A radical embodied perspective of autism: towards ethical, and inclusive views for cognitive diversities

Una perspectiva radical encarnada del autismo: hacia puntos de vista éticos e inclusivos para las diversidades cognitivas

Itzel Cadena Alvear, Melina Gastelum Vargas

ABSTRACT

Autism Spectrum Disorders have been defined as a group of developmental conditions that affect the capacity to interact with the physical and social environment, among others. A core feature of autism is the presence of restricted and repetitive behaviors that vary in complexity, form, and frequency throughout life history. These core features have traditionally been defined as impairments that interfere with communication competence. From an embodied approach, however, these actions could be seen as characteristic ways of interacting with the world. In this sense, we take an enactive and embodied approach to cognition in which we conceive cognitive agents as sensorimotor systems whose perception-action occurs in terms of affordances. This framework provides an integrative view of autism considering affectivity, perception, action, exploration, and interaction within a complex and dynamic dimension. Following this, we propose different applications based on embodied, intercultural, and feminist epistemologies, to understand and participate with autistic and cognitively diverse populations. The change in theoretical and methodological paradigms within embodied cognitive science towards autism and other cognitive diversities and how they engage with the world can lead to more comprehensive, integrative, and bioethical approaches.

Keywords: Autism spectrum disorders; embodied cognitive science; interculturality; feminist epistemology.

RESUMEN

Los Trastornos del Espectro Autista han sido definidos como un grupo de condiciones del desarrollo que afectan a la capacidad de interactuar con el entorno físico y social, entre otros. Una característica central en el autismo es la presencia de comportamientos restringidos y repetitivos que varían en complejidad, forma y frecuencia a lo largo de la historia de la vida. Estos rasgos centrales se han definido tradicionalmente como deficiencias que interfieren en la competencia comunicativa. Sin embargo, desde un enfoque encarnado, estas acciones podrían verse como formas características de interactuar con el mundo. En este sentido, adoptamos un enfoque enactivo y encarnado de la cognición en el que concebimos a los agentes cognitivos como sistemas sensoriomotores cuya percepción-acción se produce en términos de affordances. Este marco proporciona una visión integradora del autismo considerando la afectividad, la percepción, la acción, la exploración y la interacción dentro de una dimensión compleja y dinámica. A continuación, proponemos diferentes aplicaciones basadas en epistemologías corporizadas, interculturales y feministas, para comprender y participar con poblaciones autistas y cognitivamente diversas. El cambio de paradigmas teóricos y metodológicos dentro de la ciencia cognitiva corporizada hacia el autismo y otras diversidades cognitivas y cómo se relacionan con el mundo puede conducir a enfoques más comprensivos, integradores y bioéticos.

Palabras clave: Trastornos del espectro autista; ciencia cognitiva incorporada; interculturalidad; epistemología feminista.

AUTHORS:

Itzel Cadena Alvear
Universidad Nacional Autónoma de México
itzel.cadena.alvear@outlook.com

Melina Gastelum Vargas
Universidad Nacional Autónoma de México - México
melinagastelum@filos.unam.mx

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

1. Introduction

Autism Spectrum Disorders (ASD) are defined as a group of neurodevelopmental disorders characterized by social communication impairments, repetitive behaviors, and restricted interests (American Psychiatric Association, 2013). Currently, autism is considered a spectrum of disorders depicted by understandings of mind and behavior that rely on computationalist and individualistic approaches to cognition, and because of that ASD's are described given high variations between subjects in terms of intersubjectivity, behavioral patterns, interests, and activities, as well as their developmental trajectories.

This paper wants to contribute in rethinking autism and cognitive diversities as embodied phenomena. We will show how this framework provides an integrative view of autism and other cognitive diversities considering affectivity, perception, action, exploration, and interaction within a complex and dynamical interaction in the body-environment system. We will use the term cognitive diversity because the term neurodiversity tends to be neurocentric. With this framework, we then consider the bioethical dimensions that an approach like the embodied one can portray.

2. Methodology

This is a theoretical work, based on the revision of intersectional literature, experimental work, and testimonies. In the first section we will give an overview on the traditional characterization of ASD's, highlighting the way in which traditional conceptions of mind, affection and behavior get portrayed. Also, in this section some of the characteristics and concepts of the embodied approaches are presented in order to explain autism in these terms. It is argued that skillful engagement with affordances will be influenced by the normativity imposed by the sociomateriality of the situation, and so will the networks of sensorimotor schemes in ASD's. Therefore, it will be shown how an embodied theoretical framework leads to recognizing the heterogeneity of possible experiences taking into account how they may emerge given the diverse sensorimotor trajectories and ways of engaging with the world.

We sketch the change in theoretical and methodological paradigms towards autism, as well as the transformation of how to theorize and comprehend their engagement with the world, which can lead us to more comprehensive, integrative and bioethical applied approaches. We will take in into account feminist and intercultural perspectives. Finally, some discussion and future directions in research are given.

2.1 From traditional view of autism to embodied approaches

ASD's were first characterized by the child psychiatrist Grunya Sukhareva in 1925 (Posar & Visconti, 2017). As previously mentioned, ASD is conceptualized as a spectrum of disorders due to the high variations between subjects in terms of intersubjectivity, behavioral patterns, sensorial sensitivity, interests, and activities, as well as their developmental trajectories. Most of the symptoms differ leading to significant impairments and adaptive mechanisms in everyone, which lead to lifelong clinical and community support. The etiology of ASD's is still elusive, studies indicate genetic (Taylor et al., 2020; Schaefer and Mendelsohn, 2008), epigenetic (Yoon et al., 2020) and environmental factors (Bölte et al., 2019). Yet, the explanatory roots of autism remain unknown.

2

Itzel Cadena Alvear & Melina Gastelum Vargas • Resistances. Journal of the Philosophy of History • Vol. 3 Issue 6 e210101 • Jul/Dic 2022

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Throughout history, ASD's have been defined based on theoretical approaches close to the representational and computational views in cognition. For instance, the most influential theoretical explanation and treatment of these complex disorders is the "Disfunction Triad", consisting of the Theory of Mind (Frith and Frith, 2005), the Weak Central Coherence Theory (Happé, 2005) and the Executive Dysfunction Theory (Baron-Cohen, 2004). Another approach within this mentioned traditional view is the Hyper-Systemizing Theory which posits that ASD's are a product of a hyper-masculine brain (Baron-Cohen, 2009). As Gnanathusharan Rajendran and Peter Mitchell mention (2007), this ensemble of explanatory hypotheses still has many explanatory gaps related to the specificity, uniqueness and universality regarding ASD's, showing inconsistency to explain such a complex phenomena. From the traditional point of view, autism is conceived as a deficit on the ability for "mentalizing" others states of mind, as well as the product of a socio-emotional and executive deficit. Also, its principal line of research seeks to discover neural biomarkers for deficiency following a reductionist view of traditional neuroscience where deficit equals cerebral dysfunction (Fuchs, 2017).

Due to the high heterogeneity of the condition, experimental research has found that not all the individuals within the spectrum exhibit the features characterized on the triad of impairments but rather the fraction of them separately (Happé et al., 2006; Happé & Ronald, 2008).

Further, in recent years there has been an openness to interdisciplinary and more integrative approaches towards autism. Thus, coming closer to theories and methodologies about how autistic people embody and enact the world in particular ways. For instance, an increasing body of research around sensorimotor characteristics: sensory responsivity and motor coordination (Torres and Donnellan, 2015; Robledo et al., 2012; Hannant et al., 2016; Whyatt & Craig, 2013), motor execution and preparation (Glazebrook et al., 2006), hyper- hypo sensitivity to certain stimuli (Cermak et al., 2010; Gomot et al., 2002). Also, we now find qualitative studies surrounding the ways autistic people cope with sensory hyperstimulation by engaging differently with the environment and the objects surrounding them, for example, with motor stereotypies or self-stimulatory behavior, also known as "stimming" (Kapp et al., 2019; Conn, 2015; Bakan, 2014); and the incorporation of autistic adults and infants into the research of their own lived experience (Kapp et al., 2019; Bargiela et al., 2016; Hurlbutt & Chalmers, 2002).

The also called 'autistic' ways of behaving have been characterized into the cognitive sciences as Repetitive, Restricted and Stereotypical Behaviors (RRBs). RRBs are a core feature of ASD, defined as topographically alike and repetitive patterns of movement, use of objects or speech: (a) repetitive motor and sensory -arm waves, rocking, hand and finger movements, echolalia-; and (b) insistence of sameness including rituals, rigid and perseverative interests, and restricted routines (Honey et al., 2012).

Conceptualizations of ASD's have mainly derived from the biomedical model of disability and 'otherness', where autism seems like a condition to 'cure', 'eliminate' or 'fix' (Pearson & Rose, 2021). Consequently, RRBs are described as unpurposed, inappropriate, or 'aberrant' actions (Muehlmann et al., 2014).

Recently, the common gaze surrounding the RRBs categorization has been changing due to the aperture of research groups in many disciplines to incorporate the personal and collective voices of autistic people who have highlighted the importance of RRBs as adaptive mechanisms that help them to communicate, discharge or soothe emotions or thoughts (Kapp et al., 2019). It should be noted that we will use the term 'autistic' referring to people's identity and vindication from people from the spectrum talking about their specifical ways of understanding the world rather than other terms that tend to pathologize their experiences (Autistic Self-Advocacy Network, 2021; Brown, 2011).

Furthermore, theoretical, and methodological views closer to phenomenology, complexity and dynamical systems bring out an interesting proposal for our understanding of these phenomena. These views comprehend the enactive and the embodied cognition approaches which involve a more interactive landscape for understanding cognition.

A large body of proponents have contributed to the epistemology of ontogenesis of cognition from the embodied and enactive perspectives where the interaction of a living organism and the complex environment is essential. These research proposals give a radical glimpse on how we think about cognition development and developmental diverse conditions like autism. Contributors like Eleanor Gibson (1988), Esther Thelen and Linda Smith (Thelen et al., 2001; Thelen, 2000; Smith & Thelen, 2003) talked initially about the role of exploratory activity in how we link meaningfully and reciprocally with the world with developmental implications for the history of the organism. They described cognitive development in terms of a dynamical systems approach, encompassing caregiver-infant relationships, language, social interaction, perception, and action.

Thus, cognition rests on the foundation of knowledge through the exploration of the world, where new affordances are performed in a reciprocal system of interacting activity (Gibson, 1988). Also, cognition is bound to the world through the body, emerging from the interaction of the organism-environment as a result from the sensorimotor activity, distributed across real time processes of acting (Smith, 2005).

The 'affordance' concept will be taken in its relational definition (Chemero, 2009), which is called *affordances 2.0*, described as "relations between abilities to perceive and act and features of the environment, considering the interaction over time between an animal's sensorimotor abilities and its niche" (p. 150).

Considering this panorama, we depart from an embodied, dynamical, and ecological point of view about development, autism, and cognitive diversities. This perspective allows to explain living diverse systems in terms of their multiple interrelations, from the materiality of metabolic systems, their sensorimotor life, their intersubjective relations, the sociocultural normativity, and structures (Di Paolo et al., 2019).

In embodied cognition, cognisors are 'sense-makers'*:* the given relevance of certain aspects of the world depend on the needs, bodies, and constraints of the organisms and in the history of those relations. Also, the environment is seen as a constitutive element of adaptive interactions vital to sense-makings through affordances, thus, "organisms cast a web of significance on their world" (De Jaegher & Di Paolo, 2007).

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

This leads to another important concept: the "'affordative space", defined as "the (abstract) range of possibilities provided by any active movement in body or change in environment" (Gallagher & Ranson, 2016, p. 341). This concept is relevant because it implies many dimensions into the space that provides the possibilities in an environment: "an individual's occurrent affordance space is defined by evolution, development (her life-stage) and by sociocultural practices (normative constraints and possibilities)– all of which enable or constrain the individual's action possibilities (Gallagher & Ranson, 2016, p. 341). Taking these three aspects, it is established that environmental structures invite the agent to perform her networks of sensorimotor schemes in a specific environment given a form of life (Mojica & Gastelum, 2021, p. 9). Moreover, being able to establish a network of patterns of bodily behavior in the appropriate environmental circumstances implies developing or having the skills to recognize an affordance and engage with it. This means that the agent should follow the normativity imposed by the sociomateriality of the situation (what to pay attention to, how to engage with that, etc.), and so do networks of sensorimotor schemes, at least at the level of the sensorimotor agent. (Mojica and Gastelum 2021, p. 9).

Thus, if autistic people move, sense, emote and interact differently, they will make-sense of the world in a distinctive way, performing certain actions that are relevant for maintaining their own autonomy (Di Paolo et al., 2019).

According to Hanne de Jaegher, autism comprehends a particular *participatory sense-making*, which is the enactive concept for intersubjectivity. Accordingly, if sense-making differs in autism, their capacity to interact, communicate, coordinate, engage, and establish dialogical relationships is diverse rather than abnormal (De Jaegher, 2013; Hermans, 2019). Participatory sense-making entails dynamical actions -breakdowns, repairs, and transformations- of the agents involved and the social relationship itself (De Jaegher, 2020).

We can see an example of De Jaegher's proposal at Carolien Hermans ethnographic study (Hermans, 2019), where she analyzed participatory sense-making by measuring attention, anticipation, and rhythmic synchronization at the interpersonal space between an autistic child and a dance teacher. Hermans's findings confirm the relationship between sensorimotor anticipation, interpersonal synchronization, interpersonal space, and attentional engagement within a creative dance context. Hermans points to a relevant premise regarding future ASD's research: "Participatory sense-making can only become truly interactive when all participants are considered autonomous agents who have the power to mutually influence each other". The enactive and embodied view allows us to transform our research practice into a more committed and engaged process.

Findings in experimental research show that autistic people exhibit a diverse spectrum of difficulties and potentialities regarding the mastery of sensorimotor skills, perceptual-action performance (Hilton et al., 2012; Von Hofsten & Rosander, 2012; Bhat et al., 2011); various motor differences in terms of interpersonal resonance, rhythmicity, organization and regulation (McCleery et al., 2013; Esposito and Pasca, 2013); motor praxis errors correlated with ASD severity (overflow and rhythmicity; Kaur et al., 2018).

These features compromise the embodiment of autistic people, how they make sense of the world and how they engage with others. In this way, due to the increasingly concern on applying more interactive paradigms, many research findings show a variety of challenges regarding interpersonal synchrony -coordinating their movements in reciprocation to promote synchrony-, for instance, by using a rocking chair paradigm, autistic children didn't demonstrate tendency to rock symmetrically with their caregivers in comparison to typical developing children (Marsh et al., 2013); also, by applying social motor synchronization tasks with interpersonal coordination of objects, bodies, and faces, Fitzpatrick and colleagues found that motor synchronization is associated with ASD severity (Fitzpatrick et al., 2017). The way autistic people embody their self-organisation is one of the fundamental ways by which they interact with the physical and social environment, so, differences in perceiving, interacting, and responding to the rhythms of the world may have consequences for the ability to become embedded in a traditional social context (Fitzpatrick et al., 2017).

3. Discussion: The case of the autism spectrum from the embodied approaches

As we could see previously, the traditional approach to autism has perpetuated a narrative based on the deficit or impairment of cognitive abilities, which has led to applications focused on eliminating behaviors that do not match with the typical actions resulting from a shared commitment between sets of typically developing persons.

The "intersubjective meaning of life" is co-created historically across generations sustaining environments based on certain forms of life. Social affordances are co-created and maintained by joint action (Heft, 2018), which form ecological niches. However, the normative behavior settings could tend to exclude other ways of acting and making sense of the world. Diverse ways of comprehension and action in the world are considered as impaired, pervasive, or abnormal, and can even be misjudged ethically. The assumption that autistic features -such as stereotypical behavior, echolalia, low eye contact, etc.- indicate low social motivation, has had negative effects on the ways autistic people are understood (Jaswal and Akhtar, 2019).

Sensory and perceptual differences in autistic people have been reported autobiographically (Grandin, 1992; Sacks, 2015), manifesting different sensorimotor experiences that include under- or over- responsiveness to various stimuli. These experiences have been reported as: hypo- hypersensitivities, sensory avoidance, sensory overload, synesthesia, sensory seeking, fascinations for certain aspects of the environment and 'stimming'.

It has been demonstrated that autistic people coordination patterns of activity and environment have intrinsic characteristics that could change their enactment on the world, such as: delays and difficulties to synchronize the attunement of the muscles, body balance, eye gaze, corporal coordination, motor resonance, postural control, and early motor delays (Bhat et al., 2012; Von Hofster and Rosander, 2012). Early sensorimotor schemes -grasping, pointing, head turning for dyadic gaze, gestural movements- provide the basis of how we interact bidirectionally. Gross motor skills expand to the child's posture and exploratory possibilities to verbal and non-verbal communication on normo-typical development (Bhat et al., 2012).

RESISTANCES *Journal of the Philosophy of History*
Revista de Filosofía de la Historia
Revista de Filosofia da História

Sensorimotor schemes are influenced by the social norms on "how adequate they are for a given situation, how well they are organized internally, how they fit within the overall organization of the embodied agent" (Di Paolo et al., 2017). This is related to the meaningfulness of the surroundings for the agent, which differs in autistic people: What can be assimilated, can be engaged with through the sensorimotor schemes. Considering this, autistic adults have referred to rhythmical patterns of repetitive motion as actions to regulate their emotions or also, as a coping mechanism during overwhelming events (Kapp et al., 2019). RRB's could be assimilations and ongoing equilibrations of the sensorimotor schemes in the affordative space.

Also, a clear example of how social affordances are pivotal for the development of autistic people is the case of autistic women and girls, which are different from males. The lived experience of social affordances configured by the gendered structure of femininity generates certain bodily experiences in the way in which autistic women and girls enact them through their sensorimotor schemes. Iris Marion Young (1980) analyzes the reflections of the social structure on the female body defining "femininity" as "the set of structures and conditions that delimit the typical situation of being a woman in a particular society". Sarah Bargiela and colleagues (2016), denote how the gendered social normativity functions as a crucial element for autistic women's lived experience, showing that they struggle on having to fulfill socially expected gender roles like "caring, nurturing, looking out for everyone", sensing a lost identity. Autistic women referred to their experience based on how they make-sense of the world, describing themselves as 'wearing a mask' or 'masking' as a deliberate action to cope in social contexts and hide autistic expressions by mimicking socially acceptable behavior settings (Bargiela et al., 2016). Masking has been reported mostly in autistic females which could be due to the higher social pressures involved in femininity social imposition. The systematic normativities at the sociomaterial context delimit the behavioral settings available and expected for women and girls affecting how their sensorimotor networks develop (Di Paolo et al., 2017, p. 213). Consequently, autistic women and girls develop different coping strategies in comparison to autistic males, being aware of this camouflaging: "I knew that I wasn't being me when trying to play 'the wife' or 'girlfriend'"; describing to feel the "need to 'please, appease and apologize and do what you're told in order to feel accepted and receive affection", finding hard to manage the expected feminine roles normed by society (Bargiela et al., 2016).

In this way, masking, camouflaging and RRBs could be seen as the skilled individual's responsiveness to affordances in a sociomaterial-context-sensitive way.

Social possibilities are co-created and co-maintained by the joint action of the people involved (Good, 2007 in Hellendoorm, 2014), thus, the way we interact with autistic people, the way we co-create the interpersonal space and facilitate the social affordances for their particular sense-making will impact on how they experience the world.

RESISTANCES *Journal of the Philosophy of History*
Revista de Filosofía de la Historia
Revista de Filosofia da História

4. Intercultural and feminist approaches to cognitive diversity

Cognitive diversity has been targeted as an inferior entity, reinforcing social exclusion of diverse people, and reducing their experiences with negative and stigmatizing associations. Biomedicine as a social construction has served as a political and intellectual project to organize hierarchically human bodies based on different traits such as sex, gender, ways of behaving and making sense of the world. Thus, "disability" or "disorders" are based on the sameness or difference from certain dominant group -traditionally western, heterosexual, and masculine "Not only the 'normal' roles for one's age, sex, society, and culture, but also 'normal´ structure and function, and 'normal' ability to perform an activity, depend on the society in which the standards of normality are generated" (Wendell, 1989, p. 107).

In our society, difference is translated as "inferiority", devaluing cognitive and bodily diverse people's lives. This devaluing tendency often leads to the widespread assumption that their lives "are not worth living", often increasing their vulnerability to ableist violence (Bê, 2019).

With the increasing research in different disciplines, and the voices of cognitive diverse people, our conceptualization about cognitive diversity has been transforming, allowing us to rethink cognitive diversities in an interdisciplinary way, oriented to human rights and bioethical perspectives. However, there is still a considerable tendency to link these different ways of making-sense of the world to deficient ways of relating to it. Accordingly, "any deep understanding about disability must include thinking about the ethical, psychological and epistemic issues" (Wendel, 1989, p. 105) of living on the spectrum of diverse ways of relating to the world and others.

Interculturality and feminist epistemologies constitute substantive intersectional approaches to shape inclusive and ethical perspectives towards cognitive diversities and the ways we work together as researchers and participants in cognitive sciences to gain a better understanding about their experience.

First, intercultural epistemologies invite us to question how and where differences are built, -normal and abnormal, or, normo-typical and neurodiverse-. Catherine Walsh shows how the difference is built based on a westernized monocultural definition about normality and disability, where cultural and biological diversity become deficiencies (Walsh, 2009, p.15). Thus, an intercultural proposal must recognize and raise awareness about the political traits that build difference. It worries about exclusion, rejection, ontological and epistemic-cognitive subordination of certain groups of subjects given the dehumanizing practices of knowledge that privilege some people over others, essentializing otherness and hiding the inequalities inside these practices (Walsh, 2009). Critical interculturality is a "pedagogical tool that questions the power patterns of racialization, subalternation and inferiorization" (Walsh, 2009, p. 15), looking for their mechanisms, structures and conditions that allow and maintain inequity and discrimination. Interculturality involves an epistemic, political, ethical, and social proposal to transform the structure and socio-historicity of our society as we currently know it (Walsh, 2009). Critical interculturality is a "project that aims to the re-existence and life itself" (Albán in Walsh 2009, p. 12), to another type of coexistence between agents.

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Intercultural methodologies constitute a proposal to manage diversity in participative and engaged research. In addition, the feminist point of view could also nourish the way we create knowledge in cognitive sciences around divergent ways of enacting the world. In this sense, science studies from a feminist perspective begin systemically from the sixties of twentieth century, with a vast and diverse panorama of female theorists from different disciplines in science and humanities (Blazquez, 2011). The feminist critique to scientifical knowledge has potentiated the questioning around objectivity and neutrality, showing the multiple biases embedded in knowledge, where traditionally, the subject has been androcentric and westernized triggering multiple consequences to people who are out of this conception, such as women, cognitive diverse people, racialized women, and men, etc. (Harding, 2016; Smith, 1974; Haraway, 1985, Rippon, 2019; Schiebinger, 2014; Blazquez, 2011). Also, feminist disability theorists have talked about the continuous epistemic violences that cognitive sciences and biomedicine reinforce by not considering the voices of bodily and cognitive diverse people, highlighting the way in which personal, experiential, and bodily knowledges tend to be disregarded or denied while "scientifically produced discourses are the only ones considered to be authoritative" (Bê, 2019, p. 429). Connected to this, the feminist standpoint theorists propose to change the science paradigms towards the conditions and situations of experts by experience (Ordorika-Sacristán and Gómez Aguilar, 2021) based on their specific knowledge and interweaved experiences.

Specifically, these consequences are materialized in the access to public mental health and services such as formal diagnosis -which impacts on the access to interventions, health care and special education-, psychological and pedagogical treatments for cognitive diversities.

A clear example of these consequences is shown in the experiences of autistic women and girls, whose experiences have remained invisible until recent research. Feminist disability studies brought light to some of the most relevant issues that cognitive and bodily diverse women live, showing their disadvantages in comparison to both disabled men and normo-typical women, arguing that the inability to include women is due to misconceptions, stereotypes, ableistand misogynous ideas about disabled women (Bê, 2019), in addition to the importance of studying the situated condition of women living two different social structures as women and divergent. Currently, more research groups have been increasing the exploration of autistic women and girl's experiences (Bargiela et al., 2016; Tierney et al. 2016), nevertheless, these groups are mainly from the global north, thus, there is still a gap in research about the experiences of cognitively diverse women and girls in the global south, as well as the intersections that influence their experiences, such as racialization, socioeconomic status, ethnicity, sexual orientation, etc .

Hereafter, the present article will incorporate the intercultural and feminist approaches for ethical and integrative perspectives in cognitive sciences.

5. BIoethical perspectives for Autism.

It is important to notice that this analysis about ASD and embodied cognition can be seen as part of a larger bioethical project. We follow the bioethical notion of Breilh (2003), in relation to a social transformation account of bioethics, having as a foundation human rights, regenerative justice and equality for human beings, all taken from an intercultural view that will be discussed further ahead. Bringing together the intercultural, the feminist theoretical framework with the enactive and the embodied cognition approaches we could create more integrative views of development and intersubjectivity as part of a larger bioethical project.

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Firstly, the concepts of "disorders", "disabilities", and "impairments" profoundly influence the social view about autistic people, often immersed in a rhetorical tragedy where being part of the spectrum means to be a burden of care or passive recipients of care (Bê, 2019). These social narratives around cognitive diversity is often reinforced by parents and caregivers of autistic children, subsequently impacting the self-perception and self-esteem of boys and girls. For example, many parents of autistic children and adolescents report multiple demands including greater time and financial pressures, increased emotional distress, greater investment in healthcare, reduced level of social support, more fatigue and less time to rest given the higher amount of expended time in care work (Picardi et al., 2018; Gong et al., 2015).

Child's adaptation and self-esteem has been related to parental distress, thus, if facing more burden, psychological and affective distress, divergent children could face negative impacts on their emotional wellbeing (Picardi et al., 2018). These findings could also be related to the high incidence of suicide attempts in the autistic community, interestingly higher in female individuals in comparison to males (Kõlves et al., 2021). This last issue could be linked to what feminist theorists have published about the double risk that disabled or bodily-cognitive diverse women live because of the double intersection of oppressing structures: ableism and sexism (Bê, 2019). Linked to this, most autistic women live with comorbidities such as anxiety, depression, eating disorders, and gender dysphoria at higher rates than males (Plemeniti et al., 2021). For instance, taking as reference the subjective experience of Wendy Lawson (2006), autistic adult woman, she refers to these gender structures as struggles in her daily life:

> I don't desire make-up. Fashion and high-heels don't appeal. I don't like perfume or my hair cut, But my need for 'understanding' is real. The expectations placed upon me, being female and all, push me further into pain and grief. (Lawson, 2006, p. 54)

This testimony calls attention to the possible higher sensibility to social structures in ASD given their continuous effort on learning and applying the social norms such as gender, understanding then that the feminine gender refers to the social conventions that constraint or define a range of affordances available to female individuals. As Young (2002), points out, gender creates "a particular form of social positioning of lived bodies in relation to one another within historically and socially institutions that have material effects on the environment", where people reproduce power relationships.

In addition, female individuals experience increased levels of "camouflaging" or "masking", that is, a complex of behavioral and affective strategies to compensate and hide autistic traits -often to appear socially competent with normo-typical people-, which could contribute to diagnosis overshadowing, also associated with higher emotional and psychological difficulties (Wood-Downie, 2020). This diagnosis delay has also been related to diagnostic biases given that criteria come mainly from masculine and western groups (AGN, 2022).

What's important about a diagnosis for autistic people is the certainty and accompaniment of people who live similar experiences, usually increasing their confidence when treated as a diversity rather than a disease to cure. As Sarah Bargiela et al. (2016, p.3289) show in the testimonies of autistic women and adolescents:

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

> It's a difference not a disorder…it was really helpful because it made me feel good about myself. …Something that I really appreciate about having the diagnosis is actually being in this club now where people talk about their experiences and having so many echoes of my own. (Bargiela et al., 2016, p. 3289)

On the other hand, autistic features such as RRBs are described by people on the spectrum as characteristic ways of interacting with the world where, autistic agents recognize and engage with the affordances in-real-time based on their distinctives sensorimotor schemes enacted in specific contexts. It is noteworthy that must of autistic people experience discrimination, judgement and violence because of the stigma related to autistic traits like RRBs in daily life spaces such as the scholar system, and the workplace (Pearson & Rose, 2021):

> We move, communicate and think in ways that those who do not move, communicate and think in those ways struggle to empathize with, or understand, so they 'Other' us, pathologize us and exclude us for it. (Kieran Rose in Pearson & Rose, 2021, p. 53)

In this sense, autistic adults mention that RRBs serve as self-regulatory or calming mechanisms when experiencing sensory or emotional overload (Kapp et al., 2019). The rhythm of body and vocal repetitive variations help autistic people to self-regulate according to certain timing and pace. This point contrasts with studies made with autistic children who show difficulties on interpersonal synchronic rocking (Marsh et al., 2013). The individual coordination of movements differs from the interpersonal coordination dynamics. Also, evidence indicates that autistic people struggle when encountering temporal and co-created movement patterns (St Claire et al., 2018), which, as suggested by Jonathan T. Delafield-Butt and colleagues (2020), could influence their intersubjective engagement and meaning making with normo-typical people. However, as also shared with Delafield-Butt, this does not mean that autistic people can't engage with others as traditionally believed. In the mentioned study by Delafied-Butt and colleagues (2020), they demonstrated in a case study with an autistic 18-year-old girl by applying intensive interaction, how she could engage with a practitioner who interacted with the girl based on her own ways of behaving. This mentioned approach is called 'Intensive interaction' which takes place when the practitioner combines sensitive and spontaneous action with contingently, rhythmical body and vocal responses, following rather than leading the process (Nind and Powel, 2000). During intensive interaction, through the participation from the agent's ways of emoting and expressing, not as the social consensus norms, autistic people are able to co-create inter-subjective narratives from their sense-making of the real-time event. Autistic people open possibilities and allow us to build different modes of expression and communication, new material engagements. Thus, this kind of intervention involves the breaking of social normativity about how (-not) to engage.

The development of the affordance space on the autism spectrum could be diverse given their distinctive intra-organismic dynamics and their resulting range of action possibilities. Yet, this particular repertoire of action possibilities could be hindered by the normo-typical sociomateriality imposed. For instance, in traditional interventions, such as Applied Behavioral Analysis (ABA), many practitioners have conducted punishment procedures on their programs that were highly abusive, violating the dignity and rights of institutionalized autistic patients (Anderson & Carr, 2021; Anderson,

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

2022). ABA usually focuses on a performative landscape of socialization and action, training autistic people to interact based on the acceptable behavioral settings (Delafield-Butt, Dunbar, & Trevarthen, 2021). The reliance on shaping the individual as 'normal' as possible, some practitioners could end ignoring the particular autistic point of view and meaningful sense-making, neglecting their emotional and sensorimotor needs that connect to their attempts to communicate in diverse ways that differ from the social norm.

In contrast, the applications of intercultural perspectives around the affordances provided for diverse people, specifically children, could be thought in more inclusive ways, where the material resources for kids are more related to their sense-making and participatory sense-making, rather than imposing certain normo-typical ways of being in the world. Accordingly, Ximena González-Grandon, and colleagues (2021), propose to provide recreational affordances that allow to build learning experiences around socioemotional skills through play, enabling cooperation, collaboration and dialogue between participants. In the case of autistic and cognitive diverse children, we could depart from their ways of making sense of the world generating sensory friendly spaces for their sensorimotor organization, (Sadatsafavi et al., 2022). Another approach could also be the Intensive Interaction which emerges from intercorporeality, departing from the agent's embodiment to facilitate positive engagement and social responsiveness (Caldwell, 2013; Delafield-Butt et al., 2019). Also, another application is Floor Time Play where the caregiver and the autistic child interact by exploring together objects that belong to activities of daily living based on what's meaningful for the girl or boy (Dionne and Martini, 2011), portraying sociomateriality or how cognition is contextualized and interwoven in the situated interactions with the objects that actively contribute to autistic people's experience of the world.

On the other hand, the proposal here drawn with the embodied view of cognition allows us to rethink research and how we contribute to society by creating knowledge that actively involves non-reductionist views and the participation of people expert by experience such as autistic children and adults. In this sense, feminist's epistemologists (Haraway, 2002; Harding, 2016; Smith, 1974) emphasize the importance of creating committed and situated research in science and technology which involves including and amplifying the voices of marginalized people such as autistic persons. Creating embodied and situated knowledge could be possible by approaching cognition based on more integrative views that consider the 'object' of knowledge as agents and experts by experience; contemplating participation in social interaction based on the lived experiences of autistic people. Accordingly, De Jaegher (2020), has proposed to put forward engaged epistemologies for understanding, inviting, and supporting social interaction between autistic people based on their own needs, capacities, desires and struggles.

Situated knowledge involves considering "communities, not isolated individuals" (Haraway, 2002, p. 590), which is related to the theoretical account here described where cognitive agents interact based on their own sense-making, the web of collective significance at the surrounding sociomateriality, and the affordative space that constitutes their ontogenetic niche.

Finally, this situated knowledge stands also in resonance with the critical interculturality proposed by Catherine Walsh:

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

> With this perspective we do not start from the problem of diversity or difference itself, but from the structural-colonial-racial problem [...] From this position, interculturality is understood as a tool, as a process and project that is built from the people -and as subalternity demands-, in contrast to the functional, which is exercised from above. It supports it and requires the transformation of structures, institutions and social relationships, and the construction of conditions of being, thinking, knowing, learning, feeling and living differently. (Walsh, 2009, p. 4)

This passage stands in line with Haraway's (1985, pp. 71-112) statement about the problematic ground in modern science, rooted in a homogenous type of thought which can exclude other ways of acting and knowing. Thus, the construction and recognition of different types of understanding leads to a critical perspective of interculturality, as the possibility of dialogue between cultures, transcending from the imposed way of thinking. This interculturality from a critical perspective does not yet exist in the cognitive science field; it is something to build, as it is the inclusion of cognitively diverse people within society. Hence, it is a horizon, understood as a strategy, as action and permanent process of relationship between conditions of respect, legitimacy, symmetry, equity, and equality (Walsh, 2009). What is sought is to find a new society from the bases of cultural understanding and against the exploitation and alienation of human beings and nature.

It is noted that the majority of caregivers of autistic children and other cognitive divergent people are women (Obeid et al., 2015; Safe et al., 2012), being the members that more often feel overwhelmed when facing caregiving demands associated to the support needed for sustaining an autistic child -depending on the daily needs to achieve basic and instrumented activities for daily life- which is related to the sexual division of labor. Care work and nurture are complex and challenging labors that are rarely analyzed and understood in cognitive sciences, however, feminist epistemologists have raised questions and criticism to this unequal landscape about the co-responsibility in carework, specifically, by comunitary and latinamerican feminist authors (Navarro & Gutiérrez, 2018), rising for the necessity to question the unequal relationships to reproduce life. In this respect, ecological feminist proposes to create situated actions based on *interdependence*, that is, to create collective networks of work, activities and energies to nurture material, symbolic and affective life (Navarro & Gutiérrez, 2018). Mutual care sustains human life (Draper, 2018), so the challenge relies on how to organize the social responsibility for mutual care and how to delimit health policies to provide supporting mechanisms for both the caregivers and autistic people.

As one can see, this approach to cognitive diversities, one of them being ASD's and all their surrounding social and material environments, can be taken as a larger bioethical project about promoting a social transformation that takes as principles human rights, regenerative justice, and equality for human beings.

6. Conclusions

The objective of the current work was to provide an integrative view towards autism and cognitive diversities by unifying the enactive, embodied, intercultural and feminist views to address more ethical, and inclusive views about cognition.

We provide an integrative view of cognitive development by unifying pivotal concepts that conceive cognition based on the dynamical emergence of perception-action, contingent on the physical and social factors and the interactions between the agents and their surroundings. It is acknowledged that the particular affordative space generates experiences with an intrinsic affectivity corresponding to the understanding of the world of each agent, pertaining to the agent's sense-making

This dynamical and integrative view is in line with the autistic people's testimonies where they describe their behaviors and ways of understanding the world as divergent, instead of abnormal or inadequate; as well as forms of affective discharge and strategies to calm themselves during sensory distress (Kapp et al., 2019; Rose, 2017). It also aligns with the sensorimotor approach towards autism, just as with qualitative and quantitative research on sensorimotor trajectories during action-perception (Donnellan et al., 2013; Kapp, 2013) as evidence to support the complex nature of differences that arise from ASD. These emergent studies are compatible with the notion of the heterogeneous and dynamical nature of life development, maintaining its interconnectedness and diversity, instead of conceiving a universal type of 'normal' or 'adequate' cognition. Therefore, an embodied theoretical framework leads to recognizing the heterogeneity of possible experiences considering how they may emerge given the diverse sensorimotor trajectories and ways of engaging with the world.

Nowadays more researchers are considering inclusive and ethical perspectives towards autism and other developmental conditions, which implies a breakthrough for cognitive science. Also, Ines Hipolito, Daniel Hutto and Nick Chown suggest understanding ASD's as cognitive diversities instead of theoretical deficits (Hipolito et al., 2020). Whereas Hanne de Jaegher considers ASD's embodiment, lived experience and social interactions based on their particular sense-making, proposing that autistic people create a distinctive participatory sense-making or social interaction (De Jaegher, 2013).

Regarding the concepts from the enactive and embodied approaches, we can observe that autistic people express diverse ways of acting, emoting and communicating, responding to the landscape of affordances in such a way that resonates with their sensorimotor schemes, generating 'autistic experiences'. Therefore, instead of defining autistic features as abnormal actions, one could comprehend them as different ways of engaging with the world. This last point could transform therapeutic applications that traditionally have attempted to diminish or eliminate autistic behaviors such as stimming.

Theoretical paradigms in cognitive sciences have an impact on people's lives, responding to the current social problems. Calls for transformation in cognitive science have arisen from many groups of people at the margins, including autistic people. For example, in the global north, autistic networks have arisen, such as the Autistic Self Advocacy Network (ASAN) and the Autistic Girls Network (AGN) creating reliable communication and research information based on essential needs from the community.

Additionally, we need to question the theories that emerge to explain ASD and other cognitive phenomena, employing more comprehensive and inclusive theoretical frameworks. For instance, Gina Rippon objects to the Hyper-Masculine brain theory or Hyper-Systemizing theory (H-S) of autism, which relies on differentiating female and male brains employing gendered stereotypes and reinforcing unequal characterizations that could justify hierarchical and violent relationships (Rippon, 2019).

RESISTANCES *Journal of the Philosophy of History*
Revista de Filosofía de la Historia
Revista de Filosofia da História

Although the traditional biomedical model of mental health has provided a great theoretical-methodological overview regarding cognitive diversity, its hegemonical narrative can be pathologizing, thus, discriminatory to those who do not fit into the imposed normality. At the same time, the diagnostic tools provided by this traditional system "can also act as an explanation about the experience of difference, a rallying point for political action, a tool to unlock resources and services, and a first step in moving toward entering a community" (Russell, 2020, p. 140). In resonance with Steven Kapp and Ari Ne'eman (2020), we could transition towards a non-pathological view about cognitive diversities such as autism together with the participation of experts by experience.

The social responsibility towards the creation of more ethical, interdisciplinary, and integrative approaches is crucial for these current times. Abandoning universalizing and reductionist perspectives aligns with emancipatory movements for the diversity of experiences and subjectivities for the dialogue between cultures, entailing an ethical and inclusionary impact on how we conceptualize, theorize, apply, and interpret the life and mind continuum.

For future perspectives, it is important to situate the knowledge that is created as researchers in cognitive sciences, by incorporating the experiences of autistic people from the global south, given that must of the experimental and theoretical body about ASD's comes from the global north, which impacts on the lack of social recognition of ASD as a current and important phenomenon. This last point is related to the erosion of the mental health care system in Latin America where most ASD diagnoses are delayed, pointing to more severe symptoms and comorbidities long-term (Zuckerman et al., 2014).

We shall continue researching on how the experiences of autistic people constituted in the global south as well as how their experiences are interwoven with the sociomateriality at their territories, adding an intersectional framework where we could analyze lived experiences in their complexity, being interrelated with social and environmental configurations that could constraint or create more possibilities for action in diverse women and men during their developmental trajectories.

References

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders *(5th ed.)*. https://doi.org/10.1176/appi.books.9780890425596

Anderson, L. K. (2022). Autistic experiences of applied behavior analysis. *Autism*, https://doi.org/10.1177/13623613221118216

Anderson, A., & Carr, M. (2021). Applied behaviour analysis for autism: Evidence, issues, and implementation barriers. *Current Developmental Disorders Reports*, 1-10.

Autistic Self-Advocacy Network (2021, November 24). *Identity First-Language*. Autistic Advocacy. https://autisticadvocacy.org/about-asan/identity-first-language/

Bakan, M. B. (2014). The musicality of stimming: Promoting neurodiversity in the ethnomusicology of autism. *MUSICultures*, *41*(2).

Bargiela, S., Steward, R., & Mandy, W. (2016). The Experiences of Late-diagnosed Women with Autism Spectrum Conditions: An Investigation of the Female Autism Phenotype. *Journal of Autism and Developmental Disorders*, *46*(10), 3281–3294. https://doi.org/10.1007/S10803-016-2872-8

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Baron-Cohen, S. (2004). Autism: research into causes and intervention. *Pediatric Rehabilitation*, *7*(2), 73–78. https://doi.org/10.1080/13638490310001654790

Baron-Cohen, S. (2009). Autism: the empathizing-systemizing (ES) theory. *Annals of the New York Academy of Sciences*, *1156*(1), 68-80.

Bê, A. (2019). Feminism and disability: A cartography of multiplicity. In *Routledge handbook of disability studies* (pp. 421-435). Routledge.

Bhat, A. N., Landa, R. J., & Galloway, J. C. (2011). Current perspectives on motor functioning in infants, children, and adults with autism spectrum disorders. *Physical therapy*, *91*(7), 1116-1129.

Bhat, A. N., Galloway, J. C., & Landa, R. (2012). Relation between early motor delay and later communication delay in infants at risk for autism. *Infant Behavior and Development*, *35*(4), 838-846.

Bölte, S., Girdler, S., & Marschik, P. B. (2019). The contribution of environmental exposure to the etiology of autism spectrum disorder. *Cellular and Molecular Life Sciences, 76*(7), 1275-1297. https://doi.org/10.1007/s00018-018-2988-4

Blázquez Graf, N. (2011). *El retorno de las brujas. Incorporación, aportaciones y críticas de las mujeres a la ciencia*. Centro de Investigaciones Interdisciplinarias en Ciencias y Humanidades, UNAM.

Breilh, J. (2003). *Epidemiología Crítica: Ciencia e Interculturalidad*. Editorial Lugar.

Brown, L. X. Z. (2011, August 4). *The Significance of Semantics: Person-First Language: Why It Matters*. Autistic Hoya. https://cutt.ly/m1F6nVh

Caldwell, P. (2013). Intensive Interaction: Using Body Language to Communicate. *Journal on Developmental Disabilities, 19*(1).

Cermak, S. A., Curtin, C., & Bandini, L. G. (2010). Food Selectivity and Sensory Sensitivity in Children with Autism Spectrum Disorders. *Journal of the American Dietetic Association, 110*(2), 238–246. https://doi.org/10.1016/J.JADA.2009.10.032

Chemero, A. (2009). *Radical Embodied Cognitive Science*. MIT press.

Conn, C. (2015). 'Sensory highs', 'vivid rememberings' and 'interactive stimming': children's play cultures and experiences of friendship in autistic autobiographies. *Disability & Society*, *30*(8), 1192-1206. https://doi.org/10.1080/09687599.2015.1081094

De Jaegher, H. (2013). Embodiment and sense-making in autism. *Frontiers in Integrative Neuroscience.* https://doi.org/10.3389/fnint.2013.00015

De Jaegher, H., & Di Paolo, E. (2007). Participatory sense-making. *Phenomenology and the cognitive sciences, 6*(4), 485-507.

De Jaegher, H. (2020). Seeing and inviting participation in autistic interactions. *Transcultural Psychiatry.* https://doi.org/10.1177/13634615211009627

Delafield-Butt, J. T., Zeedyk, M. S., Harder, S., Væver, M. S., & Caldwell, P. (2020). Making meaning together: embodied narratives in a case of severe autism. *Psychopathology*, *53*(2), 60-73.

Delafield-Butt, J., Dunbar, P., & Trevarthen, C. (2021). Disruption to embodiment in autism, and its repair. In *Emerging Programs for Autism Spectrum Disorder* (pp. 69-96). Academic Press.

Di Paolo, E. A., Cuffari, E. C., & De Jaegher, H. (2019). Autistic Linguistic Bodies. In *Linguistic Bodies*. https://doi.org/10.7551/mitpress/11244.003.0014

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Di Paolo, E. A., Cuffari, E. C., & De Jaegher, H. (2019). Linguistic Bodies. In *Linguistic Bodies*. https://doi.org/10.7551/mitpress/11244.001.0001

Di Paolo, E., Buhrmann, T., & Barandiaran, X. (2017). *Sensorimotor life: An enactive proposal*. Oxford University Press.

Dionne, M., & Martini, R. (2011). Floor time play with a child with autism: A single-subject study. *Canadian Journal of Occupational Therapy, 78*(3), 196-203.

Donnellan, A. M., Hill, D. A., & Leary, M. R. (2013). Rethinking autism: implications of sensory and movement differences for understanding and support. *Frontiers in integrative neuroscience*, 6, 124.

Draper, S. (2018). Tejer cuidados a micro y macro escala entre lo público y lo común. In C. Vega, R. Martínez-Buján, & M. Paredes. *Cuidado, comunidad y común: Experiencias cooperativas en el sostenimiento de la vida.* Traficantes de sueños.

Esposito, G., & Pasca, S. (2013). Motor abnormalities as a putative endophenotype for Autism Spectrum Disorders. *Frontiers in integrative neuroscience*, 7, 43.

Fine, C. (2010). *Delusions of gender: How our minds, society, and neurosexism create difference.* WW Norton & Company.

Fitzpatrick, P., Romero, V., Amaral, J. L., Duncan, A., Barnard, H., Richardson, M. J., &

Schmidt, R. C. (2017). Social motor synchronization: insights for understanding social behavior in autism. *Journal of Autism and Developmental Disorders, 47*(7), 2092-2107.

Frith, C., & Frith, U. (2005). Theory of mind. *Current biology*, *15*(17), R644-R645.

Fuchs, T. (2017). *Ecology of the brain. The phenomenology and Biology of the Embodied Mind*. Oxford University Press.

Gallagher, S., & Ransom, T. G. (2016). Artifacting minds: Material engagement theory

and joint action. *Embodiment in evolution and culture*, 337-351.

Gibson, E. J. (1988). Exploratory Behavior in the Development of Perceiving, Acting, and the Acquiring of Knowledge. *Annual Review of Psychology, 39*(1), 1–42. https://doi.org/10.1146/annurev.ps.39.020188.000245

Glazebrook, C. M., Elliott, D., & Lyons, J. (2006). A kinematic analysis of how young adults with and without autism plan and control goal-directed movements. *Motor control, 10*(3), 244-264.

Gomot, M., Giard, M. H., Adrien, J. L., Barthelemy, C., & Bruneau, N. (2002). Hypersensitivity to acoustic change in children with autism: Electrophysiological evidence of left frontal cortex dysfunctioning. *Psychophysiology*, *39*(5), 577–584. https://doi.org/10.1111/1469-8986.3950577

González-Grandón, X., Rebolledo, C. C., & Domínguez, H. P. (2021). El juego en la educación: una vía para el desarrollo del bienestar socioemocional en contextos de violencia. *Revista Latinoamericana de Estudios Educativos*, *51*(2), 233-270.

Good, J. M. (2007). The affordances for social psychology of the ecological approach to social knowing. *Theory & Psychology*, *17*(2), 265-295. https://doi.org/10.1177/0959354307075046

Gong, Y., Du, Y., Li, H., Zhang, X., An, Y., & Wu, B. L. (2015). Parenting stress and affective symptoms in parents of autistic children. *Science China Life Sciences*, *58*(10), 1036-1043.

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Grandin, T. (1992). An inside view of autism. In *High-functioning individuals with autism* (pp. 105-126). Springer, Boston, MA.

Hannant, P., Cassidy, S., Tavassoli, T., & Mann, F. (2016). Sensorimotor difficulties are associated with the severity of autism spectrum conditions. *Frontiers in integrative neuroscience*, 10, 28. https://doi.org/10.3389/fnint.2016.00028

Happé, F. (2005). The weak central coherence account of autism. *Handbook of autism and pervasive developmental disorders,* 1, 640-649.

Happé, F., Ronald, A., & Plomin, R. (2006). Time to give up on a single explanation for autism. *Nature Neuroscience*, *9*(10), 1218–1220. https://doi.org/10.1038/NN1770

Happé, F., & Ronald, A. (2008). The 'fractionable autism triad': a review of evidence from behavioural, genetic, cognitive, and neural research. *Neuropsychology review*, *18*(4), 287-304.

Haraway, D. (2002). The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies, 14*(3), 575-599. https://doi.org/10.2307/3178066

Haraway, D. (1985). *A Manifesto for Cyborgs: Science, Technology and Socialist Feminism*. Routledge.

Harding, S. (1996). *Ciencia y feminismo*. Ediciones Morata.

Harding, S. (2016). Latin American decolonial social studies of scientific knowledge: Alliances and tensions. *Science, Technology, & Human Values, 41*(6), 1063-1087.

Heft, H. (2018). Places: widening the scope of an ecological approach to perception-action with an emphasis on child development. *Ecological Psychology*, *30*(1), 99-123. https://doi.org/10.1080/10407413.2018.1410045

Hellendoorn, A. (2014). Understanding social engagement in autism: being different in perceiving and sharing affordances. *Frontiers in Psychology*, 5, 850. https://doi.org/10.3389/fpsyg.2014.00850

Hermans, C. (2019). Let's Dance: Participatory Sense-Making in an Eight-Year-Old Boy with Autism. *Journal of Dance Education*, *19*(1), 23-33.

Hilton, C. L., Zhang, Y., Whilte, M. R., Klohr, C. L., & Constantino, J. (2012). Motor impairment in sibling pairs concordant and discordant for autism spectrum disorders. *Autism, 16*(4), 430-441.

Hipolito, I., Hutto, D. D., & Chown, N. (2020). Understanding autistic individuals: Cognitive diversity not theoretical deficit. In *Neurodiversity Studies* (pp. 193-209). Routledge.

Honey, E., Rodgers, J., & McConachie, H. (2012). Measurement of restricted and repetitive behaviour in children with autism spectrum disorder: Selecting a questionnaire or interview. *Research in Autism Spectrum Disorders, 6*(2), 757–776. https://doi.org/10.1016/J.RASD.2011.10.011

Hurlbutt, K., & Chalmers, L. (2002). Adults With Autism Speak Out: Perceptions of Their Life Experiences. *Focus on Autism and Other Developmental Disabilities*, *17*(2), 103–111. https://doi.org/10.1177/10883576020170020501

Hurley, S. (2008). The shared circuits model: how control, mirroring and simulation can enable imitation and mindreading. *Behavioral and Brain Sciences,* 31, 1–58.

Jaswal, V. K., & Akhtar, N. (2019). Being versus appearing socially uninterested: Challenging assumptions about social motivation in autism. *Behavioral and Brain Sciences*, 42.

Kapp, S. K., & Ne'eman, A. (2020). Lobbying autism's diagnostic revision in the DSM-5. In *Autistic community and the neurodiversity movement* (pp. 167-194). Palgrave Macmillan.

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

Kapp, S. K., Steward, R., Crane, L., Elliott, D., Elphick, C., Pellicano, E., & Russell, G. (2019). 'People should be allowed to do what they like': Autistic adults' views and experiences of stimming. *Autism, 23*(7), 1782-1792. https://doi.org/10.1177/1362361319829628

Kapp, S. K. (2013). Empathizing with sensory and movement differences: Moving toward sensitive understanding of autism. *Frontiers in integrative neuroscience*, 7, 38.

Kõlves, K., Fitzgerald, C., Nordentoft, M., Wood, S. J., & Erlangsen, A. (2021). Assessment of suicidal behaviors among individuals with autism spectrum disorder in Denmark. *JAMA Network Open, 4*(1), e2033565-e2033565.

Kaur, M., Srinivasan, S. M., & Bhat, A. N. (2018). Comparing motor performance, praxis, coordination, and interpersonal synchrony between children with and without Autism Spectrum Disorder (ASD). *Research in developmental disabilities*, 72, 79-95.

Lawson, W. (2006). *ASPoetry: Illustrated Poems from an Aspie Life.* Jessica Kingsley Publishers.

Marsh, K. L., Isenhower, R. W., Richardson, M. J., Helt, M., Verbalis, A. D., Schmidt, R. C., & Fein, D. (2013). *Autism and social disconnection in interpersonal rocking*. Frontiers in Integrative Neuroscience, (JAN). https://doi.org/10.3389/FNINT.2013.00004/FULL

McCleery, J. P., Elliott, N. A., Sampanis, D. S., and Stefanidou, C. A. (2013). Motor development and motor resonance difficulties in autism: relevance to early intervention for language and communication skills. *Frontiers in integrative neuroscience, 7*, 30.

Mojica, L., Gastelum Vargas, M. (2021). The affective and normative intentionality of skilled performance: a radical embodied approach. *Synthese.* https://doi.org/10.1007/s11229-021-03159-8

Muehlmann, A. M., Bliznyuk, N., Duerr, I., & Lewis, M. H. (2014). Repetitive motor behavior: Further characterization of development and temporal dynamics. *Developmental Psychobiology, 57*(2), 201–211. https://doi.org/10.1002/dev.21279

Navarro, M. L., & Gutiérrez, R. (2018). Claves para pensar la interdependencia desde la ecología y los feminismos. *Bajo El Volcán. Revista del Posgrado de Sociología. Buap, 1*(28).

Nind, M., & Powell, S. (2000). Intensive interaction and autism: some theoretical concerns. *Children & Society, 14*(2), 98–109. https://doi.org/10.1111/J.1099-0860.2000.TB00158.X

Obeid, R., & Daou, N. (2015). The effects of coping style, social support, and behavioral problems on the well-being of mothers of children with autism spectrum disorders in Lebanon. *Research in Autism Spectrum Disorders*, 10, 59-70.

Ordorika Sacristán, T., & Gómez-Aguilar, I. E. (2021). Personas expertas por experiencia. Entrevista con Víctor Lizama, miembro de SinColectivo. *Interdisciplina, 9*(23), 109-124.

Pavalko, E. K., & Wolfe, J. D. (2016). Do women still care? Cohort changes in US women's care for the ill or disabled. *Social Forces*, *94*(3), 1359-1384.

Pearson, A., & Rose, K. (2021). A conceptual analysis of autistic masking: Understanding the narrative of stigma and the illusion of choice. *Autism in Adulthood*, *3*(1), 52-60. https://doi.org/10.1089/aut.2020.0043

Pellicano, E., Smith, A. D., Cristino, F., Hood, B. M., Briscoe, J., & Gilchrist, I. D. (2011). Children with autism are neither systematic nor optimal foragers. *Proceedings of the National Academy of Sciences*, *108*(1), 421-426.

RESISTANCES *Journal of the Philosophy of History*
Revista de Filosofía de la Historia
Revista de Filosofia da História

Picardi, A., Gigantesco, A., Tarolla, E., Stoppioni, V., Cerbo, R., Cremonte, M., & Nardocci, F. (2018). Parental burden and its correlates in families of children with autism spectrum disorder: a multicentre study with two comparison groups. *Clinical practice and epidemiology in mental health: CP & EMH*, 14, 143.

Plemeniti Tololeski, B., Suhodolčan Grabner, A., & Kumperscak, H. G. (2021). Adolescents with autism spectrum disorder and anorexia nervosa comorbidity: common features and treatment possibilities with cognitive remediation therapy and oxytocin. *Frontiers in Psychiatry,* 12, 686030.

Posar, A., & Visconti, P. (2017). Tribute to Grunya Efimovna Sukhareva, the woman who first described infantile autism. *Journal of Pediatric Neurosciences, 12*(3), 300–301. https://doi.org/10.4103/JPN.JPN_46_17

Rajendran, G., & Mitchell, P. (2007). Cognitive theories of autism. *Developmental review*, *27*(2), 224-260.

Rippon, G. (2019). *The Gendered Brain: The new neuroscience that shatters the myth of the female brain*. Random House.

Robledo, J., Donnellan, A. M. P., & Strandt-Conroy, K. (2012). An exploration of sensory and movement differences from the perspective of individuals with autism. *Frontiers in Integrative Neuroscience,* 0(NOV), 107. https://doi.org/10.3389/FNINT.2012.00107

Roy, D. (2016). Neuroscience and feminist theory: A new directions essay. *Signs: Journal of Women in Culture and Society*, 41(3), 531-552.

Rose, K. (2017). How to hide your Autism. *The Autistic Advocate*. https://theautisticadvocate.com/2017/11/how-to-hide-your-autism/

Russell, G. (2020). Critiques of the neurodiversity movement. *Autistic community and the neurodiversity movement,* 287.

Sacks, O. (2015). *Un antropólogo en Marte: siete relatos paradójicos*. Anagrama.

Sadatsafavi, H., Vanable, L., DeGuzman, P., & Sochor, M. (2022). Sensory-Friendly Emergency Department Visit for Patients with Autism Spectrum Disorder—A Scoping Review. *Review Journal of Autism and Developmental Disorders,* 1-15.

Safe, A., Joosten, A., & Molineux, M. (2012). The experiences of mothers of children with autism: Managing multiple roles. *Journal of Intellectual and Developmental Disability, 37*(4), 294-302.

Schaefer, G. B., & Mendelsohn, N. J. (2008). Clinical genetics evaluation in identifying the etiology of autism spectrum disorders. *Genetics in Medicine, 10*(4), 301-305. https://doi.org/10.1097/gim.0b013e31816b5cc9

Schiebinger, L. (2014). Scientific research must take gender into account. *Nature, 507*(7490), 9-9.

Shiva, V. (2016). *Staying alive: Women, ecology, and development*. North Atlantic Books.

Smith, D. E. (1974). Women's perspective as a radical critique of sociology. *Sociological inquiry*, *44*(1), 7-13.

Smith, L. B., & Thelen, E. (2003). Development as a dynamic system. T*rends in cognitive sciences, 7*(8), 343-348.

Smith, L. B. (2005). Cognition as a dynamic system: Principles from embodiment. *Developmental Review, 25*(3-4), 278-298.

RESISTANCES Journal of the Philosophy of History
Revista de Filosofía de la Historia
Revista de Filosofia da História

St Clair, C., Danon-Boileau, L., & Trevarthen, C. (2018). Signs of autism in infancy: Sensitivity for rhythms of expression in communication. In *Signs of Autism in Infants* (pp. 21-45). Routledge.

Taylor, M. J., Rosenqvist, M. A., Larsson, H., Gillberg, C. D'Onofrio, B. M., Lichtenstein, P., and Lundström, S. (2020). Etiology of Autism Spectrum Disorders and Autistic Traits Over Time. *JAMA Psychiatry*, *77*(9), 936–943. https://doi.org/10.1001/JAMAPSYCHIATRY.2020.0680

Thelen, E., Schöner, G., Scheier, C., & Smith, L. B. (2001). The dynamics of embodiment: A field theory of infant perseverative reaching. *Behavioral and brain sciences, 24*(1), 1-34.

Thelen, E. (2000). Grounded in the world: Developmental origins of the embodied mind. *Infancy*, *1*(1), 3-28.

Tierney, S., Burns, J., & Kilbey, E. (2016). Looking behind the mask: Social coping strategies of girls on the autistic spectrum. *Research in Autism Spectrum Disorders*, 23, 73-83.. https://doi.org/10.1016/j.rasd.2015.11.013

Torres, E. B., & Donnellan, A. M. (2015). Editorial for research topic "Autism: the movement perspective". *Frontiers in integrative neuroscience*, 9, 12.

Van Es, T., & Bervoets, J. (2022). Autism as gradual sensorimotor difference: From enactivism to ethical inclusion. *Topoi, 41*(2), 395-407.

Von Hofsten, C., & Rosander, K. (2012). Perception-action in children with ASD. *Frontiers in integrative neuroscience*, 6, 115. https://doi.org/10.3389/fnint.2012.00115

Walsh, C. (2009). Interculturalidad crítica y pedagogía de-colonial: apuestas (des) de el in-surgir, re-existir y re-vivir. *UMSA Revista (entre palabras), 3*(30), 1-29.

Whyatt, C., & Craig, C. (2013). Sensory-motor problems in Autism. *Frontiers in integrative neuroscience*, 7, 51. https://doi.org/10.3389/fnint.2013.00051

Wendell, S. (1989). Toward a feminist theory of disability. *Hypatia*, *4*(2), 104-124.

Wendell, S. (2001). Unhealthy Disabled: Treating Chronic Illnesses as Disabilities. *Hypatia, 16*(4), 17–33.

Wood-Downie, H., Wong, B., Kovshoff, H., Mandy, W., Hull, L., & Hadwin, J. A. (2021). Sex/gender differences in camouflaging in children and adolescents with autism. *Journal of Autism and Developmental Disorders, 51*(4), 1353-1364.

Young, I. M. (2002). Lived body vs gender: Reflections on social structure and subjectivity. *Ratio*, *15*(4), 410-428.

Young, I. M. (1980). Throwing like a girl: A phenomenology of feminine body comportment motility and spatiality. *Human studies*, *3*(1), 137-156.

Zuckerman, K. E., Sinche, B., Mejia, A., Cobian, M., Becker, T., & Nicolaidis, C. (2014). Latino parents' perspectives on barriers to autism diagnosis. *Academic pediatrics*, *14*(3), 301-308.

_____

AUTORS

Itzel Cadena Alvear. Bachelor's in psychology with Honors from the National Autonomous University of Mexico. Current member from the research group 4E Cognition from the Institute of Philosophy, UNAM and the Center of Interdisciplinary Research in Sciences and Humanities, UNAM. Member from the research network Red CITEG for Science, Technology and Gender. Her current research lines are around: Neurodevelopmental divergence, autism, cognitive diversity, women experiences, and the incorporation of women in science and technology.

Melina Gastelum Vargas. PhD in Philosophy of science, especialty in philosophy of cognitive science, Master in Philosophy of Science and Bachelor un Physics. Currently working as full time professor in the Universidad Nacional Autónoma de México. Lines of research: science ant technology as practices, diversities, interculturality, embodied cognition and artifacts and technology.