Topoi (2022) 41:257–274
https://doi.org/10.1007/s11245-022-09795-0

Making us Autonomous: The Enactive Normativity of Morality

Cassandra Pescador Canales[1] · **Laura Mojica**[2,3]

Accepted: 21 January 2022 / Published online: 13 February 2022
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Abstract

Any complete account of morality should be able to account for its characteristic normativity; we show that enactivism is able to do so while doing justice to the situated and interactive nature of morality. Moral normativity primarily arises in interpersonal interaction and is characterized by agents' possibility of irrevocably changing each other's autonomies, that is, the possibility of harming or expanding each other's autonomy. We defend that moral normativity, as opposed to social and other forms of normativity, regulates and, in some cases, constitutes this very possibility. Agents are thus morally responsible for caring about their own and others' autonomies in interaction. In our conception, moral normativity is embodied, situated, and deeply affective, and is constituted in social practices and maintained in interaction. We identify at least two necessary conditions for moral normativity to arise as a social practice. The first is our embodied constitution as living beings who are precarious and therefore vulnerable and in need of interaction with others and with the environment. The second is our sociolinguistic nature, which allows us to exponentially expand our possibilities for action and normatively distinguish among them. We finish by drawing a distinction between moral character and the moral content of interactions, which allows us to universally recognize the ethical dimensions of all human interaction while doing justice to the situated character of morals.

Keywords Moral normativity · Ethics · Cognition · Autonomy · Heteronomy · Phenomenology

1 Introduction

In recent years, research has been growing on ethics[1] and moral cognition from an embodied and enactive perspective. Affective, interactive, and phenomenological dimensions of ethics and morality have been given attention, and enactive accounts of each have been advanced (Colombetti and Torrance 2009; Loaiza 2019; Urban 2015). Even so, the way in which the normativity specific to ethics might be understood under the enactive approach has not yet been explicitly delineated. This matter is particularly pressing because any complete account of ethics and moral cognition should be able to account for their characteristic normative nature, as opposed to other normative human behaviors, such as following social conventions or satisfying individual biological needs. This situation feeds the internal and external criticisms of embodied approaches that point to the lack of specificity of the enactive account of normativity. This paper attempts to show how the normativity specific to morality might be understood using an enactive approach.

We argue that moral normativity fundamentally arises from our vulnerability in interaction, that is, given our precarious and embodied nature, we are intrinsically vulnerable to change, to being changed, and to die. This constitutive vulnerability implies that the possibility of being irrevocably changed is always present in the interaction between human agents, as well as in the design of our objects and infrastructures and our engagement with them. There is an intrinsically moral dimension in these interactions and

✉ Cassandra Pescador Canales
cascanales@gmail.com

Laura Mojica
laura.mojica460@gmail.com

1 Posgrado en Filosofía de la Ciencia, Universidad Nacional Autónoma de México (UNAM), CDMX 04510, México

2 División Ciencias Sociales y Humanidades, Universidad Autónoma Metropolitana, Cuajimalpa (UAM-C), CDMX 05300, México

3 Embodied Cognitive Science Unit, Okinawa Institute of Science and Technology (OIST), Okinawa, Japan

[1] We understand ethics as a normative notion that guides the morally right course of action, which concerns promoting autonomous life and its prosperity, i.e., to take care of the autonomies of the agents. Under this definition, the terms "ethic" and "moral" are interchangeable in many instances, which is in line with the usage of these terms in the enactive literature on the topic.

engagements: agents are responsible for caring about their own and others' autonomies. This means that engagements and interactions should ensure possibilities for agents to affirm and develop their own identities.

How we care, that is, how we should ensure those possibilities, is constituted in social practices the existence of which goes beyond individual agents and particular interactions. Following Steiner and Stewart (2009) and the tradition of practice theory in sociology (Schatzki 1996), we conceive of these practices as shared patterns of sayings and doings in which the meaning of language and human action is constituted. Moral normativity is a family of social practices that constitutes the ethical dimension of all interactions and behaviors, and their moral character comes from the fact that it concerns the possibility of irrevocably changing the other's autonomy. Despite the different ways in which this caring is realized in different social practices, it is universally grounded in two ways: first, the vulnerable nature of human beings as living organisms and, second, the dependency of human autonomies on social bonds by which we mean that the possibilities of action of human beings are deeply tied to their interactions with others.

Autonomy is thus a crucial concept for our proposal for two reasons. First, it is a pre-condition for agent interactions from an enactive standpoint. Second, we postulate caring for the autonomies of the agents as a minimum normative exigency for social interactions to qualify as morally acceptable interactions. This allows us to properly discern a cross-cultural and objective moral imperative from those criteria that are relative and susceptible to cultural appropriation.

The structure of this paper is as follows. In the next section, we survey the available proposals for understanding ethics using an enactive approach. In particular, we discuss two accounts: Colombetti and Torrance's influential proposal to understand ethics as a phenomenon that emerges in interaction, and Métais and Villalobos's understanding of ethics as perceptual mandates that occur in interaction to change from selfishness to altruism. Discussing these proposals allows us, first, to argue that, although agent-agent interactions are indeed the object of moral normativity, human interactions are always shaped and situated in social practices. Second, this discussion allows us to clarify the basic requirements that an enactive account of ethics should fulfill.

In the third section, we offer our positive account of moral normativity. We defend that moral normativity, as opposed to social and other forms of normativity, is characterized by the fact that it regulates and, in some cases, constitutes the possibility of irrevocably changing the other's autonomy. Agents are thus morally responsible for caring about their own and others' autonomies in interaction. In our conception, moral normativity is embodied, situated, and deeply affective, and it is constituted in social practices and maintained in interaction. We identify at least two necessary conditions for moral normativity to arise as a social practice. The first is our embodied constitution as living beings who are precarious and therefore vulnerable and in need of interaction with others and with the environment. The second is our sociolinguistic nature, which allows us to exponentially expand our possibilities for action and normatively distinguish among them. We finish by drawing a distinction between the moral character and the moral content of interactions, which allows us to recognize the universal ethical dimensions of all human interaction while doing justice to the situated character of morals.

2 Embodied Ethics

2.1 Background

Although research on ethics using an enactive approach is relatively new, significant progress has been made in the last decade. The first enactive approach to ethics was Varela's *Ethical Know-how* (1999), according to which ethics arises as an embodied and situated coping with the world rather than as a detached judgment, be it deontological or consequentialist, of a situation. It took 10 years for the enactive approach to come back to this topic. In 2009, Colombetti and Torrance proposed a shift of focus from individual responsibility to the ethical nuances that emerge in concrete interactions, while in 2013, De Souza developed Varela's know-how and outlined a more detailed understanding of this practical ethical knowledge and its corresponding ethical world, as well as of the conditions in which they arise. More recently, various authors, such as Loaiza (2019), Urban (2014, 2015), and van Grunsven (2018), have highlighted the convergence between an ethics of care and the principles of enactivism, identifying at least three elements of convergence: for both approaches, agents are intrinsically vulnerable, they make sense of the world and of ethics by interacting with the world and with others, and their cognitive and ethical interactions with others and with the world are intrinsically affective. Finally, Métais and Villalobos (2021) have recently addressed the phenomenological dimension of the interactive approach to ethics proposed by Colombetti and Torrance, characterizing it by appealing to Levinas's account of moral duty as originating in the subjective experience of an ought in the presence of the other in interaction. In sum, there are at least two ways in which the enactive approach to ethics has been developed: one focuses on the interactive dimension of morality, and the other zooms out and explores its commonalities with an ethics of care as proposed by feminist approaches to ethics.

Regardless of their focus, these approaches are based on the enactive conception of agency and interaction. Agents are defined as precarious and autonomous systems. An autonomous system is a self-constituted network of processes that self-maintains through time, and its identity is precisely such a network. Agents are not only autonomous, but they also are precarious which means that these systems have to interact constantly with the environment to renew the processes that constitute their own identity and to counteract their intrinsic tendency toward decay. The simplest and most fundamental form that this can take is metabolism: a hungry organism is a system that requires matter and energy from the environment to transform them into processes and components to maintain its own body. Agents, moved by this need, make sense of their interactions in terms of what allows them to maintain their autonomous identity, in this case, their metabolic identity, and value their interactions and the possibilities that the environment offers in terms of what is good or bad for their metabolic values.

This conception of agency has led enactivism to defend a conception of "autonomy" that differs from the Kantian conception. In van Grunsven's words, "Autonomy is not what our Kantian tradition suggests, that is, it is not the ability to self-sufficiently legislate our own actions by taking up a detached rational standpoint that severs us from our habitual, pre-reflective ties to the world. Rather, living agents maintain their autonomy precisely in virtue of a constitutive dependency on their environment. As such, autonomy must be reconceived relationally" (2018, p. 133).

From this conception of autonomy, two consequences are usually drawn, first, the notion of the environment arises as a value-laden world of affordances, and second, it makes autonomy constitutively interactive and makes interactions normative. In van Grunsven's words: "The autonomy of a living being is thus relationally achieved and inextricably tied to precarious dependency on, and exposure and perceptual responsiveness to environmental affordances." (2018, p. 135). Accordingly, constitutive dependence arises from the precariousness of the organism, which highlights the intrinsically relational aspect of agent-environment interactions. First, due to the precarious and embodied nature of agents, they depend on their responsiveness to the relevant affordances of the environment to successfully achieve their self-constitution. Second, autonomy is individual in so far it seeks to maintain the agent's identity, but it can only be realized by agents through interaction. From the precariousness, and the self-individuating and self-maintaining nature living systems, a basic norm of interaction is established for the organism that allows it to maintain its identity. Such normativity is intrinsic to the organism because it emerges from its autonomy, from its own internal organization, and not from external parameters. This means that an autonomous and adaptive system evaluates its environment based on the normativity that arises from its own self-production in terms of a dual valence (or neutral): attraction or repulsion, approach or escape (Weber and Varela 2002), but it can only be realized through interaction with the world. This is a biological sort of normativity, which is individual or self-directed and arises from the metabolic needs of the system itself. This normative interaction with the environment monitored and regulated by the agent with respect to its own need of self-maintenance is known in the enactive literature as sense-making.

Our human identities are metabolic in so far as we are living bodies, but our bodily and social constitution makes up our identities and, therefore, our values extend way beyond mere metabolic maintenance. The identity of a human agent comprises various layers of "micro-identities," as Varela (1991) has called them, which are constituted by the patterns of activities and interaction of the agent in different sociocultural contexts and that constitute together the identity of an agent. For example, a person enacts different patterns of activity and interaction as a lawyer, as a mother, as a hiker, etc., and these make up who she is. Micro-identities must be frequently enacted to be maintained, meaning that the pattern of activities and interactions that constitute a micro-identity must be maintained over time by their repetition (Di Paolo et al. 2017, Chap. 6).

It is worth noting that patterns do not strictly determine the future activities and interactions that the agent must perform to maintain their identity. Rather, the direction that patterns take in the future and their very continuation depends on the possibility of action and interaction that the agent selects among many others in the here and now, and in that sense, patterns and therefore agents' identities are intrinsically open-ended. Note, moreover, that the need for interaction with others and with the environment to preserve one's identity renders agents vulnerable: their autonomy can be compromised by how their interactions with others and with the world unfold by closing opportunities for agents to further maintain their own identities. This vulnerability is one of the key convergences of enactivism and an ethics of care and will prove to be crucial for any enactive account of ethics.

There seems to be a tension in the conception of individual autonomy and its relational aspect in the enactive account. On the one hand, the constitution of the multiple human identities is primarily linked to the intentional actions of others. Based on Thompson (2007), van Grunsven (2018) explains that human autonomy is socially dependent as follows: "Enactivists approach the emergence of human autonomous selfhood by foregrounding that "in our human case," our interactive "perceptual and motor attunement to the world … is primarily to an environment of … *the intentional actions of others*" (Thompson 2007, p. 80, cited in van Grunsven 2018, p. 137). Hence, in our human case,

such constitutive dependence is with a social environment made up of the intentional actions of others. In other words, "[…] human agents first and foremost enact, sustain, and scaffold their precarious autonomous lives via a perceptual and motor attunement to the intentional actions of others […]" (van Grunsven 2018, p. 137). On the other hand, as we explained above, the enactive approach grounds the emergence of values and normativity in the maintenance of the individual. In short, there is a tension between the individual-centered definition of autonomy and normativity that enactivism offers, and the centrality of interaction and life with others that it grants to human autonomy. This tension has been partially recognized by enactivist, for example, by Gallagher for whom it is readily resolved as a negotiation: "[…] there is always a balanced and partial trade-off between the autonomy of the individual embodied participant and the autonomy of the process that emerges in social interaction. For the dynamical coupling of bodily individuals in social interactions to persist, both forms of autonomy are required" (Gallagher 2018, p. 37). However, the question of how exactly autonomous agents under the enactive approach can transition from an individual to a social normativity remains open.

As suggested by the conception of agency we sketched above, interaction is the central unit of analysis according to the enactive account of cognition. Interaction with the environment is meaningful to agents in terms of the possibilities allowed them by objects and environmental features. However, interactions with others do not depend entirely on the will and abilities of one agent but depend on the interplay between two or more agents. The concept of 'participatory sense-making' has been proposed in the enactive literature to capture the particularity of agent-agent interactions (De Jaegher and Di Paolo 2007). The idea is that the interaction between agents acquires its own autonomy and opens up a world of possibilities or hinders other possibilities that would be otherwise for an individual agent alone. The example often used to illustrate participatory sense-making is the uncomfortable encounter of two persons walking in opposite directions in a corridor who keep on blocking their own and the other's way despite their efforts to avoid each other. This involuntary synchronization takes a life on its own and makes it hard for the individuals to escape the synchronization of their movements that is contrary to their individual intentions; Colombetti and Torrance (2009) have called this *interaction-autonomy*, which enables and restricts the individual actions of the participants. More complex examples can be cited here: long-lasting relationships in which violent dynamics continuously dominate the interactions despite the agents' individual intentions, fruitful dialogues with colleagues that allow them to create ideas that would have been unimaginable to each individual alone, etc.

Focusing on the interaction between agents conceived in this way allows Colombetti and Torrance (2009) to argue, first, that all interactions have an intrinsic affective element, namely, the connectedness between participants and, second, that this affective element implies that all social interactions are not, in essence, morally neutral but always have ethical nuances or colors. In addition, they defend the idea that the ethical character of a given situation emerges from the interaction itself. This idea is supported by the enactive notion of meaning generation and the normativity that guides it, which is not abstractly determined but emerges from the concrete needs of agents and the opportunities of action that a particular situation offers to them. The shift from the individual to the interaction, according to them, implies that a more considerate and less superficial ethical normative assessment evaluates the interaction between agents rather than focusing on individual responsibilities (2009, p. 522).

Colombetti and Torrance's proposal is a first approach to ethics from the point of view of enactivism and consequently leaves open various questions, such as how we should understand the first-person experience of the ethical dimensions of interaction and how we should characterize the ethical normative pull that interactions with others have over individuals. Métais and Villalobos (2021) address precisely these concerns. Following Levinas, they defend the view that the perception of the other, in particular of their face, exerts a normative pull on us: the *I* loses its primacy for the other; that is, one is normatively pulled to sacrifice oneself for the other. This normative pull implies a switch from an "egotic" approach—i.e., engaging with the world for the sake of one's own enjoyment and consumption—to an altruistic engagement. The result of this switch, the altruistic engagement with others, is the gist of establishing an *ethical* relationship with others, and it has three important characteristics. First, it can only come about in the interaction with another human being, with another being of flesh and blood capable of enjoying the world. Second, it involves a change in the affective approach of the agent to the world, not a change of detached judgments: the agent is no longer driven by their own nourishment and enjoyment and now lives for the other. Third, the ethical switch is only possible for embodied creatures that can feel in their flesh both their own enjoyment and the ethical call in the perception of the other. One of the most dramatic expressions of this experienced normative pull is the felt command to not kill the other, but it is also expressed in less extreme situations, such as how we care for and respect others in daily life.

2.2 Limitations

However, these proposals have at least three serious limitations. First, following van Grunsven (2018), the emphasis on interaction proposed by Colombetti and Torrance (2009)

has the undesirable consequence of neglecting individual responsibility. While acknowledging the role that agents play in sustaining an interaction allows us to make better moral judgments, it is simply not true that a more considerate and less superficial ethical normative assessment evaluates the interaction between agents rather than focusing on individual responsibilities. Individual responsibility is essential to moral life as we know it (Strawson 1974), which is particularly clear in interactions in which one agent deliberately harms the other, as in rape or murder: an essential part of the moral assessment of the situation is the attribution of responsibility to the aggressor.

According to van Grunsven, there are two elements that are neglected if we accept Colombetti and Torrance's suggestion that adopting an enactive view warrants a shift away from the notion of individual responsibility. First, the phenomenological normative pull of the second person perspective in social interaction is left out of the moral assessment of the situation. In van Grunsven words: "To be engaged in genuine interaction is to see the other, at least during the interaction itself, as someone to whom I am in some sense obligated to respond, and thus to know myself as someone who can take responsibility" (van Grunsven 2018, p. 154). Second, the complete shift to interaction neglects the normative constraints to which individuals are subjected in their interactions with others. In that sense, van Grunsven claims that "our second-person engaged experience of the other is constitutive of what it means to be a morally responsible agent" (2018, p. 155). This implies that in our social interactions we can fail or succeed as individual agents to respond adequately to the morally relevant needs of the other.

This criticism comes from two observations: (1) acknowledging the notion of *participation* intrinsic to participatory sense-making as opposed to the generalized view of social cognition, in which subjects are mere observers, and (2) identifying that the experience of second-person engagements, such as participatory sense-making, gives rise to our orientation to be *participants* in the interactions we hold, which implies having responsibility for the other. The crucial concept to understand the dimension of responsibility is that of *participation*. Concerning the notion of participation proper to participatory sense-making, van Grunsven quotes Di Paolo et al. (2010):

> because an enactive approach places great importance on the autonomy of the individuals involved [in interaction], this approach to social cognition, while focusing on the interaction process, paradoxically also gives social agents an autonomy and role that has not been thematized before: that of participation in ontrast to mere observation (van Grunsven 2018, p. 148, footnote 17).

Giving interactors the role of *participants* and not mere observers implies significantly granting them degrees of autonomous agency, which is necessary for exercising capacities to respond adequately to the needs of the other. In a line inspired by the ethics of care, individual responsibility "amounts first and foremost to the exercise of capacities and activities through which we attempt to be appropriately responsive to the claims that the precarious lives of particular others make on us" (van Grunsven 2018, p. 143). Then, during the process of interaction between agents who intrinsically perform the role of *participants*, there is an emphatic moral significance: the responsibility to respond to and care for the other (which holds in our interpretation, of oneself as well). Accordingly, the experience of being a *participant* in second-person engagements is constitutive of what it means to be a morally responsible agent, i.e., being an involved *participant* in the interaction is being responsible for oneself and the other in the interaction. Hence, adopting an enactive standpoint does not wholly threaten the notion of individual responsibility (see van Grunsven 2018, pp. 154–155).

Second, Métais and Villalobos's (2021) proposal of the ethical normative pull in interaction as "the *I* losing their primacy for the other" potentially goes against the basic requirement of participatory sense-making, namely, that all participants preserve their autonomy throughout the interaction. Although it is ethically laudable to do things for others in certain circumstances, it seems misleading to assume that the principle that drives our ethical interactions is to sacrifice one's drive to self-nourishment and enjoyment for the other. As we argue in the next section, moral normativity and its phenomenological pull emerge in interaction, and genuine interactions require that all interactants retain their autonomy. This means that caring for one's autonomy has an essential role in the ethical dimension of human interactions. Thus, the focus on sacrificing oneself for the other has the risk of neglecting the role that each participant's autonomy has in genuine ethical interactions.

Third, in these accounts, as it should be the case for any account of ethics, it is crucial that interactions and individual behaviors are assessable according to ethical normativity. Colombetti and Torrance (2009) and Métais and Villalobos (2021) coincide in holding that such a normativity is embodied and situated in concrete interactions, rather than being tied to detached judgments made following abstract principles. According to the enactive approach, there are various layers of normativity at play in any given interaction and individual behavior. However, neither of these accounts has fully and explicitly explained how moral normativity can go beyond individual agents' experiences and their particular interactions; nor have they identified what differentiates moral normativity from other forms of normativity, such as the one dictated by social conventions. Such an account is crucial because it would explain the normative moral order

that makes up the context of the agents' interaction and that structures the rightness or wrongness of agents' behavior beyond their individual judgments. Such a normative order is crucial if we want to account for the possibility of errors in moral judgment and behavior. We will argue that this layer of normativity is instituted in social practices and is built upon the vulnerability proper to our embodied constitution. This layer of normativity makes possible and constrains both social interactions and human individual agency; in other words, this layer of normativity is heteronomous and complements the autonomy of individuals and of their interactions.

3 Making us Autonomous: The Normativity of Morality

The enactive approach defends a conception of normativity that is fundamentally embodied, situated, affective, and non-conceptual. In this section, we sketch a notion of moral normativity along these lines. We take as a starting point a very general notion of moral normativity as regulating and allowing us to determine the right course of action in interactions between agents. Following the interactive approach proposed by Colombetti and Torrance (2009), we maintain that moral normativity emerges in the interaction, but unlike them, we emphasize the crucial role that both individual autonomies and social heteronomies have in determining what is right and wrong in a given interaction. Crucially, we argue that moral normativity is different from other forms of social normativity in that it is concerned with caring about the autonomies of all the interactants; in other words, moral normativity arises whenever one agent has the possibility of irrevocably changing the other's autonomy in interaction. Thus, agents are morally responsible for caring about their own and others' autonomies in their interactions. The ethical dimension of interaction thusly characterized implies, first, that agents have a certain first-person approach to the other that allows them to interact ethically, and second, that there is a normative order beyond individual agents and their interactions that structures and determines the moral correctness of their interaction beyond their individual and shared impressions.

Given the principles we propose, we do not seek to give a unique, universal, and immovable content of moral normativity, but instead, we aim to highlight the iterative and situational aspect of it, which corresponds to different factors, such as the specific situation, the history of interactions between the agents (when it exists), and the context in which the interaction takes place. In this way, we do justice to the heterogeneous nature of morality. However, we argue that the distinctive aspect of moral normativity concerns the care for the autonomies of the participants in the interaction which is universal. Characterizing moral normativity in this way allows for a degree of analysis in which the possibilities of increasing, diminishing, or destroying the autonomies of the agents open up the realm of the moral.

In this section we defend our enactive conception of moral normativity. It is structured following the three levels of normativity we identify in the ethics of interaction. First, we focus on the interaction itself. Following Froese and Di Paolo (2011), this level of description allows us to see the necessary social conditions for an embodied, situated, affective, and non-conceptual moral normativity to emerge. Second, we zoom in and consider the experience of each individual in interaction with regard to moral normativity. Following Loidolt (2018), we characterize it as the experience of an ought in the face of the other, in which three categories intertwine: values, the I, and the other. Third, we zoom out and show that both individual agencies and the interaction between agents are shaped and normatively regulated by the social practices shared by the community they inhabit.

3.1 Socio-cognitive Interactions

Following the enactive approach, Froese and Di Paolo (2011) propose an explanation of social cognition that makes it possible to spell out the necessary conditions of social normativity: social cognition is explained as an interaction in which interactants are agents able (i) to create non-metabolic values and (ii) to perceive others as having their own point of view, intentions, and concerns, i.e., as autonomous agents. These two capacities allow agents to enact and participate in a socio-cognitive domain. Before defining socio-cognitive interactions, let us see in some detail what these two capacities mean.

(i) Values that govern social interactions are largely independent of the norms of physical realization and regeneration.[2] For example, the metabolic need for, say, water and vitamin D, of each agent is irrelevant to engaging in a social interaction such as dancing bachata or chatting about the impact of The Bauhaus in contemporary design. Although agents should be in a metabolic state sufficiently good to enter into

[2] To be sure, here we do not mean that different levels of normativity live in separate realms and are completely independent, rather we want to emphasize that a relative independence is preserved between them, that is, the normativity that guides social interaction is not constrained to the strict confines of the metabolic normativity (see Froese and Di Paolo 2011, p. 17). Importantly, enactivism recognizes multiple and partial decouplings between the distinct layers of normativity (namely, between biological normativity, sensorimotor normativity, and social normativity).

such interactions, their concrete metabolic needs are insufficient and irrelevant to successfully maintain the interaction. This is why agents have to have the capacity to make sense of their interactions based on values that are not metabolic to be able to interact with others.

Multicellular living organisms are indeed composed of systems that are partially decoupled from their metabolic needs, such as their immune or nervous system. If cognition is understood as agent-environment interactions that the agent regulates according to their own needs, values, and concerns, then the nervous system is crucial for understanding cognition. The reason is that the nervous system allows the organism to create feedback loops between perception and action such that what it perceives allows it both to act in certain ways and to perceive aspects of the environment that were inaccessible without its acting, which, in turn, allows it to further perceive and act. Patterns of perception and action allow agents not only to obtain what they require metabolically from the environment, such as food, but also to engage with the environment in ways not driven by their metabolic needs, such as play, exploration, and interaction with others.

The patterns of interaction that humans establish with their environment and with others are highly underdetermined at birth,[3] so they are mostly constituted in development by their interactions with primary care takers and other human beings. In development, agents slowly acquire a basic sensorimotor repertoire and learn to carry out a wide variety of activities that not only open up further possibilities of action for the individual but also become the pattern of activities that make up their form of life. These patterns give form to the life of the individual and constitute the socio-cultural identity of human agents: they comprise the particular actions—which crucially include the use of language—the demeanor, and the circumstances in which they occur, and they have to be enacted for the identity of the agent to be maintained. These interactions, in turn, belong to wider social practices that shape the form of life shared by the community to which the agent belongs. For example, the identity of an agent as a father depends on having children, talking to them, caring about them, interacting with them, providing the affective and material resources they need for their sustenance and development within their possibilities, etc.[4] The socio-cultural identity of agents defined as situated patterns of action is an autonomous system in the sense that its constituents produce the system as a whole and the system as a whole produces its own constituents through time; that is, the pattern of actions that make up an identity produces the very actions that allow this pattern to be maintained over time. In the example, the father's active caring about his children and providing for them generates commitments and responsibilities in the future that allow him to carry out the actions that constitute his identity as a responsible father.

(ii) Defining the socio-cultural identity of humans in this way opens up the possibility for individual agents to live by and be moved by values that are irrelevant for keeping themselves alive but that are crucial for their identities as members of a human community. In particular, they are moved to act by values that are defined by a community, such as etiquette; values that are directed toward maintaining certain interactions with others, such as attentiveness; and values that are directed toward the other in itself, such as considerateness.

Being able to interact with the world guided by social non-metabolic values opens up the possibility for agents to perceive others not in terms of how they could be useful for the agent's own purposes but in terms of the others' own existence. The exact details of how this switch in perception occurs in evolution and individual development are beyond the scope of this paper, but what matters here is that humans do learn to perceive and value others as having their own point of view, intentions, and concerns.

According to Froese and Di Paolo (2011), agents establish genuinely social interactions when, first, the autonomy of each participant is not destroyed in the interaction and, second, when they perceive each other as such, as a foreign locus of goal-directed behavior, i.e., as autonomous precarious agents with their own point of view, and not as a tool or as a mere element of the physical environment, which in classical moral jargon means not regarding the other in an instrumental manner. Although the first requirement is also a requirement of participatory sense-making as defined by De Jaegher and Di Paolo (2007), the second is not. So, for example, the interaction between a newborn infant and her

[3] This thought is in opposition to the nativist assumption about pre-wired and content-loaded minds.

[4] It is a debatable question whether or not a father (or parent) who does not have contact with their children for whichever reason can be considered a father; however, for our purposes, we are only interested in emphasizing the constitutive importance of enacting and performing the patterns of activities that scaffold the distinct and various identities of human agents.

mother (such as in cases of neonatal imitation) counts as participatory sense-making, but it would not be a full-blown socio-cognitive interaction because the infant is still unable to recognize her mother as an autonomous agent with her own point of view (see Froese and Di Paolo 2011, p. 21). There are nuances important for understanding the interaction between unborn humans and their mothers which have been discussed in detail by Martínez Quintero and De Jaegher (2020).

Moreover, agents that establish socio-cognitive interactions are guided by a social normativity, that is, a normativity that is directed to the other and to the interaction with them. Froese and Di Paolo capture all these requirements in an operational definition of socio-cognitive interaction as a sensorimotor coupling such that, in their own words:

1. A new autonomous organization emerges from the interaction process spanning at least two internal and a shared relational domain of dynamics, and
2. The cognitive agency of at least two of the individuals is not destroyed in the process (though their scope can be augmented or reduced), and
3. A cognitive agent's regulation of sensorimotor coupling is complemented by the coordinated regulation of at least one other cognitive agent.

Froese and Di Paolo (2011, p. 23).

We wish to highlight two aspects of socio-cognitive interactions. First, as implied by the second condition, for an interaction to be effectively social, it is necessary that the autonomy of each interactant not be destroyed in the process. This definition rightly allows us to characterize oppressive relations in which one agent manipulates the other and cuts their off from other social relations as social interactions despite the fact that these are morally wrong social interactions. Although oppressive relations decrease the autonomy of the oppressed agent, their autonomy required to establish socio-cognitive interactions with another agent is not completely destroyed: the oppressed agent might retain aspects of their autonomy that allows them to coordinate with the oppressor, such as their ability to move around by themself, to communicate using language, etc. Dramatically, if the oppressed agent dies, no social relation exists anymore, but as long as both agents are able to cognitively coordinate with each other, their interaction can be characterized as social, even at the expense of diminishing, but not completely destroying, the autonomy of one of the agents.[5]

Second, it should be noted that the normativity of socio-cognitive interaction focuses only on the momentary constitution of norms during the interaction. Therefore, social normativity is situational[6]: it arises from interaction and occurs moment by moment, enabling, and constraining the behaviors of the agents. Importantly, this normativity is co-regulated. As developed by Cuffari et al. (2018), these interactions are highly structured by the use of language. A simple example that illustrates this type of co-regulated normativity is the act of giving. "The act of giving has an essentially different goal structure from individual centered cognitive engagements. In essence, in order for the social action to be completed successfully, it requires acceptance from the other agent" (Froese and Di Paolo 2011, p. 22). In sum, social normativity emerges as a domain from interactions in which, first, agents should be capable of generating values in relation to others that allow them to perceive the other as an autonomous agent, i.e., as an other with their own view, and second, the autonomy of the agents should not be destroyed in the interaction. Ethical dimensions come into play when the possibilities of increasing, decreasing, or destroying the autonomies of the agents in an interaction are recognized because they imply a responsibility toward the other. Under this conception, we identify as the moral ought[7] in interaction the responsibility of, at least, not diminishing the other's and one's own possibilities of cultivating autonomy, and, at best, augmenting these possibilities through the interaction. Let us elaborate on the reasons and meaning of this claim.

Human individual identities are precarious and vulnerable, not only because humans are living organisms who require energy and matter from the environment to keep their existence, but also because human identities depend both on social interactions and on the ways of living that we learn from others and share socially, such as eating practices or our patterns and ways of working and resting. This means that the particular precariousness of human identities makes every

[5] In the very characterization of participatory sense-making, De Jaegher and Di Paolo (2007, p. 492) state: "If the autonomy of one of the interactors were destroyed, the process would reduce to the cognitive engagement of the remaining agent with his non-social world. The 'other' would simply become a tool, an object, or a problem for his individual cognition."

[6] In the words of van den Herik and Rietveld (2021, p. 3372), situated normativity is defined as "the ability of skilled individuals to distinguish better from worse, adequate from inadequate, appropriate from inappropriate, or correct from incorrect in the context of a particular situation. Situated normativity is not rooted in detached judgements, but consists in a situated appreciation expressed in normative behaviour. Skilled individuals are motivated by the situation by being drawn to those possibilities for action that contribute to improving grip." Importantly, situated normativity can be experienced as a bodily affective tension.

[7] We use the notion of "moral ought" in a pragmatic sense, i.e., one that corresponds to the ability for ethical know-how (Varela 1999). Therefore, the "is-ought" problem concerning metaethics does not arise: conceiving morals as the situated ability to interact with others with care and respect for their autonomies is evaluated in the situation according to the specific autonomies of the interactants and not with respect to a metaphysical/prescriptive ought.

human agent dependent on others to not harm them and to help maintain their identities. The moral dimension of human interactions emerges precisely in this reciprocal dependency: we are participants and therefore morally responsible in our interactions as far as we are able to contribute in a decisive manner to others' identities, and in virtue of our belonging to a human community, we potentially or actually have the socio-culturally crafted cognitive tools for foreseeing the impact of our actions on the other's autonomy.

Undoubtedly, some interactions leave our identity untouched; however, implicitly, various moral norms corresponding to the situation are respected for this to be the case, e.g., do not push, insult, or harm the other in any way. Likewise, not all agent-agent interactions are symmetric in the sense that one individual's autonomy might be more vulnerable than the other's. This can happen for three reasons. First, there are interactions in which the participants are not considered equally autonomous, or equally humans, e.g., cultures that limit the autonomy of agents through oppressive social environments such as the communities that promote slavery, who assume the lives of some are at the service of others; or also people who are victims of violence. Agents under these forms of oppression do not play an equal role as their oppressors in their own degradation.

Second, whether identities are changed in a given interaction is related to the degree of vulnerability of the agents involved. For example, consider people who suffer from crippling physical illnesses or mental illnesses such as quadriplegia or advanced dementia, and they are dependent on others for their flourishing. Clearly, these people show a greater degree of vulnerability to being changed by others in each social interaction they hold, and in this sense, it is more likely that the identity of the vulnerable is changed and less likely that the identity of the other agent changes. Third, other cases exemplify how depending on the history of interactions over time agents can develop different degrees of "petrification" of influence towards their autonomy and identity, that is, agents show greater or lesser openness to certain influences to change their autonomy. This can occur in different ways, both physical and idiosyncratic. For example, in an adverse situation that involves physical force to escape from an interaction (consider a fight), perhaps a high-performance athlete may have a greater chance to escape and thus maintain their autonomy intact compared to a person with a sedentary lifestyle. Then, there also seems to be a learning dimension that allows us to learn from previous interactions how to be autonomous in different aspects. Depending on what and how we learned to be autonomous, our future interactions may be closed or open to certain influences.

The pull to behave ethically, that is, to care for the autonomies of others is not a logical conclusion of a reasoning that individual agents deduce based on some axioms and premises. Rather, it has a pragmatic and affective justification, namely, to belong to our communities where belonging implies building and maintaining one's identity together with others. From an enactive perspective, it is part of human nature to belong to human communities; our ways of inhabiting the world and the ways we respond to others have roots in our membership of human communities. Therefore, our daily moral practices are deeply tied to the practices of our community, where the minimum normative condition is the care of one's own autonomy and that of others. What the proper care of autonomies pragmatically entails is determined by the socio-cultural practices of the specific community to which one belongs.

In the above, we have offered a definition of autonomy as the capacity of systems to maintain their identity by engaging with the possibilities that the environment offers them. A crucial implication of this definition is that the autonomy of agents requires them to be in an environment that allows them to exercise the skills that constitute their identity. Being autonomous thus means having possibilities for cultivating one's identity; augmenting or reducing one's autonomy means either augmenting or reducing one's skills or augmenting or reducing the material possibilities or access to them. This means that the agent's moral responsibility when interacting with others is to procure, maintain, or even augment the other's possibilities for cultivating their autonomy as well as its own possibilities for cultivating its own autonomy.

The normative link between our embodied, precarious, and vulnerable identity and the moral responsibility to maintain the autonomy of the other in social interactions has been partially sketched by van Grunsven (2015, 2018), who argues that second-person engagements, which always involve the experience of being a participant (such as the socio-cognitive interactions that we defend here), entail: (i) mutual responsiveness to the precarious autonomy of the other, and (ii) the responsibility to respond to it. In our interpretation, this involves degrees of moral responsibility between interactants to maintain the autonomy of the other. This normative link allows us to explain several possibilities and situations in which the attributions of moral responsibility to maintain one's own autonomy and that of others can vary.

The normative link depends on understanding two enactive principles: (i) living organisms as a source of meaning and value, and (ii) social interactions as second-person engagements that involve mutuality between agents to respond to the needs of the other.[8] Consequently, the enactive moral normativity that we propose relies heavily, not on detached abstract principles devoid of meaning for the agent,

[8] The social interactions defined this way, i.e. as second-person engagements always imply the dimension of participation and, therefore, the dimension of responsibility as well.

but on a source of universal value: life, i.e., care for life is prioritized as a moral foundation. In our view, the minimum condition of moral normativity is the care of one's own life and that of others; therefore, caring for one's autonomy and that of others is crucial. How we take care of autonomies depends on our socio-cultural practices, that is, the specific socio-cultural practices of our community dictate the various ways to realize the care of autonomies.

A few words about the source of normativity are in order to justify the move from explanatory reasons to moral reasons and consider the care of autonomy as a moral obligation. Why should we care for the autonomies of others? There are at least three reasons. First, we argue that the nature of morality in an enactive framework is grounded in two fundamental traits of the human being: (i) in their incessant and natural struggle to preserve life, and (ii) in their natural need to belong to the community, where belonging implies building and maintaining one's identity together with others. Second, these two traits imply a human commitment to participate in ordinary interpersonal relationships, since humans need interpersonal interactions to survive and to build and maintain their human identities. And third, in the interpersonal interactions, human agents assume the role of *participants*, which implies responsibility. Specifically, granting the role of *participant* to each of the interactants opens up the possibility of creating shared meanings through the coupling of actions and intentions during the interaction process. Note that this is possible because each interactant possesses their own perspective, their autonomous intentions and actions, and so their autonomous agency, which, in dynamic coupling with the other, contribute to the generation of shared meanings and shaping the interaction process. Hence, moment by moment of the ongoing interaction participating agents can impact each other, which represents an opportunity to fail or to respond successfully to the mutuality that the interaction demands, so each moment opens up different degrees of (individual) responsibility to the participants to respond to their own and others' needs, where the minimum normative exigency is the care of the autonomies of the participating agents.

In short, individual responsibility arises from our role as *participants* in the interaction, which gives rise to a moral dimension. And, the moral dimension is directly related to our natural need to belong to the community because it results in an intrinsic need to participate in social interactions, where the minimum normative exigency is the care of the autonomies of the agents. Importantly, this minimum normative exigency comes from the legitimate moral foundation with universal value mentioned above, namely, the care of one's own life and that of others. From there, caring for the autonomies of the agents would be a basic objective and cross-cultural moral principle that fulfills a social function: to ensure the interaction between the members of a society and thereby ensuring social order.

We now explain in more detail what the mutuality and responsibility of agents' interactions involves. In socio-cognitive interactions: (i) we perform the role of participants, and (ii) we recognize the other agent as such, as another autonomous, precarious, vulnerable agent with their perspective on the world. This implies a direct perceptual understanding[9] between the interactants that is negotiated moment by moment, where both are exposed to each other, that is, their autonomies and vulnerabilities are permanently exposed to the other, which configures (in a situated way) moral agency. Playing the role of participant and perceiving the autonomy and vulnerability of the other restricts and enables the various actions and possibilities that exist to impact them (positively or negatively), i.e., interacting with another morally constrains or enables us for action. Thus, in the process of interaction, a wide range of possibilities opens up moment by moment in which ethical dimensions come into play, since there are different degrees and opportunities of increasing, decreasing, or destroying the autonomies of the agents in a specific situation.

Considering life as a legitimate value allows us to establish an objective and cross-cultural primary moral imperative of enactive moral normativity, namely, the care of autonomies, the meaning of which only has content in specific situations and interactions. Thus, situations in which maintaining or increasing the autonomy of one of the agents implies diminishing or even destroying that of the other reveal an ethical dimension that gives rise to moral dilemmas. For example, in an interaction in which one of the agents has a total disregard for how their actions impact the other and exercises their intentional acts on the other without taking into account the latter's requests, demands, or needs, the autonomy of the other clearly diminishes. In this situation, the agent violates the primary moral imperative to varying degrees, thus diminishing the identity of the other, such as in the case of the oppressive relationship mentioned above.

In our interpretation, the ethical dimension is indicated by the reciprocal and constitutive dependency that emerges from the process of interaction between social agents to care for and respect the autonomy of the other, a characteristic that will make it possible to contribute to the specificity of moral normativity as we propose it. Nevertheless, as we mentioned above, it should be clear that not all interactions

[9] According to Gallagher, our social life is negotiated essentially through second-person interactions, which are facilitated by a direct perceptual understanding of the expressive bodily behaviors of others, scaffolding a range of possibilities for action and response (see van Grunsven 2018, pp. 137–138).This idea constitutes much of the embodied explanations of social cognition that are opposed to traditional accounts of mental attribution, which assume that the mental states of others are hidden entities not available to the observer.

are symmetrical because either the participants are not always considered equal or they show different degrees of vulnerability. For example, cultures that promote slavery or ritualistic mutilation are cultures that minimize the possibility of some degree of autonomy for the oppressed, so in our moral framework, they would be considered non-moral.

This moral normativity, as well as the other layers of normativity at play in interaction, exert a shaping force in the first-person experience of the interactants. Now, we turn to this level of analysis of normativity: the phenomenological level.

3.2 Phenomenological Normativity

Following Loidolt (2018), we focus on a specific level of normativity that emerges from the experiential structure that occurs in the encounter with the other; Loidolt refers to this level as "imperative normativity".[10] This experiential normativity has two constituent characteristics: (1) it emerges from the engagements with another agent, and (2) it confronts the agent with an "ought".

As a first step in explaining the distinctive feature of the experiential structure of the encounter with the other, it is necessary to differentiate between two types of normativity, one related to our engagements with the world and one related to our engagements with other agents. The difference is that the former is, somehow, a self-related and self-sufficient normativity that allows me to pursue myself in everyday socio-cultural practices. In Loidolt's own words: "[…] my normatively loaded openness to the world allows me to pursue myself in (more or less trivial) practices I can succeed in or fail at: the practices of gaining knowledge, of catching the streetcar, of being a good parent, of riding a bicycle, of being my true self, etc." (2018, p. 160). By contrast, the normativity of engagements with the other "happens in and *as* an encounter" (Loidolt 2018, p. 160), in which "[…] the other summons me in the form of a command […]" (2018, p. 160). Here we focus on this second type of normativity.

We focus on this type of normativity for two reasons: (1) to characterize a moral pull[11] that contributes to the affective and normative connectedness between interactants, and (2) to account for the way in which moral norms can gain relevance and meaning for an agent in the first place.

In the phenomenological tradition, it is argued that the encounter with the other in itself confronts us with an "ought," and this "ought" has been conceived as a *call to conscience,* as a call to respond with a vocation, i.e., lovingly (Husserl and Scheler), or, as a call to responsibility (Levinas). The idea is that experientially we become receptive to that *call* of the other, we become receptive to the mandates of that ought due to the experiential inter-relational structure of categories that institute this normativity[12]: values, the self, and the other (Loidolt 2018).

Regarding the mandates in the phenomenological tradition, it has been argued that embodied non-conceptual mandates[13] emanate from *the mere presence of the other*, which minimally demands respect and care, i.e. "[…] the respect that the other calls for when she shows herself in our consciousness, with her autonomy and dignity, refusing to be reduced to an object […]" (Métais and Villalobos 2021, p. 175). This opens up a new level of significance: the moral level. Such mandates do not establish or constitute a set of abstract moral principles, nor of prescriptive norms and/or deontic justifications; rather, this level of normativity seeks to capture the way in which moral normativity can gain relevance and meaning for a subject in the first place, arguing that this experiential normative level—concrete and not theoretical—constitutes a basic degree of morality.

This level of normativity is constituent of the ethical experience, which serves as a moral pull that allows us to

[10] Loidolt argues: "In order for this new form of "imperative normativity" to emerge, a different kind of experience and experiential structure is needed. In the phenomenological tradition, it has often been described as the experience of a "call" (2018, p. 158).

[11] The moral pull depicts a phenomenological pull that we experience when alterity is presented to us, i.e. another person. The specific subjective experience of the other does not occur with inanimate objects. From this derives a specific phenomenological normative level of the encounter with another agent, which does not pretend to be an ontological or metaethical ideal, but only highlights what happens to us at an experiential level in the encounter with the other; we do not perceive the other as a physical body devoid of meaning. This contributes to connecting us affectively and normatively with the other, which is crucial for interacting ethically.

[12] For Loidolt, the interrelation of these three categories allows ethical relevance: "[…] my claim is rather that imperative normativity is instituted through a particular interrelated experiential structure to which all three cases belong: an affective encounter with something other than the (present) self, where a specific structure of the self is disclosed that it can fail at or succeed in. This makes ethical relevance possible in the first place—and thus the experience of a vocation and an ought" (Loidolt 2018, p. 159).

[13] Concerning *embodied non-conceptual mandates*, we want to capture three underlying elements: (1) about *mandates*, in the phenomenology of the social encounter with the other, *the other* is who constitutes me normatively (the *other* as a command); in Loidolt's words: "Only from a first-person perspective converted into the position of the addressed—that is, the second person—can the appeal of the other be understood as a command, an imperative which comes "from a height" and which constitutes me normatively" (2018, p. 161). And from there, the ethical experience emerges: " […] the ethical experience has been revealed, essentially, as the experience of being commanded to respond, being requested to care for the vulnerability of the other, and ultimately being called to make a gift of yourself" (Métais and Villalobos 2021, p. 180). (2) The *non-conceptual* harks back to the enactive assumption of developing an approach to experience in non-intellectual or non-conceptual terms (Métais and Villalobos 2021 p. 171). And, (3) about *embodied* aspect, the enactive view essentially considers experience as embodied.

open ourselves (affectively and normatively) to the other. In phenomenology, normativity is understood as coming from the experiencing subject, but at the same time, from the experienced object, thus giving rise to the idea of the relational aspect of moral normativity and therefore of moral values. This is relevant because in the traditional ethical accounts, such as the Humean and the Kantian, it has been established that moral values are found either in the subject or "out there" in the world, ignoring the possibility of a relational aspect (van Grunsven 2015). In an enactive explanation, the relational aspect of normativity must be highlighted, because the *presence of the other* is a necessary condition for the moral normativity that we defend.

Starting from the notion of phenomenological normativity in connection with the notion of socio-cognitive interaction, we suggest that a new normative order emerges—moral normativity (at least in its most basic dimension)—in such a way that:

1. Participating interactants "ought"[14] to maintain their autonomy (this is manifested by experiencing phenomenological normativity, depicted as a moral pull), giving rise to a co-regulated normative domain in which both agents are responsible for taking care of themselves and the other.
2. At this normative level, the possibility of irrevocably changing the autonomy of the other (positively or negatively) opens up, and thus the condition of possibility of caring for, respecting, or irrevocably changing the autonomy of the other emerges in the agents.

As we have already mentioned, requirement (2) of socio-cognitive interaction states that for an interaction to be effectively social, it is necessary that the autonomy of each interactant not be destroyed in the process. This denotes the possibility of irrevocably changing the autonomy of the other (positively or negatively), giving rise to an ethical dimension in which moral values come into play. Interactants are responsible for caring for and respecting their own and others' autonomy at several levels because the vulnerability of the agents is exposed in the interaction. As we saw above, the degrees of vulnerability correspond to various features of the ongoing interaction, which can be related to both personal traits and features of the interaction itself (for example, the history of interactions between the participants or the social environment in which it takes place). This becomes clearer if we take into account that the perceptual experience of the other as an autonomous, precarious, and vulnerable person, and of ourselves as such, is formed, enriched, and even distorted in the interaction itself (van Grunsven 2015). Consequently, perceiving the other as such in an interaction and the normativity that emerges from it are not something pre-given, nor do they depend on a fixed mechanism; instead they constitute a condition that is continuously negotiated in the process of socio-cognitive interaction. Thus, the interactants have the possibility of exploring and providing mutual feedback at each moment of the interaction. Whether such mutuality is positive or negative depends on the (moral) responsibility of each of them. Hence, a wide range of possibilities opens up in which moral values come into play from the start of every social interaction. In this way, we approach the claim that all social interaction is moral, as stated by Colombetti and Torrance. Nonetheless, how can moral values come about? From where do they come? Do they only come from the moral pull? To solve these questions, in the next section, we address a more encompassing normative level, namely, a background normative moral order proper to the context.

3.3 External Moral Normativity

Moral normativity at the level of the first-person experience, as well as at the level of the interaction, is shaped by a more encompassing normativity: standards that are collectively shared and that establish whether a particular behavior or interaction is morally correct or not. Normativity requires both an agent able to tell the difference between right and wrong, commendable and reprehensible, etc., as well as external criteria that allow any member of the community to determine whether an individual behavior or a particular interaction is actually right or wrong, commendable or reprehensible, etc., beyond the agent's own impression. This means that for agents' individual behavior and their interactions to be genuinely normative, they must be shaped and evaluable with respect to something other than the agent herself or the interaction, that is, pre-existing normative structures shared with others. This is true for moral normativity as well as for any kind of normativity that shapes and governs human behavior and interactions.

3.4 Heteronomy: External Shaping and Regulation of Human Behavior and Interactions

Steiner and Stewart (2009) propose the concept of *heteronomy* to capture this kind of relation in which an external, more pervasive phenomenon shapes a narrower

[14] Note that in the phenomenological tradition, this "ought" occurs at the experiential level, by which this "ought" is interpreted not in prescriptive terms, nor is it a command that obliges me in the *factical* sense, but is just a descriptive effort to capture "[…] how the ethical or the normative can gain meaningful relevance for a subject in the first place" (Loidolt 2018, p. 161). Indeed, "Phenomenologists analyze the structure of those experiences that essentially constitute us as ethical beings and claim that normative questions can only arise in this venue" (2018, p. 159).

phenomenon. In general, heteronomy refers to the relationship between two phenomena, *e* and *a*, such that the phenomenon *e* exerts a shaping force over the phenomenon *a* where *e* is not produced by *a*; in that case, we say that *a* is heteronomous with respect to *e*. Note that heteronomy so defined is a relative concept in the sense that a system can be heteronomous with respect to one system while not being so with respect to another. Crucially, this implies that a system can be autonomous with respect to itself and heteronomous with respect to another system. Consider the following example: the socio-cultural context imposes important restrictions over how our daily interactions and individual behaviors unfold. These restrictions are ubiquitous and are not the product of the sole autonomous behavior of the person or the individual interactions between members of the group; therefore, they constitute a heteronomous normative field with respect to individuals and particular interactions. However, as we showed in the two preceding sections, the person and the interaction constitute autonomous systems with respect to themselves.

The kind of heteronomy that the socio-cultural order exerts over interactions and individual behaviors has a particular character: the latter partially constitutes the former (Torrance and Froese 2011, p. 47). The reason is that the social normative order provides the means for the agents' behaviors and their interactions to take place, and when such behaviors and interactions take place, they contribute to the maintenance of that very same normative order as a context that shapes the behaviors and interactions of the community. Pre-established norms are not limited to prescribing what should and what should not be done; they "actually constitute the possibility of enacting worlds that would just not exist without them. [That is why] interactions between two or more agents are never properly social unless they take place in the context of an environment of social structures or norms which give meaning to the interactions" (Steiner and Stewart 2009, p. 528). The pre-existing norms are embedded in the way people conduct their lives, and their continued existence requires that they be re-enacted through interactions between members of the community (Torrance and Froese 2011, p. 46). Let us see in more detail what these relations of heteronomy, constitution, and autonomy mean for human and social behavior.

As we explained in the previous section, socio-cognitive interactions refer to a dynamic coordination between two cognitive autonomous agents that has its own autonomy and that both enables and constrains the individual behavior of the interactants. Because the individual participants are subjected to the dynamics of the interaction with the other, their individual behavior is heteronomous with respect to the socio-cognitive interaction with the other (Torrance and Froese 2011). In short, the individual behavior is heteronomous with respect to the interaction. Likewise, the ample spectrum of moral norms culturally prescribed, sometimes explicitly formulated and sometimes implicitly understood by participants, govern both the interaction between agents—e.g., listening when the other speaks—and the individual behavior of the agents—e.g., do not take what is not yours, even when nobody is looking. These culturally prescribed norms form a normative structure in the background, with respect to which socio-cognitive interactions and individual behaviors are heteronomous. Moreover, socio-cultural norms shape an autonomous system with respect to themselves, in so far as they produce the very processes that constitute it, namely, the pattern of interactions shared by the community. Figure 1 below captures the relationships between these three levels.

Conceiving the socio-cultural normative context as social practices allows us to capture these relations more clearly. Human interactions and individual human autonomies are shaped by the practices shared by the community to which they belong. These practices are defined as ways of doing and acting, with or without language, that are shared by a community. Sociolinguistic practices expand our powers over others and our vulnerabilities beyond face-to-face online interactions. More concretely, as defended by Di Paolo et al. (2018), the use of language allows us to assimilate standardized patterns of behavior that complement the assimilated patterns of agents of our community with whom we have not interacted before in such a way that the complementary coordination of one's own and the other's behavior causes a joint action. This means that the standardized patterns of behavior we learn by learning to speak a language allow us to quickly establish sophisticated patterns of interaction with others—think, for example, of greeting, asking and answering questions, or giving and receiving instructions.

Different patterns of complementary behaviors and individual behaviors are built around different activities and constitute a social practice; for example, the social practice of educating children in primary school implies that teachers explain things to children, make requests, give instructions, ask questions, respond to questions, propose activities, etc. It implies that children follow instructions from teachers, play with other kids in the designated times and places, ask questions of teachers and other kids, etc., and that parents ask questions of teachers about the kids, cooperate to give children complementary instructions, etc. The social practice of educating children in school is constituted by the fact that all actors—teachers, children, and parents—develop and maintain these families of activities and interactions among actors that repeat over time and in different places with different individuals. Moreover, from the point of view of the individual agent, this consolidated pattern of activities and interactions gives rise to an aspect of their identity, that is, their identity as a teacher, a student, or a parent. This identity needs to be maintained over time by routinely

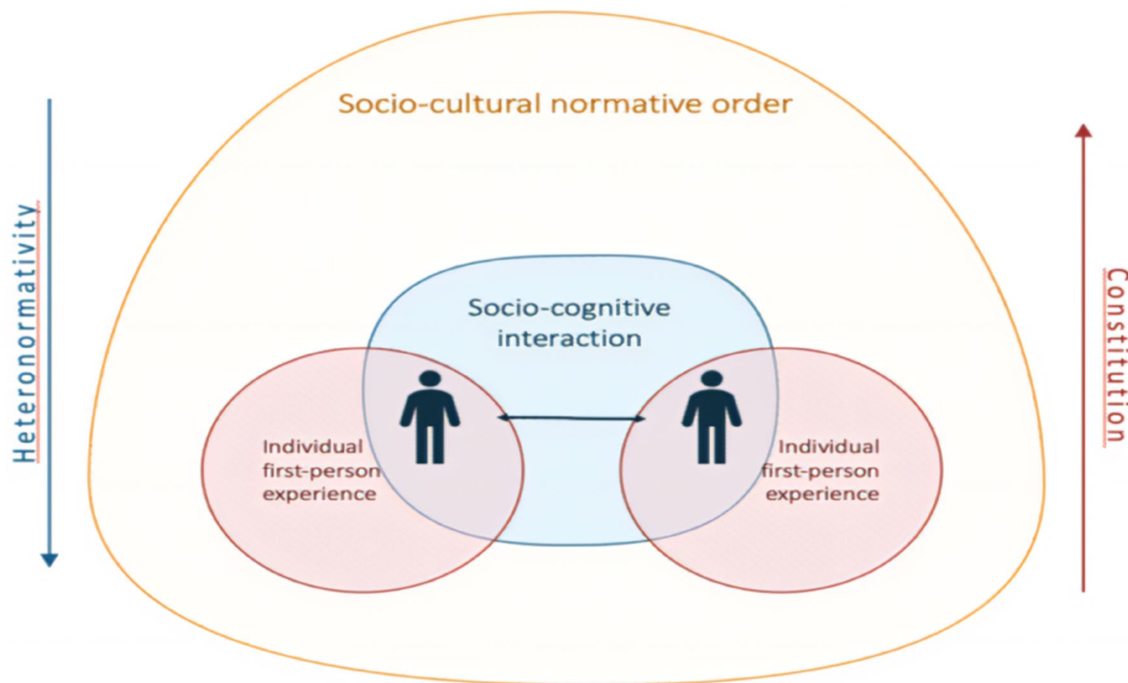

Fig. 1 The left arrow captures two heteronomous relations of shaping and normative conditioning the socio-cultural normative order that constitutes the individuals' background heteronomously shapes and regulates human interactions, as well as socio-cognitive interactions heteronomously shape and regulate the individual's experiences and behaviors. Conversely, the right arrow captures two relations of constitution: The pattern of interactions and the pattern of individuals' behaviors constitute the socio-cultural normative order that serves as the socially shared context. These patterns are extended in time and over multiple individuals, and constitute the shared form of life (articular socio-cognitive interactions are constituted by the individual behaviors of two or more agents that coordinate in time and space such that they recognize each other as agents with their own purposes and interests and they do not terminate each other's autonomies)

engaging in these activities and interactions, and routinely engaging in these constitutes the very identity of agents as a teacher, students, etc. This means, first, that their identity and autonomy is constituted with others within a community of shared activities that extends over time, and second, that what needs to be done to maintain such an identity is dictated by the socially shared patterns of activities of the community to which the agent belongs; that is, socio-cultural practices establish a normative order that dictates what agents should do to maintain their identity, i.e., to retain their individual autonomy as social agents. Third, through our social practices, our autonomy is temporally extended in the sense that the meaning of a present restrictive action, e.g., going to bed early instead of going to the party, becomes its contribution to our autonomy in the future, e.g., being fresh and well-rested to give a talk next morning, as it ensures more possibilities of action that contribute to the enactment of one's values. Developing this point further goes beyond the scope of the paper, but it has been developed in detail under the idea of the chain of significance of action as discussed by Schatzki based on Heidegger's phenomenology. Importantly, these individual identities and its temporally extended autonomy originate and develop in a social milieu comprising practices, relationships, and structures that are evaluated by the possibilities that they offer to the agents to affirm their identities. In this sense, the social milieu is not neutral but corresponds to a morally evaluated background, or in other words, morally loaded.

3.5 Moral Normativity Beyond Individuals

Within this ample realm of socio-cultural normativity, we identify two necessary conditions for moral normativity to arise as a social practice, that is, as a normative realm beyond individual behaviors and particular interactions. The first is our embodied constitution as living beings who are precarious and therefore vulnerable and in need of interaction with others and with the environment. The second is our sociolinguistic nature, which allows us to exponentially expand our possibilities for action and interaction through the use of language, and to normatively distinguish among them, in particular with regard to the possibilities for maintaining and expanding others' and our own autonomy in interaction.

Let us see in some detail what these two conditions mean. The key concepts for understanding the first condition are

vulnerability and the need for interaction with others. This constitutive vulnerability implies that the possibility of being irrevocably changed is always present in the interaction between human agents. As we explained above and in line with the ethics of care (Loaiza 2019; Urban 2014, 2015), there is an intrinsically ethical dimension in these interactions and engagements, since the agents, as participants, are morally responsible for caring about their own and the other's autonomies. This means that engagements and interactions should ensure possibilities for agents to affirm and develop their own identities. The way in which we care, that is, how we should ensure those possibilities, is constituted in social practices whose existence goes beyond individual agents and particular interactions. This is possible due to our sociolinguistic nature, which allows us to exponentially expand our possibilities for action and normatively distinguish among them. This brings us to the second condition.

The process by which moral norms are established in the social environment is through collective practice and the mutual acceptance of these norms in practice (Hufendiek 2017; Rietveld 2008; Schatzki 1996; Wittgenstein 1953 [2009]). Socio-cultural practices are structured by language and are sedimented through their continuous repetition over time, which normatively configures agents in different constituent stages of their identity. This means that socio-cultural practices are part and parcel of what constitutes us as human agents within various practices exercised by the community to which we belong (such as language, morality, religion, among others). Thus, socio-cultural norms learned and enacted through the use of language can dictate what agents must do and how they should interact to maintain their identity at each stage of their training since it establishes a greater normative force on the individual. In this sense, humans have a socio-linguistic nature which greatly structures their identities and their socio-cognitive interactions.

What makes sociocultural norms moral is that they are mainly directed to the care or preservation of the autonomy of agents in society, and this characteristic expands to a wide range of normative possibilities for their fulfillment. Norms fulfill their regulatory function in practice by allowing agents to distinguish between correct/incorrect, acceptable/unacceptable, behavior in interaction, but also by provoking the positive or negative motivation that accompanies them; in this sense, our sociolinguistic nature expands our moral possibilities. Human agents learn to engage with the world within a cultural context in which they practice and participate in the various behaviors associated with beliefs, values, conventions, sanctions, rules, and motives that constitute the moral code relative to their context or culture. The learning or enculturation at play here consists in joining the pattern of everyday activities of the community, activities that include using language and embodied gestures to express approval, condemnation, uncomfortableness, proudness, etc., about others' and one's own actions. Given the conception of identity and autonomy we defended above, by joining this pattern of behavior, human agents also shape their own autonomous identity. In that sense, the socio-culturally shared normative level exerts an irresistible force on individuals, shaping their behaviors and interactions and allowing the kinds of moral actions of which they themselves are capable. In other words, norms acquire their force over individuals by shaping not only the pattern of activities and interactions but also by shaping their first-person experiences of the "ought" in the encounter with the other. Human beings are not initiated into a narrow moral sense of "right and wrong" (De Souza 2013) but into a more complex compound that includes and allows such actions with moral significance beyond the duty to respect the biological life of others.

A word about relativism is in order at this point. In our account, we propose a primary and basic moral imperative, namely, taking care of one's autonomy and that of others. However, what this consists of and how it is carried out is largely determined by the specific socio-cultural practices of the specific community to which we belong, linked with the concrete situation and history underlying an interaction. Although, it might seem that a consequence of our proposal is moral relativism to a certain degree, we conceive of life and autonomy as universal basis for morality. Indeed, we defend the heterogeneous and iterative aspect of morality, which does not imply undermining the ethical weight of caring for the autonomies of the agents as an objective cross-cultural criterion. Let us explain this claim: the morally correct course of action is to contribute to maintaining, and at best, maximizing one's autonomy and that of others. This assertion constitutes an objective cross-cultural criterion, but its content, meaning, and the different forms in which the care of the autonomies of the agents consists is determined, dictated, and provided by the socio-cultural practices carried out by the specific community to which they belong. Thus, the precise forms dictated by each human community for the care of autonomies largely regulate behaviors and social interactions. However, in a relevant way, this regulation has a situational character, which corresponds to various factors of the ongoing interaction, such as personality traits, history of interactions between agents (when it exists), and contextual elements. This allows for configuring a wide range of moral codes concerning social interactions, and with their continuous repetitions, they become part of the context.

Certainly, enactivism, at its roots, promotes life and its prosperity thriving (without harming others), which gets affirmed through autonomy. One important consequence of such conception is that it allows us to consider life (the living body) as a universal value. Drawing upon this, we propose that ethics is grounded on the notion of autonomous life as an ultimate value, thereby that affirmation of life and

the care of autonomies are non-negotiable values. This claim implies that we reject the cultural appropriation of moral terms, i.e. of the meaning of life and autonomy. If life is the ultimate value, those cultures that play with the definitions of humanity or autonomy remain outside our moral framework since they would be deemed non-morals. Overall, practices that undermine or threaten autonomous life are practices non-morals, e.g., the cultures that promote slavery or ritualistic mutilations are cultures that play with the definitions of humanity because it automatically dismisses who gets to be autonomous, i.e. these cultures with their multiple definitions of humanity invalidate any autonomy of the oppressed victims in such systems.

Importantly, we accept moral relativism in how to take care of one's autonomy and that of others, that is, we accept relativism in the varied ways in which the possibilities of maintaining or increasing autonomies and identities in different cultures are fostered or cultivated, but we do not admit cultural relativism regarding the meaning of life and therefore of the meaning of *caring for the autonomies* of the agents. Strictly speaking, the value of *caring for autonomies* is objective and trans-cultural; it is the ultimate value of the enactive ethics that we propose.

In this context, there are moral criteria relating to cultures that can be controversial or questionable for other communities. For example, cultures that accept consensual polyamory or consensual non-monogamy (known as CNM), as well as cultures that allow both heterosexual and homosexual marriages, are cultures that approve of different possibilities for maintaining, caring for, and expanding the identities of agents belonging to such cultures. But despite their different worldviews in contrast to other more conservative communities, these are cultures that are not opposed to autonomous life and its prosperity as long as they conceive and preserve the affirmation of life and the care of autonomies as the ultimate foundation of their ethics.

A consequence of the enactivist framework is to consider the care of life, autonomy, and identity as a source of normativity or as a normative criterion strong enough to base the nature of ethics on it. Hence, in our account, ethics serve to discern which conditions contribute to preserving life and enhancing the autonomies of the agents and which do not. This allows us to distinguish between actions, practices, and cultures that maintain or expand the autonomies of those that are oppressive or that limit the potentialities of the agents.

Accordingly, the characterization of moral normativity that we propose is as follows: (i) In the encounter with the other, agents face a normative moral level depicted as a moral pull, and this implies a degree of morality that is felt in the living body; (ii) in the socio-cognitive interaction, there is a reciprocal dependence between agents, which gives rise to the ethical dimension that corresponds to the responsibility of caring for one's own and others' autonomy; and iii) the socio-cultural practices of the community in which the interaction takes place heteronormatively shape the appropriate moral content for the care of autonomies.

At this point a distinction between moral content and moral character is called for.

4 Moral Content and Moral Character

Moral character According to the conception of morality we have defended so far, individuals' behaviors and interactions among each other have a moral character when they imply the possibility of harming, increasing, or contributing to the maintenance of the autonomy of the other. This autonomy involves both the other's identity as a living organism and their identity as a member of a bundle of socio-cultural practices. Harming the other's autonomy means reducing their possibilities of acting to affirm their own identity, while increasing their autonomy and contributing to its maintenance means maintaining or expanding the current possibilities of action of the agent. We have argued that the moral responsibility that arises in interaction with others is to not harm either the other's autonomy or one's own autonomy. Note that this definition of the moral dimension of behaviors and interactions does not allow us to specify universal rules of moral correctness[15] beyond the basic moral imperative with objective and cross-cultural value, namely, the care of the autonomy, e.g., not killing the other or making them or oneself deliberately ill.

Moral content The specificities of how to act in a morally responsible way depend on the particular situation in which a behavior or interaction occurs; the socio-cultural practices to which the interactants belong constitute a crucial element of this situation. Socio-cultural practices shape the pattern of activities and interactions that shape the identity of the interacting agents, and therefore, specify the wide range of possibilities of action that each agent has to reaffirm their identity. Socio-cultural practices specify too how these possibilities can be reduced. Therefore, socio-cultural practices give content, that is, indicate the actions and interactions that count as morally correct and incorrect in a specific circumstance, as long as the care of the autonomy is respected. There are non-controversial situations that illustrate this; for example, helping another who is in need in a specific situation reflects a morally correct action commonly accepted as such. In our account, this counts as morally correct behavior because the act of helping increases the other's possibilities of acting in the world, e.g., helping an old person to step onto the bus so they can use the public transport and visit

[15] Due to its situational aspect, no universal specifications can be derived (see van den Herik and Rietveld 2021).

their friends. There are, however, more controversial situations that highlight the specific moral content of a given socio-cultural community, such as in the example already mentioned about cultures that accept consensual polyamory or consensual non-monogamy. Consensual polyamory practices are morally justified in such communities because they imply an increase in the autonomy of the agent who decides to carry them out, and that, according to our account, is the very reason why such practices are maintained as morally correct in these contexts. Specifically, these communities open up possibilities for agents to realize their identity: autonomously deciding over their bodies and their sexuality. Our account thus allows us to see why consensual polyamory or consensual non-monogamy has the status it has as a morally correct practice in the cultures in which it is practiced.

By contrast, there are oppressive socio-cultural environments that cancel any possibility of autonomy for the agents through destructive and devastating practices. These cultural environments would be considered immoral in our framework. One of the most dramatic expressions of these practices is female genital ablation. Such practices are morally unjustified in our proposal because the very act of executing the mutilation implies a detriment to the autonomy of the girls and women to whom it is practiced.

According to these communities, female genital ablation is a practice that allows girls and women to belong to the society as respectable women, that is, virgins and loyal women, which is a recognition on which they crucially depend to interact with other members of the community and to form a family. This explains why these practices are maintained despite them being detrimental to women. However, this explanation does not morally justify these practices. We reject the cultural appropriation of fundamental moral terms (i.e. autonomous life), therefore, in our moral framework, female genital ablation is a practice considered immoral since it deprives women of bodily and fundamental ways to realize their identity (both physical and socio-cultural) and to choose autonomously whether or not to build their identities as virgins and loyal women devoted to their husbands. Then, our account allows us to see clearly why the practice itself is an oppressive cultural practice, since it directly threatens the autonomous life of women. In short, in our interpretation, *caring for autonomy* is the ultimate normative criterion that determines whether cultures, practices, or actions are morally correct.

5 Conclusion and Open Questions

We have argued that moral normativity can be distinguished from other forms of social normativity because it is concerned with the possibility of irrevocably changing the autonomies of the interactants at each moment of interaction in the encounter with the other. This characterizes the deep moral responsibility that agents have to care for and respect their own autonomy and that of others in interaction. The moral normativity that we have proposed has three levels: (1) the phenomenological level, characterized as a moral pull; (2) the level of the interaction between agents, characterized mainly as the possibility of irrevocably changing the autonomy of the other; and (3) the background normative moral order relative to the context and culture in which such interactions take place. The latter heteronormatively shapes the other two levels, and the level of the interaction heteronormatively shapes the phenomenological level.

First, the moral pull corresponds to the normativity that arises from the specific experience of three interrelated categories (values, the self, and the other), which contributes to the deeply affective connection that occurs in the encounter with the other. Second, at the level of socio-cognitive interaction, the possibility of damaging or increasing one's own and others' autonomy opens up, which constitutes a moral dimension in which the interactants acquire moral responsibility (minimally) to mutually care for and respect their autonomies. Third, the normative force that the background normative moral order exerts on particular interactions and on individual agency constitutes the (moral) content of moral codes relative to context and culture.

We would like to highlight three possible consequences of our proposal. First, we consider that the moral normativity characterized in this way would correspond to various skills involved in an ethical know-how. In the encounter with the other, the agents face a normative moral level depicted as a moral pull, and this implies a degree of morality that is felt in the living body. This degree of morality is felt and exercised since it is immediately given to us on a concrete level, not abstract or theoretical. From this, the agents minimally know how to respond, participate, and act morally in relation to the specific demands of the situation. The psychological details of how this practical knowledge is acquired in development remain open in this paper. However, we can find empirical support for this claim in the work of Reddy (2008). In the words of van Grunsven (2018, p. 140), "Reddy hints at a link between our engaged experience of others as beings who afford address and the ethical experience of others as beings who *obligate us*: 'Not only is the experience of the other person more immediate and more powerful in direct engagement, but it calls out from you a different way of being, an immediate responsiveness, a feeling in response, and an obligation to 'answer' the person's acts'."

The second consequence is that our proposal can account for the objectivity of moral normativity in two senses: (i) through the moral imperative with objective and cross-cultural value that we propose, namely, *the care of autonomies*, which would function as a tool for the moral evaluation of

actions, interactions, and practices. And (ii) objectivity is additionally achieved with a minimum criterion of externality that requires that the norms be capable of being shared. In our account, this criterion is met at the level of the background normative moral order, which is constituted by shared collective practices. These practices result from the very pattern of actions and interactions that a community forms and maintains in time.

Finally, the third consequence refers to the normative force of the moral content that we propose. Let us remember that the moral content depends on the normative moral order relative to the context and the culture, that is, the background normative moral order. This normativity regulates the conditions of the interaction, regulates the behavior of the participating agents, and therefore regulates and determines how intentional behavior is carried out and evaluated within the interaction. As we explained above, the regulatory function of this moral normativity allows agents to distinguish between correct/incorrect and acceptable/unacceptable behavior and provokes in them the positive or negative motivation that moves them to act in response. This moral dimension and its standards or measures of good or bad actions provide normative force to every intersubjective practice that unfolds in that context.

Characterizing moral normativity in this way makes it possible to do justice to the iterative, situational, and heterogeneous aspect of morality, at the same time that it allows us to offer an objective normative criterion that would serve as a moral evaluative tool with cross-cultural value.

We consider that these questions open avenues for future research on, for example, the ethical dimension of the material objects and infrastructures that enrich or hinder our autonomy and therefore implies both a certain proto-agency to materiality as well as a moral responsibility of people in charge of maintaining or changing such materialities. Thus, we consider that future research could study broader-scope interactions in light of the enactive moral normativity that we propose; for example, agent-sociomateriality and agent-institutions interactions, even interactions between human agents and other non-human partners.

Acknowledgements We acknowledge support by a scholarship granted by the Mexican Council for Science and Technology (Consejo Nacional de Ciencia y Tecnología, CONACyT). We want to thank Maximiliano Martínez Bohórquez for his support and the three anonymous reviewers for their helpful comments.

References

Colombetti G, Torrance S (2009) Emotion and ethics: an inter-(en) active approach. Phenomenol Cogn Sci 8(4):505–526. https://doi.org/10.1007/s11097-009-9137-3
De Jaegher H, Di Paolo E (2007) Participatory sense-making. Phenomenol Cogn Sci 6(4):485–507
De Souza N (2013) Pre-reflective ethical know-how. Ethical Theory Moral Pract 16(2):279–294
Di Paolo E, Rohde M, De Jaegher H (2010) Horizons for the enactive mind: Values, social interaction, and play. In: Stewart J, Gapenne O, Di Paolo E (eds) Enaction toward a new paradigm for cognitive science. MIT Press, Cambridge, pp 33–88
Di Paolo E, Buhrmann T, Barandiaran XE (2017) Sensorimotor life: an enactive proposal. Oxford University Press, Oxford
Di Paolo E, Cuffari EC, De Jaegher H (2018) Linguistic bodies: the continuity between life and language. MIT Press, Cambridge
Froese T, Di Paolo EA (2011) The enactive approach: theoretical sketches from cell to society. Pragmat Cogn 19(1):1–36
Gallagher S (2018) Deep brain stimulation, self and relational autonomy. Neuroethics 14:31–43. https://doi.org/10.1007/s12152-018-9355-x
Hufendiek R (2017) Affordances and the normativity of emotions. Synthese 194(11):4455–4476
Loaiza JM (2019) From enactive concern to care in social life: towards an enactive anthropology of caring. Adapt Behav 27(1):17–30
Loidolt S (2018). Experience and normativity: the phenomenological approach. In: Phenomenology and experience. Brill, pp 150–165
Martínez Quintero A, De Jaegher H (2020) Pregnant agencies: movement and participation in maternal-fetal interactions. Front Psychol 11:1977–1977
Métais F, Villalobos M (2021) Embodied ethics: Levinas' gift for enactivism. Phenomenol Cogn Sci 20(3):1–22
Reddy V (2008) How infants know minds. Harvard University Press, Cambridge
Rietveld E (2008) Situated normativity: the normative aspect of embodied cognition in unreflective action. Mind 117(468):973–1001
Schatzki T (1996) Social practices: a Wittgensteinian approach to human activity and the social. Cambridge University Press, Cambridge
Steiner P, Stewart J (2009) From autonomy to heteronomy (and back): the enaction of social life. Phenomenol Cogn Sci 8(4):527–550
Strawson PF (1974) Freedom and resentment, and other essays, vol 595. Egmont Books, London
Thompson E (2007) Mind in life: biology, phenomenology, and the sciences of mind. Harvard (Belknap), Cambridge
Torrance S, Froese T (2011) An inter-enactive approach to agency: participatory sense-making, dynamics, and sociality. Humana Mente 15:21–53
Urban P (2014) Toward an expansion of an enactive ethics with the help of care ethics. Front Psychol 5:1354
Urban P (2015) Enactivism and care ethics: merging perspectives. Filozofia 70(2):119–129
van den Herik JC, Rietveld E (2021) Reflective situated normativity. Philos Stud. https://doi.org/10.1007/s11098-021-01605-4
van Grunsven J (2015) Bringing life in View, an enactive approach to moral perception. (Doctor in Philosophy): The New School University
van Grunsven J (2018) Enactivism, second-person engagement and personal responsibility. Phenomenol Cogn Sci 17(1):131–156
Varela FJ (1991) Organism: a meshwork of selfless selves. In: Boston Studies in the Philosophy of Science. Springer, pp 79–107
Varela F (1999) Ethical know-how: action, wisdom, and cognition. Stanford University Press, Redwood City
Weber A, Varela F (2002) Life after Kant: natural purposes and the autopoietic foundations of biological individuality. Phenomenol Cogn Sci 1(2):97–125. https://doi.org/10.1023/A:1020368120174
Wittgenstein L (1953 (2009)) Philosophical investigations. Wiley, New York

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