes)—where the concept of function (as in ‘the function of the human heart is to pump blood throughout the body’) can be understood in a number of different ways. Here we cannot explore these issues due to limitations of space. See Buller (1999) and Ariew et al. (2002) for collections of essays defending some of the main positions on the subject of function.

<sup>8</sup> See Jaarsma & Welin (2012).

We will finish this section with a brief general comment on the importance of these notions for contemporary epistemology and some related areas of philosophy by use of examples. Part of the contemporary research, including some of the work in this volume, concerns itself with the issues mentioned in this section—principally, whether the distinction between neurodiversity and neurodivergence is or is not a social construct, and why. Furthermore, other authors whose work is also included here explore the nature of the characteristic symptoms of some neurodiverse conditions, for example, the delusions experienced by some schizophrenics or by people with Cotard's Syndrome, and the epistemic consequences these delusions may have.

Another important and related area of research has to do with the negative epistemic consequences that persons self-identified as neurodivergent experience; epistemic injustices they suffer by being dismissed as unreliable witnesses altogether as a group, by being stereotyped as committing epistemic errors of all and any sorts (perceptual, inferential, social, etc.). Thus, one of the perceived injustices that neurodivergent subjects commonly suffer is epistemic in kind. Concerning these injustices we find the literature debating the rationality of delusions, drawing from early work in the philosophy of psychiatry (Maher, 1974), as well as its implications concerning the doxastic conception of delusions (Bortolotti, 2009; Frankish, 2009).

Increasingly, as we can appreciate in this collection, the epistemic and representational properties of delusions have become the focus of interest of authors (see Bortolotti, 2018) who do not necessarily come from the philosophy of psychiatry and who are interested not only in the nature of delusions, but also in the consequences that their study might have for epistemology and the philosophy of mind. The autistic spectrum is one of the main neurological conditions which has been taken into consideration in issues related to the epistemology of testimony (Leonard, 2016), as well as epistemic injustice (Jongsma et al., 2017; Lekić Barunčić, 2019). Other works which are not centered on any condition in particular, focus on more general philosophical themes such as the epistemic aspects of intellectual disability (Catala, 2020), and of mental illness (Scrutton, 2017) and its consequences for a general understanding of epistemic normativity.

## 2 Epistemological issues concerning delusion, bizarre experiences and unusual processes

Within the wide set of subjects that arise in the field of neurodiversity and atypical cognition, there is one that has caught a lot of attention from philosophers; namely, the one that concerns the characterization of clinical delusions; roughly speaking, the strange or unusual beliefs and/or experiences that appear in the context of some mental disorders such as schizophrenia and dementia, as well as delusional disorders like Capgras or Cotard syndromes. Several examples of this continued interest in the philosophical literature can be found in works compiled in Bayne & Fernandez (2009); Davies & Coltheart (2000); and Bortolotti (2018b). The main questions concerning delusion are about its definition, its source or sources, and the type of dysfunctions or anomalies it seems to involve (if any).

The canonical answer to the question concerning the definition of delusion is found in the *Diagnostic and Statistical Manual of Mental Disorders V* (American Psychiatric Association, 2013, p. 819) which states that a delusion is

a false belief based on incorrect inference about external reality that is firmly sustained despite what almost everyone else believes and despite what constitutes incontrovertible evidence to the contrary.

Almost every point in this characterization has been controverted (Coltheart, 2007). First, it has been argued that delusions need not involve *false* beliefs (some of the beliefs involved in, e.g., paranoid delusions, may actually be true). Secondly, some researchers have argued that a delusion need not involve beliefs at all; it may in many cases lead a subject to have strange beliefs, but delusion itself has at its core *only* a bizarre experience. Thirdly, delusion may not be the result of incorrect inferences, and it is not necessarily resistant to change in the face of ‘obvious and incontrovertible’ evidence (see Flores, 2021).

Concerning the question as to whether delusions are beliefs—the doxastic conception—, some philosophers reason that they cannot be beliefs since they do not share some of the characteristics that are arguably central to beliefs, for example, their connection to action and rationality. It is pointed that, given that putative delusional ‘beliefs’ are irrational in the face of most of the other beliefs and actions undertaken by a delusional subject (and in the face of evidence offered by other people around her), they cannot be said to be *actually held or believed* by her (Frankish, 2009. Cf. Bentall, 2003).<sup>9</sup>

Another point made against the idea that delusions are beliefs is the view that bizarre experiences are at the core of delusions (see, e.g., Bayne & Pacherie, 2004, and Noordof & Sullivan-Bissett, 2021); strange beliefs may then be formed as a *rational and/or natural* attempt to explain the bizarre experiences.

Apart from issues concerning the characterization of delusion itself, other questions arise in this connection:

- (a) How are delusions distinguished from other cognitive disorders?
- (b) Given that delusions seem to form a fairly heterogeneous group of phenomena, is it appropriate to classify them under the same category? In other words, are they the same psychiatric kind and/or natural kind?
- (c) What are the sources of delusions? How are they formed?
- (d) Are there different types of delusions?

Concerning types of delusions, these have been classified as being either monothematic or polythematic. The former are delusions that involve only one theme or subject matter; for example, a subject with Cotard syndrome who thinks/feels she has no body but whose other beliefs do not seem to be involved since there do not appear to be complex doxastic elaborations of the delusion. Monothematic delusions seem to be fairly isolated from the rest of the subject’s beliefs and actions. Polythematic delusions, on the other hand, are more pervasive in the mental life of the subject.

<sup>9</sup> Smithies et al. (2022) argue that it is not inconceivable (or unintelligible) that there are subjects who are wholly irrational and yet have beliefs. This essay is part of the collection, as we see below.

Persecutory delusions are a case in point; these delusions tend to color the subject's interpretations of most aspects of her life, forming complex networks of beliefs.

Another important distinction in this context concerns the *types of theoretical accounts* of the formation of delusions<sup>10</sup>: There are *one-factor theories of delusion* which argue that delusions are exclusively the result of having certain bizarre experiences (Maher, 1974), while *two-factor theories* hypothesize that the occurrence of a bizarre experience is not sufficient to causally explain the formation of a delusion; some other inferential or valuational cognitive dysfunction must be at work (Coltheart et al., 2010; Davies & Egan, 2013).

Paul Noordhof & Emma Sullivan-Bissett (2021), argue in favor one-factor theories of monothematic delusion formation in "The clinical significance of anomalous experience in the explanation of monothematic delusions", collected in this volume. According to them, saying that an inference or a belief is *normal* (as opposed to abnormal or dysfunctional) is different from saying that it is *rational*. Indeed, 'normal' people oftentimes think irrationally—as it has been persuasively argued by many psychologists of reasoning since the 1960's. Thus, Sullivan-Bissett and Noordhof's argument in favor of one-factor theories of monothematic delusion is that two-factor theories of delusion have to establish that monothematic delusions are the result of two *abnormal* (not necessarily irrational) factors, since no one in the debate between one-factor and two-factor theories denies that there are a great number of causal factors in the formation of a delusion (certainly more than two!), so that the debate between them concerns whether there is more than one *abnormal* factor of a unique kind (apart from the bizarre experience) involved in the formation of delusion. However, once they review a number of putative second *abnormal* factors presumably involved in monothematic delusion formation (e.g., biases of belief formation or evaluation), they find that these factors are also widely present in belief formation and evaluation in subjects without delusional tendencies. Thus, so far there appears to be no plausible second *abnormal* factor involved in the formation of monothematic delusions—in other words, no second factor of *clinical significance*.

In contrast, Carolina Flores (2021) in "Delusional evidence-responsiveness" (in this collection) argues against the idea—found in the canonical definition of 'delusion' (American Psychiatric Association, 2013, 819)—that delusions are "firmly sustained... despite what constitutes incontrovertible and obvious proof or evidence to the contrary," i.e., that delusions are constitutively "not evidence-responsive." (Flores, 2021). Indeed, it appears that, by their very definition, delusions are irrational, and involve a kind of irrationality that is tenacious and dismissive of evidence. Flores starts out by considering the following argument (2021):

<sup>10</sup> A different distinction between types of theories of delusion formation, is that between psychodynamic accounts of delusion and neuropsychological accounts. The former claim that delusions are caused solely by motivational factors, e.g., as psychological responses to some traumas or negative events in the life of the individual. In contrast, neuropsychological accounts point to some damaged regions of the brain as the main causal explanations for delusions. There are also hybrid accounts that propose a combination of psychological and neurological factors as causally responsible for the presence of delusion. Each of these accounts may be more adequate for some types of delusions and not for others. For our purposes this distinction need not be explored here (Bortolotti, 2018).



1. Belief is constitutively evidence-responsive.
2. Delusions are not evidence-responsive.
3. Therefore, delusions are not beliefs.

She argues that premise 2 of this argument is not plausible.<sup>11</sup> The key to her argument lies in the manner in which she understands *evidence-responsiveness*. She proposes the following (Flores, 2021):

Evidence-Responsiveness:  $S$ 's attitude towards  $p$  is *evidence-responsive* just in case  $S$  has the capacity to rationally respond to evidence bearing on  $p$ .

The rest of her paper is devoted to arguing that delusions are the result of other cognitive factors' tampering with the successful exercise of the subject's capacity to rationally respond to relevant evidence. Indeed, she adds, there is a lot of inductive evidence pointing to the fact that delusional subjects of different kinds—whether they are diagnosed with schizophrenia, dementia, or some other delusional disorder—have a capacity to rationally respond to evidence, but are not in a position to exercise it due to other factors extraneous to the capacity; for example, cognitive biases, as well as motivational or other affective factors.

Delusional subjects, Flores (2021) claims, have the capacity to rationally respond to evidence “but are rarely in the right (internal) conditions to respond to it.” First, she argues, there is no evidence showing that they lack the capacity to rationally respond to supporting evidence; indeed, patients with different kinds of delusions often make attempts to inferentially integrate their delusions with their relevant non-delusional beliefs. This, Flores adds, explains why cognitive behavioral therapy is so successful in many cases of delusion; in these cases, the therapist leads the patient towards noticing and accepting the relevant evidence: “it focuses on cognitive restructuring.” (Flores, 2021).

Furthermore, concerning doxastic biases, Flores articulates some hypotheses as to why delusional subjects tend to have more acute forms of some of these biases (for example, a bias against disconfirming evidence that is stronger in these subjects than it is in non-delusional subjects); a fact that may explain why delusional subjects tend to cling more firmly to delusional beliefs.

Motivational factors also play a role in the maintenance of some delusions, according to Flores; for example, in delusions of self-aggrandizement, the maintenance of the relevant delusional beliefs allows the subject to construct a positive view about the self. In other cases, where the delusion includes very bizarre sensory experiences that lead one to embrace certain delusional beliefs, accepting that one is wrong amounts to admitting that something is seriously wrong with one's self—which constitutes a motivation to maintain the delusion.

In any case, Flores's view cannot easily be classified as either one-*abnormal*-factor or two-*abnormal*-factor theories in the manner in which Noordhof & Sullivan-Bissett (2021) understand them. First, she is interested in the (normal or abnormal) factors

<sup>11</sup> Another possible response to this argument would be to accept that beliefs are not constitutively evidence-responsive; but Flores does not want to take this route. She wants to be in a position to keep the connection between having beliefs and being evidence-responsive (i.e., being rational to an extent), while being able to explain that, in some sense, delusions constitutively involve beliefs.

that allow a subject to form and maintain a delusional belief—some of these factors are not necessarily abnormal or dysfunctional (e.g., some doxastic biases) and some may only be exacerbated by the presence of some other normal factor or by the extreme bizarreness, continuity and vivacity of the strange experience. She wants to argue that the reason why delusional beliefs are so evidence-resistant is not that the subjects in question are irrational (i.e., lack the capacity to rationally respond to evidence), but that other non-rational factors tamper with the exercise of that capacity.

Noordhof & Sullivan-Bissett (2021), in this collection, would probably agree with Flores on most of these points. For one, they accept that delusional subjects are not more irrational than ‘normal’ people and that the fact that these subjects respond well to cognitive behavioral therapy underwrites this. They also agree that some of the experiences that delusional people undergo may be so disturbing as to put their capacity to respond to reasons under heavy pressure. On the other hand, unlike Flores, they would insist that two-factor theories of monothematic delusion formation would have to find a *unique* and *abnormal* second factor—a second factor of the same kind that is *both* abnormal *and* present in all cases of monothematic delusion.

This requirement, however, makes two-factor theories (if any) very implausible. Delusions—and this includes monothematic delusions—are a very heterogeneous set of phenomena: they have different themes (conspiracies, self-identity, lack of body or body parts, self-inexistence, thought insertion, partner betrayal, persecution, self-aggrandizement, alien-murmuring, etc.), and different impacts on inference, action, and emotion. Thus the existence of a second unique and abnormal factor present in all of these cases is very unlikely. As Flores (2021) states: “Given such heterogeneity, one may doubt whether delusions are all in the province of the same cognitive mechanisms.” That said, Flores adds that she prefers a model whereby most delusions are in the “range of the same cognitive mechanisms.” (this volume)—mechanisms such as cognitive biases, motivational factors, etc. But this assertion does not make her a two-factor theorist (in Sullivan-Bissett and Noordhof’s sense), since she is talking about a range of *normal* cognitive mechanisms. However, Flores’ assertion that delusions are in the “range of the same cognitive mechanisms” does not have much cash value unless she argues that so-called ‘motivational factors’ are all factors of the same kind, *and* of the same kind as emotional factors and normal cognitive biases of belief acceptance and evaluation—a claim that seems *prima facie* implausible.

As we have seen so far, the authors of the two previous essays do not question the view—accepted by most philosophers of mind for a long time—that “belief is constitutively evidence-responsive”—as Flores (2021) puts it. According to them, a very irrational subject cannot have beliefs; yet, since they want to say that delusional subjects have beliefs, then they have to argue that they are not irrational, at least not any more irrational than the rest of us who clearly have beliefs. In contrast, Declan Smithies et al. (2022) in “Delusions and madmen: against rationality constraints on belief” defend the view that *wholly irrational subjects may have beliefs*; they argue that the existence of a population of “madmen” that are not even minimally rational is conceivable.

In order to better understand their argument, we must make a distinction between two distinct views concerning the way in which we ought to understand the rationality constraint on beliefs:

- a. Weak view: In order for a subject to have any beliefs at all, she must be at least minimally rational.
- b. Stronger view: For any subject and any proposition *p*, *S* has the belief that *p* only if *S*'s belief that *p* is coherent, consistent and inferentially connected with at least some of her other appropriate beliefs connected with *p*.

For example, according to the Weak view, *S* can have the belief that dogs are animals, and yet not have any other belief about animals, dogs, and the like; in contrast, the Stronger View would deny this; *S*'s aforementioned "belief" is not a true belief. Both the Weak and the Stronger views are versions of what could be considered a minimal (not ideal) constraint on rationality.<sup>12</sup>

Furthermore, if we understand Smithies et al. (2022) main view correctly, their argument goes against even the Weaker view. Their argument goes in steps: first, they consider some of the views initially held by psychologists of reasoning to the effect that human beings are typically irrational in the sense that they *systematically* violate the so-called "Standard Picture of Rationality" according to which to be rational is to have a reasoning competence that operates in accordance with principles of reasoning that are based on rules of deductive logic, probability theory, etc. Later on, psychologists found additional empirical evidence which suggested that although a part of our reasoning competence is not aligned with the Standard Picture—since it is based upon heuristic and biased forms of reasoning that are useful in some reasoning contexts but not others—nonetheless another part of our competence is aligned with the Standard Picture and reasons correctly. Thus, as Smithies et al. (2022) argue, no contemporary empirical theory denies that human reasoning competence sometimes is in accordance with the principles constitutive of the Standard Picture of Rationality. Sometimes we are rational in this Standard sense; for example, when we carefully and consciously reason in certain contexts. This led several psychologists and philosophers to conclude that having (some or many) beliefs should be compatible with not being perfectly rational (in the Standard Picture sense), since typical humans clearly have beliefs in spite of not being perfectly rational.

Secondly, Smithies et al. consider an argument drawn from the literature on the psychopathology of delusions. According to this argument, delusions are irrational in the sense that they are not acquired in accordance with the Standard Picture and violate even the minimal constraints on rationality, being deeply resistant to revision. The conclusion of this argument would be that delusions cannot be beliefs if one accepts the Strong reading of the rationality constraint. On the other hand, one can accept that delusions can be beliefs by accepting the Weaker reading; something that, for example, Flores (2021) sometimes appears to be doing when she accepts that all that is required to have beliefs at all is to have the *capacity* to be rational.

However, Smithies et al. (2022) disagree with these conclusions. Their view is that, even if delusional subjects were wholly irrational, their delusions could be (or involve) beliefs. There are no rationality constraints on belief. As we saw above, the empirical findings both from the psychology of reasoning and the psychopathology of delusions show at most both that oftentimes we are irrational, and that this fact does not imply either that we are always irrational or that the delusions of certain subjects are not

<sup>12</sup> See Cherniak (1990).

beliefs. However, these empirical findings do not suggest either that it is possible both to be wholly irrational and have beliefs.

To argue for this last assertion, Smithies et al. (2022) articulate an argument against the idea that the rationality constraint—whether in its Weaker or Stronger form—is a conceptual truth about belief. In particular, they argue against Lewis' claim that "our ordinary concept of belief is a theoretical concept that is implicitly defined by its role in folk psychology"—which is the central claim of the kind of analytic functionalism that Lewis (1983, 1999) defends. Lewis appears to be interested in defending a version of the rationality constraint on conceptual, not empirical, grounds.

The basic premise of Lewis' defense, according to Smithies et al. (2022), is a view concerning the definition of theoretical terms in any theory, in this case, in our Folk Psychological Theory. The view is that "theoretical terms are functional terms that are implicitly defined by the theoretical role specified in some associated theory." (Smithies et al., 2022). And, according to Lewis, 'belief' is a theoretical term of Folk Psychology that plays a crucial role in the explanation and prediction of behavior; by definition, belief is a term that is exhaustively defined by its theoretical function as specified by the appropriate theory.

Smithies et al. (2022) disagree; they think that our concept of belief, as it is understood in our Folk Psychology, has two dimensions: a functional dimension and a *phenomenal* dimension. By this last dimension, to believe something is to (be disposed to) *feel* convinced that it is true, and what we mean by 'belief' is having a disposition to feel the appropriate conviction. If I truly and sincerely believe that *p*, then I have a disposition to feel convinced that *p* is true.

On the other hand, the functional role of beliefs is a different aspect of them. Conviction is a feeling; while the functional role of belief is a set of rational relationships that the belief has with other functional states in certain ways—no phenomenology is involved.

Smithies et al. (2022) then argue that the phenomenal aspect of belief is sufficient for a correct or true belief attribution; if someone sincerely expresses her conviction that *p*, then this is enough evidence to infer that she believes that *p*—even when her behavior, the inferences she makes from *p*, and the desires she has have absolutely no rational connection to *p*. This is what happens in some cases of Capgras delusions; "many [Capgras] patients appear wholly unmoved by their delusional belief" (Smithies et al., 2022) of which they appear to be wholly convinced. Presumably these are cases where the subject has a belief, is convinced of its truth, but the functional role of the belief is absent.

If indeed this is an accurate description of these Capgras' cases, then it is possible, (conceivable, imaginable) that there are subjects that have some beliefs that directly violate the rationality constraint, but only in its Stronger Form. In order to establish that the Weaker form of the rationality constraint is false or at least implausible, they have to argue that there can be a subject each of whose beliefs are completely irrational—i.e., a subject that is wholly irrational with respect to each and all of its putative beliefs. Concerning this point, Smithies et al. (2022) argue:

If we can imagine mad beliefs that are circumscribed in this way, then we can imagine a madman whose entire system of beliefs is infected with madness. .

. . it remains plausible that [this] madman has beliefs insofar as he experiences feelings of conviction when he consciously entertains their contents and consider whether they are true.

And, they add, if this wholly mad person is indeed conceivable, plausible or imaginable, then there seems to be no reason why we cannot conceive of a society composed exclusively of such mad persons. Therefore, there is no rationality constraint on beliefs; even the Weaker version of the rationality constraint is false.

This is an interesting argument that, we are sure, can generate a great deal of debate; first, concerning the phenomenal aspect of belief, the question arises as to whether it exists in connection with all or some beliefs, and whether its presence in a subject is sufficient to correctly ascribe her certain beliefs. Second, even if one concedes that it is conceivable that a lone subject can have a single very irrational belief (or a very small set of them), it does not follow only from this that there can be a single subject all of whose beliefs are wholly irrational and completely unrelated to each other—let alone a whole society of them! Finally, it is unclear what concept of mental content underlies the assertion that this Society of systematically irrational people have thoughts—beliefs, desires, intentions, etc.—with contents of which they can be convinced or unconvinced.

In any case and in a different subject, Kengo Miyazono & Alessandro Salice (2020), also in this collection, argue that subjects with delusions—in particular, schizophrenic delusional subjects—oftentimes exhibit some unusual tendencies concerning the testimony of others; these epistemological social abnormalities, they contend, are causal factors in the etiology of delusions in schizophrenia; factors that have not been thoroughly explored in the literature concerning the sources of delusions. They call their proposal a ‘social epistemological theory of delusion’; it is *social* because it concerns testimonial (interpersonal) sources of information; it is *epistemological* since it has to do with how these sources are epistemologically evaluated.

Miyazono & Salice (2020) think there are at least two different kinds of testimonial abnormalities that are causally involved at different stages in the development of delusions in subjects with this condition:

- A. *Testimonial isolation*. This is understood as the lack of testimonial interaction with others which is in turn probably due to either a *social skill deficit* (lack of appropriate skill concerning social interactions including communicative abilities), or to *social anhedonia* (absence or reduction of experiences of pleasure in social interactions).
- B. *Testimonial discount*. This consists in a failure to take into account the testimony of others due to an underestimation of a testifier’s competence and sincerity. This can in turn be result of a lack of group identification in schizophrenic subjects.

Miyazono & Salice (2020) argue that, given that these subjects fail to identify with any social group (Sass & Parnas, 2003), they would naturally tend to underestimate other people’s testimonial competence and sincerity. A failure of group identification in these subjects appears to be the result of certain anomalous self-experiences that are considered to be at the core of the psychopathology of schizophrenia (Ibid.)

Furthermore, Miyazono & Salice distinguish three stages in the development of delusions: There is the *adoption stage* at which the subject adopts the delusional

belief partly as a result of some abnormal feeling or experience (e.g., I am in contact with some alien entity that is inserting thoughts into my head). Miyazono & Salice (2020) think that testimonial abnormalities rarely play a causal role at this stage. Then, there is the *maintenance stage* and the *elaboration or polythematization stage*; at these stages, they argue, testimonial tendencies probably play an important role.

Miyazono & Salice (2020) emphasize that their theory concerns only delusions that arise in schizophrenic subjects; its application to other sorts of delusions is an open question. Secondly, they also clearly indicate that they are proposing that testimonial abnormalities are not *the cause* (not even the *main cause*) of delusions in those subjects; they are only *a* causal factor. In other words, they are not arguing that all those subjects that display the aforementioned testimonial abnormalities—testimonial isolation and testimonial discount—will always end up developing delusions. Other causal factors—bizarre experiences or abnormal inferential mechanisms—need to be involved. Indeed, they portray their theory as being pluralist and multifactorial.

The paper by Houlders et al. (2021) here collected, "Threats to epistemic agency in young people with unusual experiences and beliefs", falls more within the province of clinical psychology and/or psychiatry; they argue that since a good therapeutic relationship in mental health services is a *predictor* for positive clinical results in people with bizarre experiences, and given that the sense of epistemic agency is still developing—and is thus especially vulnerable—in young people with unusual experiences, it is particularly important that behaviors that may damage their sense of epistemic agency be avoided in the therapeutic encounter.

One of their goals is to characterize the sense of *epistemic* agency as a specific form of the sense of *agency* that many humans have. This consists in "the sense that one can intervene in one's physical and social environment and shape one's life to some extent." (Houlders et al., 2021). In particular, the sense of *epistemic agency* is the sense that one has the capacity to produce and share knowledge in a competent and authoritative manner.

A person's sense of epistemic agency can be undermined in several different ways; and in many cases the undermining gives rise to an epistemic injustice. Such an injustice is committed by B against A, when B believes that A is not capable to exercise epistemic agency; furthermore, this belief of B is based on an aspect of A's identity that triggers in B a social prejudice according to which people with this aspect of A's identity are unable to exercise epistemic agency, and B's prejudicial belief affects A's ability to exercise her epistemic agency, undermining her epistemic status (Houlders et al., 2021).

Houlders et al. then articulate the notion of a meaningful self-narration around the ideas of a sense of self and of a sense of agency, including epistemic agency. Self-narration includes all the stories one tells oneself; these narrations influence the views one has about the possibilities of action open to oneself, in other words, they influence one's sense of agency. Furthermore, *meaningful* autobiographical narratives encompass those self-narrations that one feels are self-defining and most important.

One key point about meaningful self-narratives, according to them, is that they strongly affect and are affected by one's sense of self, of agency, and particularly of epistemic agency. Additionally, a meaningful self-narration is socially co-constructed (Houlders et al., 2021); the stories other people tell about one's self, they argue, have

a strong impact on one's own self-narratives, especially when the sense of self (that includes sense of agency and of epistemic agency) is still developing and is thus most vulnerable. This is the case of young people and, more importantly for their purposes, young people with bizarre and disturbing experiences, such as hearing voices and paranoia (Ibid.) Thus how other people interact with them is a delicate matter; in particular, the position of authoritative expertise of the therapist makes it essential that she creates a respectful interaction with a young person (as an agent and as an epistemic agent) having bizarre experiences. A respectful and epistemically fair interaction between the clinician and her young patient implies that the former must avoid views and behaviors towards the latter that are based upon epistemic prejudices like a global dismissal of the young person as an authoritative source of information. Young people with bizarre experiences and beliefs are not always irrational; some of their beliefs may seem unusual but, as some researchers have argued, this does not necessarily imply that the rest of their beliefs and experiences are irrational or bizarre, or that they lack a capacity to rationally respond to evidence.

Finally, there are other types of neurodivergence not necessarily related to unusual experiences, but atypical processes. In "Cognitive diversity and the contingency of evidence", Jack Lyons (2022) addresses atypical cases of knowing necessary truths, such as calendar savants and the Indian mathematician Srinivasa Ramanujan (1887–1920). Calendar savants are capable of almost instantly reporting the day of the week on a given date many years in the future (Miller, 1999). Ramanujan was famous for intuitively attaining mathematical results typically requiring proofs of considerable length.

According to Lyons, cases of cognitive diversity such as these are a strong reason to adopt the view that evidence depends on contingent factors, such that "[d]ifferent cognizers have different skills, capacities, abilities and proclivities, and this cognitive diversity has the effect of, among other things, rendering evidential relations contingent" (Lyons, 2022, p. 202). He calls this thesis evidence contingency, in contrast to evidence essentialism, which holds that an identical body of evidence justifies the same propositions for any two agents. More formally, if  $e$  is evidence of  $h$ , for some agent at some time, then necessarily,  $e$  is evidence of  $h$ , for any agent at any time (Lyons, 2022, p. 201).

Lyons proceeds to show that not all conceptions of evidence are able to adequately accommodate evidence contingency, and hence the fore mentioned cases. Whereas etiological conceptions of evidence—such as reliabilism and virtue theoretic—show promise in this respect, he considers informational (Smithies, 2015) and phenomenological (e.g. Chudnoff, 2012, 2013; Huemer, 2007) views more problematic in this respect. Etiological views of evidence also offer directions in which the respective contingent processes of diverse types of cognizers result in differences in the set and/or degree of beliefs supported by the same body of evidence.

By addressing the issue of evidence in general, this contribution is a great example in how to the practice of considering instances of neurodivergence is not only an exercise in a special area of applied epistemology, but also function as limiting—but nonetheless relevant—cases to take into account in the study of epistemic notions in general. Hopefully, we will see this trend grow in the short term in both epistemological literature and neurodiversity studies. We now proceed to describe another set of articles

collected in this volume, which deal with the subjects related to extended and embodied approaches.

### 3 Epistemology and neurodiversity within 4E approaches to cognition

In this section we will address a set of articles related both to atypical cognitive phenomena and neurodivergence within the 4E paradigm; that is, the embodied, embedded, enactive, and extended approaches to cognition. These share an interest in exploring the role of the dynamic relationship between the nervous system and physical and social environment in cognition (see Newen et al., 2018). We will begin by introducing some of the ways in which 4E approaches shed light on epistemological problems related to atypical phenomena, before looking at some of those works that attending to epistemological injustice, pertain to neurodiversity and/or neurodivergence within a 4E view of cognition.

An example of the philosophical study of atypical cognition found in recent works within a literature designated as ‘Extended Epistemology’, which is inspired by, but not always committed to, any of the 4E cognition paradigms. Hence, issues related to epistemic agency and virtue, have been explored in the light of cognitive phenomena such as cognitive scaffolding (explained below) and distributed cognition—issues that are increasingly common as information technologies develop. We find a variety of examples in the works compiled in Carter et al. (2017, 2018), as well as recent works concerning the consequences of new technologies for the epistemology of education (Heersmink, 2018).

Despite its relatively nascent status, extended epistemology can be considered as a research program in its own right. Epistemologists engaging in this type of inquiry take the seminal exposition of the extended mind thesis in the philosophy of mind by Clark & Chalmers (1998) in order to explore the consequences for knowledge, justification, and agency—among other topics in the fore mentioned settings related to extended cognition. For instance, an example of a working definition of extended knowledge is "knowledge that is the result of an extended cognitive process" (Pritchard, 2018).

In the classical example offered by Clark & Chalmers, Otto—a subject suffering from Alzheimer’s disease—consults a notebook on which he relies for everyday information in order to arrive at the museum, whereas Inga does the same by consulting her biological memory. Reasoning by what the authors dub the *parity principle*, Otto’s process should be counted as mental, since if "a process which, were it to go on the head, we would have no hesitation in accepting as part of the cognitive process, then that part of the world is part of a cognitive process" (Clark & Chalmers, 1998, p. 8). That is, functional sameness—inside or outside of the head—does not allow for differences regarding whether a process is cognitive or not. According the extended cognitive hypothesis, a great deal of human cognitive processes are extended in this sense.

In "Extended cognition, assistive technology and education" (2021), collected here, Duncan Pritchard, Andrea English and John Ravenscroft explore the ramifications of allowing for external cognitive processes (in the fore mentioned sense) in the context of



Assistive Technologies (AT)—such as aids for vision and hearing impairments—used by learners in special education settings. The authors propose to distinguish what they refer to as *extended cognitive integration* in AT learners, from the mere use of an AT as an instrument. These cases of true cognitive integration correspond to the seamless and fluent use of the device as portrayed in the descriptions of learners in semi-structured group interviews (both with teachers and students) conducted by the authors and cited in the paper (the questionnaire can be found as an appendix).

Interestingly, Pritchard, English and Ravenscroft argue that these examples of extended cognitive integrations bolster the case for the extended cognitive hypothesis, since it is likelier that functional parity is achieved in them—in contrast with Otto's use of his notebook. Moreover, the authors argue that ATs should be considered part of the cognitive character of its users when it is used in an integrated way, and hence allows for a more accurate way of conceiving cognitive agency in these instances.

The authors then argue for the importance of embedding these technologies in what has been termed 'full AT Systems' (Khasnabis et al., 2015), i.e., the complete arrangements related to skills, bodies of knowledge, and policies needed for the implementation of ATs. Accordingly, AT Systems allow the transition from ATs used as instruments to cognitive integration allowing learners to truly profit from them.

Another area of research within epistemology related to the 4E paradigm, particularly to extended and embedded cognition, involves the study of the epistemic implications of *cognitive scaffolding*. Scaffolding includes cognition achieved through a highly coupled use of "external tools whether natural or technological; interpersonal and social supports; and internalized versions of these two classes" (Sutton, 2006, p. 284).<sup>13</sup>

Additionally, in "Technologically scaffolded atypical cognition: the case of YouTube's recommender system" (2020), in this collection, Alfano et al. address particularly problematic instances of what has been called 'technological seduction' by performing and discussing a study of the role of the streaming platform's algorithmic recommender system, in favoring extreme conspiratorial beliefs. 'Technological seduction' refers to a sociotechnical system that nudges the users towards certain beliefs or decisions, whether by an architecture laid down by designers' choices (top down) or as a result of aggregating the data of many users (bottom up) (Alfano et al., 2020). An example of what that the authors have in mind involves a homicide caused by the perpetrator's beliefs in the reptilian conspiracy theory—the contemporary belief that some of the world governments and powerful organisms are controlled by lizard-like humanoids. These were gradually acquired from the YouTube video streaming platform. In the authors' words, "the ideation associated with these bizarre conspiracy theories constitutes atypical cognition, in the sense that it is epistemically counter-normative" (Alfano et al., 2020).

The study offered by the authors is the result of a simulation of the users' behavior on a dataset. Following the model developed in Alfano et al. (2020), the study looks not for immediate recommendations, but for the path resulting from following the platform's

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<sup>13</sup> A more precise account of the relation of scaffolding to embedded and extended cognition can be found in Coltheart et al. (2010).

recommendations iteratively. The study shows how starting from certain topics of interest, regular users might unknowingly arrive at videos advocating extreme views. The authors note their results fall short of establishing that these are the patterns of the actual users, or that the platform has in fact the ability to shift the epistemic perspective of users not already engaged in conspiratorial thinking patterns. Nevertheless, the study showcases a structure in the recommender system that is worrying in itself, and opens the path for future studies to establish the behavior of actual users and the causal role of the algorithmic framework in the cases of users resulting with extreme epistemic failures. The authors finish by offering recommendations to address this problem for users, platforms, and policymakers.

The 4E paradigm is not only useful for thinking about the epistemic consequences of aggregative behavior in shaping the cognitive environment, but also in a context when this shaping is cemented in social and linguistic practices. In "Autism, Epistemic Injustice, and Epistemic Disablement: A Relational Account of Epistemic Agency", Amandine Catala, Luc Faucher and Pierre Poirier propose a new framework within the enactive paradigm to address the many types of epistemic injustice faced by autistic persons regarding assumptions about their putative lack of desire and/or need to socialize. The authors present the first-person accounts of several autistic individuals expressing their own desire to lead a rich social life (the first person perspective), which contrast strongly with third-person accounts of these experiences that tend to diminish them. The work then spells out several types of epistemic injustice involved in this phenomenon—which are themselves subtypes of testimonial and hermeneutic injustice, as characterized by Fricker (2007).

The authors contend that these types of injustice are fully understood by taking into account the way they depend on a landscape of affordances (Bruineberg & Rietveld, 2014, Kiverstein et al., 2021) "containing social and cultural affordances (Ramstead et al., 2016) associated with artifacts, practices, and other individuals." (Catala et al., 2021). This notion extends the affordances of ecological psychology (Gibson, 1977), commonplace within the 4E paradigm —roughly, a possibility of action perceived by an organism in an object<sup>14</sup>— to a dynamic field or space of affordances, not necessarily embodied in physical objects, but possibly in social practices and traditions. In particular, the authors call upon the notion of the neurotypical mental institution previously employed in enactivist approaches to autism, that is, "rich networks of norm-governed practices, artifacts, and traditions that shape how we attend to and interact with the world and others" (Krueger & Maiese, 2019, p. 10).

The focus of the research is to give an adequate account of the way in which a neurotypical affordance landscape produces the epistemic injustices spelled out by the authors. To achieve that, they introduce the concept of epistemic disablement/enablement "to more accurately account for the mechanisms that undermine or facilitate epistemic agency" (Catala et al., 2021). Agency here is understood in

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<sup>14</sup> This is a usual formulation, though it should be noted there is no consensus on the precise definition and ontology of affordances. An interpretation of Gibson's claim that affordances are real in terms of dispositional properties of objects can be found in Turvey (1992), and a relational interpretation can be found in Kiverstein & Rietveld (2020). For the view of affordances as mental representations—much less amenable to ecological psychology— see Vera & Simon's (1993) influential reworking of the notion. For an historical survey see Lobo, Heras-Escribano & Travieso (2018).

relational terms, drawing on the notion of dynamic coupling between organism and environment (Varela et. al., 1991; Di Paolo et al., 2017), a central notion within the enactive tradition. Finally, the authors show how this alternative and enactive way of conceiving the problem can promote epistemic justice for autistic people. We believe this work will have interest for researchers exploring ways to address epistemic injustice related to other neurotypes, and within neurodivergence in general.

Another exploration of the potential of a 4E view of cognition in addressing epistemic injustice as related to neurodiversity can be found in "From neurodiversity to neurodivergence: the role of epistemic and cognitive marginalization" by Legault et al. (2021). The authors argue that, although many researchers in the relevant literature often use the terms 'neurodiversity' and 'neurodivergence' interchangeably, their meanings ought to be distinguished. The former refers to a natural phenomenon, to wit, the existence of variation in nature, including *neural variation*. In evolutionary biology, the concept of variation as applied to an organism's characters or features plays a central role in the description and explanation of the emergence of a variety of life forms, and no distinction is made between healthy (or 'normal'), and pathological (or abnormal), variations.<sup>15</sup>

Therefore, talking about neurodiversity in terms of neurological variations thus includes no such distinction; saying that A is neurodiverse is only saying that there is some variation in the structure, or function of A's nervous system (in comparison with the structure, or function of other organisms of A's population or species). Something similar can be said of neural and cognitive variations.<sup>16</sup> Any neurotypical ("normal") person, as well as an autistic or schizophrenic person, presents certain cognitive and/or neural variations that regularly appear in the human neural and cognitive phenotype. Indeed, in this sense we are all neurodiverse. It should be noted that Bourdon, Legault & Poirier extend this point to a view of cognitive diversity that does not consider cognitive properties fixed by neurological properties, but emerging from an interaction between the cognitive apparatus and the environment, i.e. "extended neurodivergence" (Fine, 2012).

On the other hand, the term 'neurodivergence', argue Legault et al. (2021), has normative connotations absent in 'neurodiversity': the former is a term of exclusion but not the latter; the former implies divergence from a putative neural "normality". What the authors further argue is that many of the so-called 'neurodivergences' (or psychiatric neuro-cognitive "pathologies")—such as some forms of autism and ADHD—arise from a mechanism called 'epistemic and cognitive marginalization'.

The authors contend that epistemic marginalization is achieved through the differential distribution of epistemic resources, mainly as a landscape of affordances embedded in the cultural niche. Drawing on the ecological-enactive model of disability by Toro et al. (2020), an explanation is offered on the way epistemic injustice is created and perpetuated. As a neurotypical norm is socially and culturally established,

<sup>15</sup> The only distinction made in this context is that between lethal vs. non-lethal variations. The former are those which cause (or are correlated) with the early death of an organism.

<sup>16</sup> For a more precise and clear articulation of the notion of cognitive variation, see García (2010).

those deviating from it due to a lack of epistemic resources are marginalized—hence ‘neurodivergence’ is created.<sup>17</sup>

The authors show how this may constitute a new type of epistemic injustice which does not fit easily in the usual taxonomy of testimonial and hermeneutic injustice (Fricker, 2007), which they call “cognitive injustice”. This type of epistemic injustice is realized “[w]hen the collective cognitive resources (i.e., the concepts, methods, tools, etc., that contribute to cognitive performance and development) of a society do not provide resources to a given cognitive profile” (Legault et al., 2021). By offering a better understanding not only of the phenomenon in action, but of the historical (or diachronical) aspects that enable the construction of such disabling structures, their proposal offers potential in addressing new ways of taking remedial measures.

## 4 Concluding remarks

By putting together this topical collection our aim was to show how the incorporation of issues related to neurodivergence and atypical cognition in epistemology results in a more robust understanding of its central issues; at the same time these works provide relevant research topics that can be used in an interdisciplinary way to better understand and address many types of social injustices. As part of this, it should also be noted that many of the works collected here include the voices and testimonies of the stakeholders themselves as credible first-person accounts of the relevant phenomena. In this way, we hope to have shown that rigorous philosophical theorizing and a move towards greater inclusion can, and should, go hand in hand.

**Acknowledgements** The authors declare that there are no conflicts of interest regarding the publication of this paper.

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<sup>17</sup> Here, it is reasonable for the reader to ask in which sense it is “created.” In order not to misrepresent the authors complex view, due to limitations of space we instead refer the reader to their paper for their detailed view.

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