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## Considering the boundaries of intellectual disability: Using philosophy of science to make sense of borderline cases

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### ABSTRACT

Who should be diagnosed with intellectual disability and who should not? For borderline cases, the answer to this question may be as difficult to decide on as determining the borderline between being bald or not. While going bald may be upsetting to some, it is also an inevitable and relatively undramatic course of nature. In contrast, getting a diagnosis of intellectual disability is likely to have more far-reaching consequences. This makes the question of where the cutoff point for intellectual disability lies more imperative. Philosophy of science may help psychologists to understand the nature of this dilemma in a more profound manner.

This article builds on the sorites paradox to explore the vagueness that surrounds the concept of intellectual disability and the consequences of this vagueness for the diagnostic process. While epistemicists argue that vagueness is a consequence of our limited knowledge of the world that we live in, semantic theorists claim that there is nothing that we do not know, but that our language allows for indecisiveness. What these different lines of understanding mean for psychologists who are diagnosing intellectual disability, is described in this article. Furthermore, the article discusses practical implications of these philosophical underpinnings.

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## Introduction

Intellectual disability cannot be diagnosed by merely taking a blood test. Instead, psychologists need to rely on extensive assessment of cognitive and adaptive functioning. In certain cases, this assessment will not provide conclusive evidence to establish whether intellectual disability is present or not. How are psychologists to decide their course of action when faced with such borderline cases? This article uses philosophy of science to address this question, and it explores the nature of the vagueness that is typical for borderline cases. Furthermore, the article looks into which purpose

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a diagnosis of intellectual disability may serve, and it explores how diagnostic indecision may be turned into a functional tool for psychologists.

According to the World Health Organization's (2019) *International Classification of Diseases 11<sup>th</sup> version*, intellectual disability is described as a disorder of intellectual development which originates "during the developmental period characterized by significantly below average intellectual functioning and adaptive behavior that are approximately two or more standard deviations below the mean (approximately less than the 2.3rd percentile), based on appropriately normed, individually administered standardized tests". Thus, the disorder is characterized by impairments of general cognitive abilities that impact adaptive functioning in the conceptual, social, and practical domain (American Psychiatric Association, 2013). This implies that persons with intellectual disability may experience difficulties with language skills, reading and writing, logical thinking and reasoning, social judgment, interpersonal communication skills, self-management, personal care, money management, and organization of time (Danielsson et al., 2012; Greenspan & Woods, 2014; Luckasson & Schalock, 2013). Therefore, persons with intellectual disability may in varying degrees depend on others in their daily life, and they may need support when it comes to organizing school or work tasks and independent living. As such, a diagnosis of intellectual disability may be an important acknowledgment of their support needs, and in many countries, the diagnosis is a prerequisite for the provision of adequate financial and practical support. Scior et al. (2013) found that making a diagnosis of mild intellectual disability known may prevent misattribution to more stigmatizing causes, and hence, a diagnosis may increase tolerance for difference. At the same time, a diagnosis of intellectual disability may be associated with social stigma (Pelleboer-Gunnink et al., 2017), which puts a strong element of gravitas in the diagnostic process. As Schalock and Luckasson (2013) suggest, the stakes are high for those in the receiving end of this diagnosis, and the essential question in defining intellectual disability is about who will be "in" for protection, supports, and benefits, and who will be "out" of the category.

This need to categorize individuals is not novel. During the 18<sup>th</sup> and 19<sup>th</sup> centuries, diagnosing and institutionalizing the "feeble-minded" was considered important in order to safeguard society from the perceived threat that persons with intellectual disability were feared to pose to the common good. From the midst of the 20<sup>th</sup> century, focus shifted toward the provision of social care for persons with intellectual disability, and diagnosis was then important for welfare distribution (Gates & Mafuba, 2016). Historically, intellectual disability has frequently been relabeled, and many of the terms that were previously used, such as e.g., "simpleton", "imbecile", "mentally infirm", "subnormal" or "mentally handicapped", are now considered

pejorative, offensive, and/or not in accordance with our present understanding of the condition. Thus, terminological shifts reflect both changes in society and changes in the way the condition is understood and defined (Cluley, 2017).

The current definition of intellectual disability states that the diagnosis is to be based on “appropriately normed, individually administered standardized tests” that assess both cognitive ability/intelligence quotient (IQ) and adaptive behavior (AB). Such normed and standardized tests include, e.g., Wechsler Intelligence Scale for Children (Wechsler, 2014) for the assessment of intellectual functioning, whereas adaptive functioning may be measured with standardized tests such as Vineland Adaptive Behavior Scales (Sparrow & Cicchetti, 1989). The cutoff point for intellectual disability is placed at approximately two standard deviations under the mean, i.e., an intelligence quotient score and an adaptive behavior score of 70 or less. Hence, the diagnostic criteria for disorders of intellectual development seem relatively straightforward and fixed, at least in theory.

Yet, since the presence of intellectual disability cannot be established through a simple laboratory test, psychologists may sometimes face difficulties deciding on whether to diagnose a person as intellectually disabled or not. This dilemma occurs especially when IQ- and adaptive scores lie around the critical cutoff point. Such scores are considered approximations, and the potential for imprecision is accounted for through the standard error of measurement. It is then, for example, very well possible that a person reaches a full-scale IQ score of 69 on the Wechsler’s Intelligence Scale, but a score of 72 on another measure, and these scores may lie within the same confidence interval. Given that the person in addition shows an impairment in adaptive functioning that is situated roughly two standard deviations below the mean, is it then reasonable to diagnose him or her with intellectual disability or not? And would we be able to observe any real difference in a person’s functioning given a score of 70 plus or minus two points? As discussed above, a diagnosis may come with its own advantages and disadvantages, and each of these may carry equal weight. What would then be the right course of action for a psychologist who finds herself in this situation? Merely taking another IQ test would probably not offer a solution to the problem, as it is likely that a new test would leave us with nothing but a new borderline result. Thus, we can assume that the uncertainty is not due to our limited ability of testing and assessing intellectual disability, but that it is rather a consequence of intellectual disability itself. In dealing with such borderline cases, the vagueness of intellectual disability shows itself clearly.

## What is vagueness?

Vagueness is a trait that jumps to mind rather immediately when we think of boundaries. We can think of boundaries related to almost any object, activity or event, whether they be abstract or concrete (Varzi, 2015). For some objects or events, we can identify sharp boundaries that clearly mark off where they begin and end. It is, for example, rather easy to look at a pear and the space surrounding it, and to identify where there is still pear and where there is no longer pear. And a boxing competition is indisputably over when one boxer knocks out his opponent. But in other cases, the exact location of a boundary may be unclear. Think of, e.g., the margins of Mount Everest, the number of hairs on a bald man's head, or blurry concepts of time like noon. It may be difficult to say where exactly Mount Everest begins, at which exact point a man can be called bald, or when the last minute of noon is. Whenever we try and identify the boundaries of a certain entity, we may be faced with difficulties defining where one entity ends and another one begins (Varzi, 2015).

It is said that a term or a concept is vague if one can identify borderline cases (Sorensen, 2018). Vagueness can be seen as a feature of a number of syntactical categories, such as predicates, adjectives and adverbs. A typical example of vagueness is a color spectrum that goes from red to pink, where in between the clearly red and the clearly pink there will be an area of vagueness where it is impossible to determine whether a color is either red or pink. As a matter of fact, one person may claim that a particular spot on the spectrum is red, while another person may claim that it is pink, and they may both be in their right mind. No conceptual analysis or empirical inquiry would be able to settle the argument, but still, according to standard logic the color cannot be red and pink at the same time. There is in other words a borderline case, which means that pink and red are vague concepts. Moreover, there will also be unclarity as to where the unclarity begins: the borderline case will itself also have borderline cases. The question that arises is then whether this vagueness reflects the structure of the world that we live in, or whether it is the result of how we organize entities in our minds, i.e., is it an ontological question, or is it a matter of linguistic indecision? The sorites paradox illustrates this question further.

## The sorites paradox

The “sorites paradox” refers to the Greek word “sôros”, which means “heap”, and the paradox comes from the following puzzle: A single grain of sand is not a heap. Adding one grain of sand will not transform a non-heap into a heap. Thus, by simply adding one and one grain of sand, we will never arrive at a heap. And yet, no one will argue that a collection of

one million grains of sand is a heap (Rescher, 2008). Schematically, this conditional argument can be presented as such:

$Fa_1$   
 If  $Fa_1$  then  $Fa_2$   
 If  $Fa_2$  then  $Fa_3$   
 ...  
 If  $Fa_{i-1}$  then  $Fa_i$

---

$Fa_i$  (where  $i$  can be arbitrarily large) (Hyde, 2014)

In this presentation,  $F$  stands for the soritical predicate “is not a heap”, whereas  $a_n$  (where  $n$  is a natural number) is the subject to which the predicate relates. The argument is soritical if 1)  $a_1$  is true, 2)  $a_i$  is false, and 3) each adjacent pair in the series ( $a_n$  and  $a_{n+1}$ ) is sufficiently close to each other so that they are indiscriminable with regard to  $F$ , i.e., either both  $a_n$  and  $a_{n+1}$  satisfy  $F$ , or neither of them do (Barnes, 1982, referenced in Hyde, 2014). In other words, the base step “A single grain of sand is not a heap” is true, but the conclusion “A million grains of sand is not a heap” is obviously false. Therefore, the induction step, which claims that if a collection of  $n$  grains of sand is not a heap, then neither is a collection of  $n + 1$  grains, must be rejected. However, in classical logic, rejecting the induction step means accepting its negation, which leaves us at exactly the same spot, namely that there must exist a sharp threshold between a heap and a non-heap (Sorensen, 2001, p. 1).

Let us now look at how the sorites paradox relates to intellectual disability. The argument can be built up as follows:

Base step: A person with IQ and AB score 100 is not intellectually disabled

Induction step: A person with IQ and AB score 99 is not intellectually disabled

Conclusion: A person with IQ and AB score 65 is not intellectually disabled

The base step is correct, but the conclusion is false, and therefore, we have no choice but to reject the induction step. The argument is soritical, since in the induction step, each adjacent IQ and adaptive behavior score is indistinguishable from its neighbor. Even the best-skilled psychologist would not be able to observe any difference in cognitive or adaptive functioning between a person with an IQ and AB score of 100 and a person with an IQ and AB score of 99, or between a person with an IQ and AB score of 85 and one with an IQ and AB score of 84, etc. Still, in the case of intellectual disability, we operate with a clear boundary, namely a cutoff point at 70. As such, psychologists have identified a theoretical threshold for intellectual disability. Yet, if we were to present to a panel of

psychologists two persons, where one has an IQ and AB score of 72 and the other one scores 68, and we do so without making known to the panel who is theoretically defined as intellectually disabled and who is not, it is unlikely that they would be able to identify any differences in functioning between those two persons.

Thus, even though intellectual disability seems a sharp predicate with clear diagnostic criteria, the categorization appears arbitrary and borderline cases do exist. Could it be that the vagueness lies somewhere else than in diagnostic indecision? And if so, is vagueness a metaphysical or a semantic characteristic of these concepts? Since the late 19<sup>th</sup> century, philosophers have discussed these questions vibrantly, and we will here look into two camps that have occupied themselves with the discussion of vagueness, namely the epistemic and semantic theorists.

### **Epistemic theory: Vagueness as ignorance**

According to epistemicists, vagueness is considered a form of ignorance. Epistemic theory claims that vague terms do have clear boundaries, but that the location of these boundaries are unknown and cannot be known to us (Hyde & Raffman, 2018). Thus, there are no concepts that are vague in the way they present themselves to us, but because of our limited capacity to understand the world, we cannot discover where the boundaries lie in a sorites series. In this line of understanding, the sorites paradox is rejected instantly, as one of the conditional steps in the paradox must be wrong, only we cannot know which one.

Epistemicists offer different explanations for our ignorance. One approach is that we cannot know the exact location of the boundaries, as these boundaries change location depending on the speaker's interests (Fara, 2008). The mere act of looking for the exact boundary makes finding the boundary impossible. Because of this, our ignorance cannot be helped, and the boundaries are destined to remain unknown to us. Another epistemic explanation posits that our knowledge of the application of vague terms is inexact, and there is a margin for error in our judgments (Hyde & Raffman, 2018). Upon examining a sorites series of men ranging from bald to a full head of hair, we may classify a particular man in the borderline zone as bald, but this classification is based on luck rather than on knowledge. That is, the difference between the man that we identified as bald and the adjacent man who is not bald is not observable to us, and therefore, our identification cannot be considered as factual knowledge, but instead it is a qualified guess.

Concerning the identification of intellectual disability in a person, epistemic theory presupposes that there exists an exact boundary between who has the condition and who has not, but we cannot know the precise location

of this boundary. This implies that some persons in the borderline between absence and presence of intellectual disability may end up being diagnosed by mistake, and vice versa. To add to this complexity, the boundaries may not only shift with our own location and interest, but they can also vary across time (Hyde & Raffman, 2018). This may be particularly so for the concept of intellectual disability. Our naming of the condition and our understanding of its etiology has changed considerably over time, and this suggests that the boundaries of the concept may be unstable. This instability contributes to the diagnostic uncertainty that psychologists sometimes experience when confronted with borderline cases.

While epistemic theory has the advantage of retaining classical logic, it may appear intuitively unconvincing in its attempt to solve the sorites paradox. The epistemic belief in an unknowable world with clear boundaries is contrasted by semantic theories, such as supervaluationism and contextualism. These theories consider vagueness as a semantic feature of our language rather than as a consequence of our ignorance.

## **Semantic theories: Vagueness as an inherent feature of language**

### ***Supervaluationism***

For supervaluationists, the distinction between words and objects is important, as they claim that objects themselves cannot be vague, but instead the vagueness is a characteristic of words. As Sorensen (2018) states, even if we cannot identify clear borders of an object, this does not automatically allow us to conclude that there is metaphysical ambiguity. For example, a cloud in itself is not metaphysically vague, but the concept “cloud” is semantically vague. As such, supervaluationists claim that all vagueness is a matter of linguistic indecision; the vagueness stems from our language, and not from our world (Sorensen, 2018). It can be said that this indecision is functional, as vague concepts allow for an easier representation and categorization of the world.

When it comes to statements about borderline cases, supervaluationists claim that these statements lack a truth-value, i.e., they distance themselves from standard logic, and postulate that statements about borderline cases are neither true nor false. Hence, a demonstration that a statement about a borderline case is not true does not guarantee that the statement is false (Sorensen, 2018). In the case of the borderline colors between red and pink, supervaluationists allow for the following claim: “It is not true that this spot on the spectrum is pink, but it is also not false that it is pink”. They state that it is universally impossible to know the truth-value of a borderline statement, and therefore, they admit to “truth-value gaps” (Sorensen, 2016). According to supervaluationists, these gaps, or the impossibility of knowing



whether a predicate F is true or false, spring from our representational system rather than from the world that we live in (Sorensen, 2001, p. 12). Or as Rescher (2008) puts it: “The fault is not in our stars, but in ourselves”, since our language system impedes exact knowledge by being “indefiniteness-friendly”.

This supervaluationist approach has its advantages and disadvantages. One advantage is that supervaluationists describe vagueness as a purely epistemological problem based on semantic deficiency, and they deny that there is any real, metaphysical indeterminacy. Instead, they argue that vagueness is due to limitations in our language system and “species-wide cognitive defects” (Locke, ref. in Sorensen, 2001, p. 3). This is positive, since it means that the existence of borderline cases has its origin in ignorance, and therefore, it can be overcome (at least in theory). As a matter of fact, declaring something to be a borderline F is the same as giving up any further effort to find out whether it is an F or not. And even though we have no answer to the question whether something is an F, there may be nothing that we do not know. So, supervaluationism seems to solve the problem of the sorites paradox and borderline cases in a rather easy fashion: we simply must accept that there is a clear and sharp threshold between an F and a non-F, but because of our linguistic indecision, we cannot know where this threshold is situated. In other words, supervaluationists reject the induction step in the sorites paradox. Therefore, we have no way of saying whether a statement about a borderline case is true or false, and the supervaluationists reject standard logic that a statement must be either true or false (Sorensen, 2001, p. 8). As such, a demonstration that a statement is not true does not automatically guarantee that the statement is false, leaving us with a truth-gap as a third option.

Rejecting standard logic in this way is, however, not unproblematic, and this is a clear disadvantage of the supervaluationist approach. The rationale of truth-gaps conflicts with the law of bivalence, which states that every proposition is either true or false. Sorensen (2001, p. 9) argues here that changing logic never is a successful approach, and instead of changing logic, it would be wiser to change our opinion about how language works. As Sorensen (2001, p. 8) claims: “*Change in the web of belief should be made at the most peripheral portion available. Beliefs about how language works are far more peripheral than beliefs about logic.*” Thus, we are cautioned against accepting a rejection of standard logic as a fruitful approach to solve the sorites paradox.

What does supervaluationism mean when trying to solve vagueness in diagnosing intellectual disability? Supervaluationists would claim that there is a certain cutoff point for intellectual disability, but that there is no particular point of which we can state that it is true that it is the actual cutoff point. Using this approach leads us to believe that there indeed exist

unknowable borderline cases, i.e., that there are some persons of which it is neither true nor false to state that they have an intellectual disability. However, this conclusion is problematic since it is more of a “nonclusion” than a conclusion, and it doesn’t really solve the matter. Still, many practitioners may know of cases where it is exactly their opinion that it would be neither correct nor incorrect to give a patient a diagnosis of intellectual disability. However, supervenientism alone does not seem to bring about a useful practical solution to this problem of vagueness.

### **Contextualism**

For contextualists, vagueness is in part a linguistic phenomenon that finds its origin in the kind of language that humans speak. As such, their approach is not immediately opposite to that of supervenientists. However, contextualists postulate that vagueness is also due to the kind of world that we live in and that we try to communicate about, and to the kinds of beings that we are. Blaming either the phenomenon or the concept as the source of vagueness will not solve the issue (Shapiro, 2006).

According to contextualists, each vague term has a uniform and constant meaning or “character”, but the contents to which these terms apply shift with the context (Sorensen, 2016). In this way, vague words are very much like indexical terms, such as personal pronouns, adverbs of time and space, etc. If a person, for example, says on Monday “I will go on a diet tomorrow”, and then says the same thing again on Tuesday, the character of the utterance is identical on both days, but the content has changed. The person has in a way said both the same thing and something different, as the indexical term “tomorrow” refers to Tuesday in the first sentence, but to Wednesday in the second, even though the lexical format is identical. Contextualists will claim that this is also what happens when referring to vague borderline cases, as all vague words are indexical. Thus, the content of vague terms shifts with the context (Sorensen, 2016). However, while the reference of the vague term changes, the lexical meaning of the vague term remains unchanged.

It is commonly known that the content of vague terms shifts with contextual factors such as the comparison form. A five-year-old may be exceptionally smart compared to other five-year-olds in preschool, but he will most likely not be so very smart compared to a professor in physics at Harvard University. A birch tree may be considered very tall if it measures ten meters and it grows in Arctic Norway, but compared to giant sequoias in Yosemite National Park, it will be quite small. Contextualists such as Shapiro (2006) will however claim that vague terms also may shift meaning when external contextual features such as the comparison class have been fixed. Shapiro says here that the extensions of vague predicates also may

vary during the course of a conversation, and that a speaker may go in both directions of a borderline case within the same conversation, without this meaning that he is sinning against either semantics or the non-linguistic facts. This is because borderline cases are judgment-dependent according to contextualists: if a speaker judges a predicate to be an F, then this is true because the speaker judges it to be true. And maybe even more importantly, listeners acknowledge that other competent speakers could judge the borderline case differently, without this meaning that either one of the speakers is wrong (Sorensen, 2016).

In a sorites series of 2,000 men that are lined up according to the amount of hair that they have on their head, ranging from not having one single strand of hair on their head to having a wealthy scalp with a serious amount of hair, Shapiro (2006, pp. 17-24) postulates that people judging each man as bald or not bald will end up with a number of borderline cases that remain unjudged. This lack of judgment or settlement is what Shapiro (2006, p. 44) describes as “open-texture”. In the borderline area, there simply is no consensus; vague predicates are judgment-dependent, and the judgment may be altered upon further investigation. Thus, a person that was first considered bald may be judged as not bald in a later situation or context. Judgments may be retracted and altered, and this will be accepted because of the contextual aspect of the judgment.

What would contextualists then say about intellectual disability? From the example given above, it makes sense to derive that psychologists trying to diagnose a borderline case of intellectual disability under some circumstances could conclude that the person has an intellectual disability, but under other circumstances they might not. Since content changes with context, the diagnostic criterion of impaired adaptive functioning may be particularly important. Adaptive functioning is in many ways dependent on the socio-ecological system that a person dwells in. Adequate support systems that bridge the gap between a person’s impairments and society’s demands can make the difference between a person being disabled or not. Two persons that are borderline intellectually disabled and that are virtually indistinguishable from each other in a clinical context, may differ significantly in functional level if one of them is placed in an environment that offers individualized supports, while the other one is left without any appropriate support. In other words, context is pivotal in the case of borderline intellectual disability.

Also, one and the same person who is identified with a borderline case of intellectual disability may function better or worse depending on the kind of environment and the nature of the demands that are being posed. A young person with an IQ of 69 would probably function rather poorly in an ordinary context of higher education where much of the focus is on academic achievements. However, if we were to put the same person in a work environment where work tasks are matched with cognitive profile and interests, we may very

well find an individual who functions mostly like everyone else who is not intellectually disabled. Thus, the same person may in some situations be judged as intellectually disabled, but not so in other situations, and both judgments could be defensible and correct. Contextualism seems in many ways a viable match for a reality where borderline cases of intellectual disability occur.

On the other hand, Shapiro's (2006) open-structure system where one can move back and forth between borderline cases making and retracting judgments may be more difficult to apply in a clinical diagnostic context. After all, it would not be very ethical for psychologists to first diagnose a person with intellectual disability, and then sometime later retract the diagnosis because they are faced with another patient who appears extremely similar to the first one, and whom they had decided not to give a diagnosis. Even though this is not an unthinkable situation, it would be considered bad practice to do so. Furthermore, in this system, there would still be a number of borderline cases that are left undecided, so the matter is by no means resolved. However, contextualism seems like a more appropriate approach to borderline cases of intellectual disability than supervaluationism, with its focus not only on the linguistics but also on context, which is known to play a vital role in the enabling and disabling of people.

## Discussion

The vagueness that surrounds intellectual disability as a concept or as a condition may sometimes result in practical uncertainty as to who should be diagnosed and who should not. While epistemicists, supervaluationists and contextualists argue with each other as they try to determine whether the vagueness is metaphysical or linguistic, it may seem as if we are stuck with the sorites paradox. From time to time, psychologists will be presented with borderline cases, and they will need to confront their own indeterminacy.

Yet, the discussion of uncertainty regarding borderline cases of intellectual disability highlights some important aspects concerning the diagnostic process. The following two questions may be essential to consider for psychologists who find themselves indecisive in their encounter with borderline cases of intellectual disability: 1) Which purpose does the diagnosis serve, and 2) How can diagnostic indecision be turned into a functional tool?

### *Which purpose does the diagnosis serve?*

One central question in our meeting with persons who appear to present with a borderline case of intellectual disability is: "Why diagnose?". If a person is referred to specialized health care services, a good starting point for the diagnostic process may be to explore together with the patient (and possibly his/her relatives or legal guardian) which ideas and concerns

they have and what they see as a desired or expected outcome of the diagnostic process. Such a patient-centered communication may provide the practitioner with insights in the reasons for the referral, and it may also be helpful in establishing a diagnosis (Matthys et al., 2009). In addition, improving the patient-practitioner interaction through open dialogue may have an empowering effect on the patient and it may yield positive effects on health-related outcomes (Matthys et al., 2009).

Despite the presence of impairments in cognitive and adaptive functioning, it is paramount for psychologists not to overestimate disability or underestimate ability. With an appropriate communicative style, reciprocal dialogue about the diagnostic process may be achieved. It may then also be possible for the psychologist to communicate what supervaluationists describe as a truth-gap: Some arguments may speak in favor of a diagnosis, while other arguments may be against. Admitting uncertainty should not be interpreted as unprofessionalism.

As Schalock and Luckasson (2013) indicated, there may be much at stake for persons who get a diagnosis of intellectual disability, and it may therefore be useful to go through possible advantages and disadvantages of receiving such a diagnosis with them. Research has suggested that young people with intellectual disability often are aware of stigma related to their diagnosis, and they may experience being stereotyped due to membership in this group (Daley & Rappolt-Schlichtmann, 2018). Hence, psychologists should strive to communicate clearly about what it means to be diagnosed with intellectual disability, and they should help the person in question to identify both positive and negative consequences of a diagnosis, so that these can be weighed against each other. If a person with borderline intellectual disability is referred to a psychologist for diagnostic assessment, we can assume that there is an impairment in adaptive functioning that has led to this referral. As such, a diagnosis may give a much-needed explanation for the experienced impairment. Optimally, one could hope that effective communication between patient and practitioner could result in shared decision-making about a possible diagnosis when standardized tests are not conclusive. At the same time, such close dialogue between psychologist and patient would introduce a subjective element into the diagnostic process that is less present in standardized tests. As such, the diagnostic outcome could become more dependent on the clinician's ability to interact with the patient rather than on the patient's condition.

### ***How can diagnostic indecision be turned into a functional tool?***

Another important question to consider in case of diagnostic uncertainty is anchored in the contextualist approach. Contextualism emphasizes the meaning of context when trying to identify whether a borderline case falls within or out of a certain category. In one situation, a borderline case may be

considered as predicate F, but under other circumstances, it may be regarded as a non-F. This contextual influence may also be observed in determining a person's cognitive and adaptive functioning, but it is given limited attention in the medical definition of intellectual disability.

The medical definition of intellectual disability is operational in nature, as it defines the construct of intellectual disability in such a way that it can be observed and measured. As such, the medical definition is a practical, applied definition and it relates primarily to empirical testing (Luckasson & Schalock, 2013; Wehmeyer et al., 2008). However, this operational definition is only one way of defining intellectual disability, and within the field of psychology, the construct is further explained by a constitutive or theoretical definition. Constitutive definitions are used to define constructs in relation to other, related constructs, and they may help us understand the theoretical underpinnings of a construct (Wehmeyer et al., 2008). The constitutive definition of intellectual disability describes the condition as socio-ecological and relational (Wehmeyer et al., 2008). This understanding implies that intellectual disability manifests itself as a state of functioning that exists in the gap between a person's capacities and limitations on the one hand, and the contextual demands and supports on the other hand. Hence, the constitutive definition does not see intellectual disability as a personal deficit or individual pathology. Instead, it describes intellectual disability as limitations in human functioning, and this human functioning is influenced by contextual factors, such as the presence of individualized supports (Wehmeyer et al., 2008).

Given the relevance of context for how poorly or how well borderline intellectually disabled persons may function, it is in order to raise some critical questions about our current diagnostic practice. The World Health Organization's (2018) operational definition of intellectual disability states that cognitive and adaptive functioning must be assessed with appropriately normed, individually administered standardized tests. Despite the underlying constitutive definition of intellectual disability, the standardized tests that are commonly used to assess cognitive and adaptive functioning measure first and foremost individual capacity. When assessing cognitive functioning with standardized intelligence tests, there is no evaluation of the cognitive demands that the individual meets in everyday life, but only an evaluation of the person's cognitive functioning in a clinical context. Standardized intelligence tests tell us only something about a person's current ability, but they give no indication of a person's learning aptitude or how we may support a person's cognitive processes during problem-solving (Elliott et al., 2018). Dynamic assessment of cognitive functioning may be an approach that is more in line with the constitutive definition of intellectual disability. With dynamic assessment, the focus is not so much on establishing a psychometric foundation for disability labeling, as on maximizing a person's potential by identifying which support will yield the best results (Elliott, 2003).

Hence, in case of diagnostic uncertainty, psychologists may use their indeterminacy to critically explore the context in which the person functions in everyday life. This may be especially important for the assessment of adaptive functioning, which is often measured via proxy reports. Adaptive behavior has everything to do with how a person *interacts* with his or her environment. Yet, an assessment with, for example, Vineland Adaptive Behavior Scales (Sparrow & Cicchetti, 1989) is based solely on how the person *responds* to the environment. Thus, the relational element in intellectual disability remains unexamined, and the impairment is solidly placed within the individual. Within a contextualist approach and a constitutive understanding of intellectual disability, this diagnostical practice is questionable. The use of a measurement tool that also assesses the “fitness” of the environment would make a welcome extension to the current diagnostic process. While such a measurement tool may again confront us with new borderline cases – as all measures with cutoff points inherently do – an assessment of the person-environment fit may help psychologists to better determine who belongs within or outside of the category of intellectual disability. Furthermore, such a tool may also inform support workers about which interventions are likely to render optimal outcomes. And ultimately, that is one of the main goals of the entire diagnostic process.

## Conclusion

This article explored the vagueness that surrounds borderline cases of intellectual disability. Such borderline cases are at the heart of the sorites paradox, and they may lead to diagnostic uncertainty for psychologists who must decide whether a person falls within the category of intellectual disability or not. Much is at stake for persons who find themselves in the gray area between intellectually disabled and borderline intellectual functioning. A diagnosis of intellectual disability may give access to much-needed supports, but it may also lead to social stigmatization and discrimination. This dilemma adds responsibility to the task of the psychologist, and a thorough understanding of what constitutes borderline cases may help in this sometimes difficult decision.

In philosophy of science, the nature of borderline cases has been explained as being metaphysical or linguistic in nature. Epistemicists describe vagueness as a consequence of the limits of what we can know about the world that we live in. Semantic theorists understand the vagueness of borderline cases as an inherent feature of our language. Both approaches put forward certain insights that may guide psychologists who find themselves in doubt as to whether a diagnosis of intellectual disability is in place or not. Hence, philosophy of science may provide fruitful perspectives on a practical problem. Yet, one of the most important questions to consider remains the following: Which purpose will the diagnosis serve?



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