

A reflective guide on the meaning of empathy in autism research

Bollen, Caroline

DOI

[10.1016/j.metip.2022.100109](https://doi.org/10.1016/j.metip.2022.100109)

Publication date

2023

Document Version

Final published version

Published in

Methods in Psychology

Citation (APA)

Bollen, C. (2023). A reflective guide on the meaning of empathy in autism research. *Methods in Psychology*, 8, Article 100109. <https://doi.org/10.1016/j.metip.2022.100109>

Important note

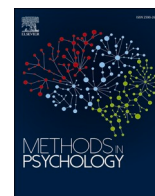
To cite this publication, please use the final published version (if applicable). Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights. We will remove access to the work immediately and investigate your claim.



A reflective guide on the meaning of empathy in autism research

Caroline Bollen

Delft University of Technology, Netherlands

ARTICLE INFO

Keywords:

Autism
Empathy
Theory of mind
Neurodiversity
Double empathy problem
Cognitive empathy
Affective empathy

ABSTRACT

Empathy is an often researched but highly ambiguous concept. This makes research on empathy prone to miscommunication and misinterpretation. Careful reflection on what is meant by empathy in a certain context is essential. As the scope of the variety of possible meanings of empathy one could encounter is vast, such reflection would benefit from a guide that maps out this terrain of conceptual confusion. To this end, the present study maps out the diversity of the meaning of empathy within the scope of autism research. The autism context is of particular relevance as autism is often linked to empathy in research, and crucially, how one understands empathy shapes theories of autism as well as the societal perception of autism. An interdisciplinary literature search was conducted to collect different conceptualizations of empathy used in autism research. In 111 articles, 31 unique definitions of empathy were used. This diversity can be accounted for by a list of 12 dimensions along which the meaning of empathy can diverge, found in this study. These dimensions pinpoint which aspects of empathy require attention and reflection when engaging with empathy in research. It can be used as a practical framework to reflect on empathy in the design and documentation of research, defending methodological decisions, and interpreting the work of others. Furthermore, this study discusses various, and some worrisome, implications for findings and theories in autism research.

1. Introduction

Empathy is a frequently researched, but highly ambiguous concept (Cuff et al., 2016). The term empathy can refer to co-feeling, mentalizing, to something inherently good, something inherently biased, etc. These discrepancies may seem purely semantic, but if these are not explicitly discussed this can lead to various problems in research practice. In fact, it already has. The exact interpretation of the concept drastically changes the meaning of a hypothesis, a claim, research results, and the validity of chosen methods. For example, when a researcher understands empathy as emotion contagion, one should not assess this with a perspective taking task, nor would findings of the latter kind be of interest to this researcher. Lack of caution with respect to this complexity can harm the progress in understanding empathy, as it makes the field prone to miscommunication, misinterpretation, or even (unintentional) scientific malpractice. Crucially, empathy is often connected to morality (for example Zalla et al. (2011)), which makes this conceptual confusion even more problematic.

This is showcased by the role the concept of empathy plays in the context of autism research. Autism is a neurodevelopmental spectrum condition associated with social, communicative and sensory idiosyncrasies. According to the dominant narrative in both autism research and

societal perception, autism is associated with empathy deficits. However, this view is increasingly attracting resistance. For example, testimonies of autistic people often include hyper-empathic experiences, contrasting the current stigmatization (Welch et al., 2020). Furthermore, the theoretical account of the so-called *double empathy problem* ascribes the apparent empathy deficits seen in autistic behavior to an in-group/out-group issue, arguing non-autistic people have trouble empathizing with autistic people, and not only the other way around (Milton, 2012; Paul and Nicholas, 2014). Another hypothesis aiming to explain both seeming deficits and empathic experiences associated with autism is the empathy imbalance theory, arguing that autism is associated with difficulties only concerning *cognitive empathy* and heightened or intact *emotional empathy* (Smith, 2009). While there is empirical evidence supporting this view, this seems to be at odds with the proposed increased cognitive endeavor made by autistic individuals to overcome differences in neurodiverse interactions (Beck, 2018). Importantly, what is actually being understood as *empathy* varies substantially between the accounts described here.

Recently, Fletcher-Watson and Bird (2020) argued to be wary of the various meanings empathy can have, and specifically the way they influence theories of autism and research methodologies. They illustrated how diverging meanings of empathy are currently causing problems in

E-mail address: c.j.m.bollen@tudelft.nl.

<https://doi.org/10.1016/j.metip.2022.100109>

Received 13 December 2021; Received in revised form 5 December 2022; Accepted 19 December 2022

Available online 7 January 2023

2590-2601/© 2023 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

the progress of autism research, and societal perception of autism. The problem of the variability in understandings of empathy is getting acknowledgment inside and outside of autism research. Most notably, a critical review of the concept by Cuff et al. (2016) aimed to provide a new, more clear, and complete definition of empathy by combining different aspects of empathy found in various definitions used in the literature they investigated. In doing so, they mapped out several important features that conceptualizations of empathy can have. However, it is unknown whether these features account for all diversity in what researchers mean by empathy. Definitions of empathy may diverge in ways not yet made explicit, and as a result, not looked out for when reading or writing about the concept. To be able to approach the concept with care, and critically reflect on what it means in a certain context, first a deeper understanding of the diversity of possible meanings of empathy one can encounter is needed. A systematic interdisciplinary analysis mapping out this conceptual diversity in detail was, to the author's best knowledge, missing.

Considering the immense volume of empathy research, covering an expansive range of disciplines, such an undertaking requires a collaborative effort in academia over time. The present study takes the first step by mapping out the ambiguities of the meaning of empathy within the scope of autism research. This context is of particular relevance because of the impact the conceptual confusion has on this field, and the unique insights autism research brings on understandings of empathy.

With the aim to clarify the complex diversity of what we mean by empathy, the main question explored in this paper is: in the context of autism, on what fronts do understandings of empathy diverge? An extensive multidisciplinary literature search on autism and empathy was conducted to take stock of the different conceptualizations of empathy that are being used. To answer the research question, similarities and differences between these understandings were identified. Additionally, an overview of different methodological approaches to measure empathy as found in the literature was made. Together, these findings create a comprehensive framework that grasps the diversity of what empathy can mean in the context of autism.

No new definition of empathy will be proposed here. Instead, the

findings motivate and guide critical reflection and careful use of the concept, especially when translating between different contexts or disciplines. They do so by pinpointing which areas require extra attention and reflection when engaging with empathy in research, as well as implications for empathy assessment strategies.

2. Methods

The methodology was inspired by, but not identical to, systematic reviews as widely used in biomedical sciences. It was designed to achieve an accurate representation of the research field this study aspires to serve (Polonioli, 2017). The body of literature included in this study is an extensive representation of literature explicitly focused on empathy and autism. This study aimed to examine how in this body of literature, empathy is being understood and measured. The collection of definitions of empathy found in literature was analyzed by looking for factors that can account for the similarities and differences between the findings. In this section, each step of the process will be discussed in more detail. Each step was executed by the author.

2.1. Data collection

The datasets needed for this project were 1) a list of understandings of empathy and 2) a list of methods to measure empathy, in literature on autism and empathy. This dataset was acquired in three steps: literature search, literature selection and data extraction. The details of these steps will be described below, and are summarized in Fig. 1.

A literature search was conducted on Web of Science, Pubmed and Philpapers. The search condition on the first two was "empathy" and "autism" or "ASD" or "autistic" in the title, and published before the end of 2020. The title-focused condition was chosen to ensure (to the best extent) the main focus of the article to be on empathy and autism, and, as such, maximize both the relevance and manageability of the findings. On Philpapers, the same conditions were used, but the keywords were applied to the topic instead of title. This was done to include additional relevant articles from the field of philosophy, taking into account the

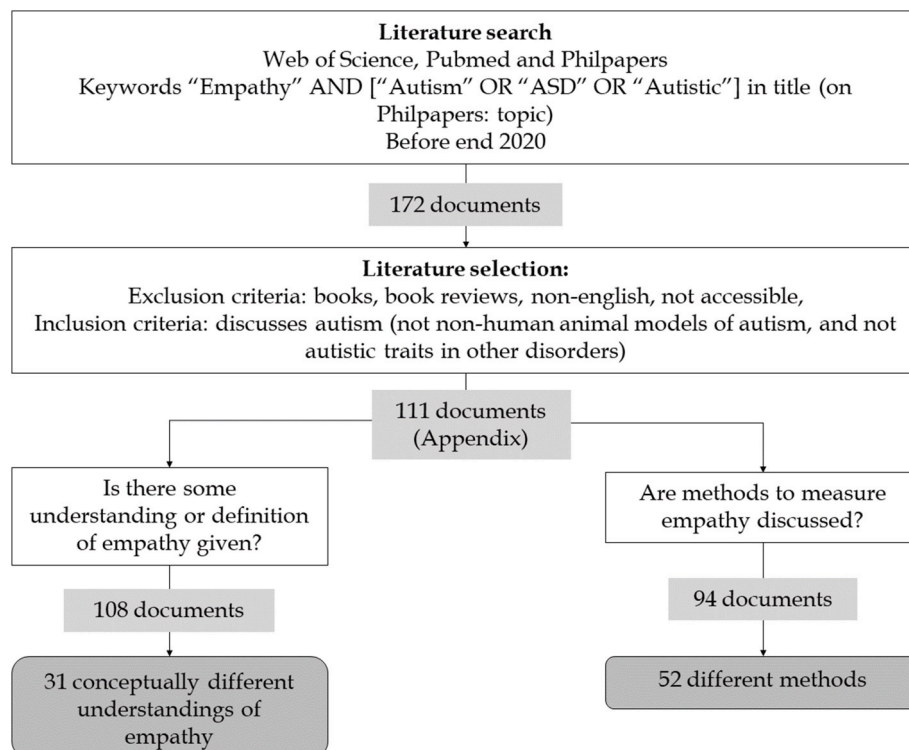


Fig. 1. Schematic overview of method. From top to bottom. The literature search resulted in 172 documents. The literature selection resulted in 111 documents.

difference in norms of title-design compared to natural and social sciences. After removing double findings, this resulted in 172 documents.

In the selection phase, books, book reviews, non-English documents, and inaccessible documents got excluded. An important inclusion criterion was that literature focused on autism. For the purpose of this study, non-human animal models of autism and explorations of autistic traits in other disorders were not included for further analysis. The selection phase resulted in 111 documents published between February 1992 and July 2020 (a list of the articles included in the dataset can be found in the appendix).

The next phase, data extraction, had the goal to find in each document 1) how empathy was being understood, and 2) what method(s) was/were used or discussed to measure empathy. Some articles did not provide an explicit definition or conceptualization of how empathy was understood by the authors. In these cases, an implicit understanding of empathy was extracted from the text by interpretive reading, which was needed for 13 articles. In 3 articles, no understanding of empathy was found at all, neither explicit nor implicit. From these 108 understandings of empathy, identical or highly similar definitions were grouped together. This resulted in 31 different conceptualizations of empathy. In 94 articles one or more methods to assess empathy in humans were discussed and/or executed. In total, 52 different methods were found in this set of literature.

2.2. Analysis

The analysis of the set of different conceptualizations of empathy aimed to find a comprehensive list of factors accounting for all the similarities and differences between them. This was approached as follows. The content of each conceptualization of empathy was schematically represented in a model. Each model captured what was meant by empathy. To illustrate, “an emotion that helps one understand another’s emotion”, consists of a self and an other having an emotion, the self having an understanding of the other’s emotion, and the self’s emotion improving that process of understanding. These are the elements this meaning of empathy consists of.

Based on these elements, the models could be grouped in various ways, considering which elements they had in common and which they had not. For example, models that consider empathy a purely cognitive process could be distinguished from those that considered it a purely affective process, and again from those that understand it as a combination. Within these clusters, models differ from each other on other fronts, maybe with similarities to some models in another cluster. Correspondingly, the models were grouped and re-grouped based on their similarities and differences in an iterative process. This was done with the goal to identify the characteristics of the models that made them different from others. In other words, to find all dimensions (for example, the cognitive and/or affective nature of empathy) along which meanings of empathy diverge. The analysis was completed once a list of dimensions was identified that could account for all the differences between the 31 conceptualizations of empathy found in the dataset, while all dimensions on the list would be needed to do so. This means that disregarding one of the dimensions would result in a failure to distinguish between some of the definitions, and adding a dimension to the list would not make a difference. A list of 12 dimensions was found that met this requirement.

Methods used to measure empathy in participants say a lot about what is meant by empathy in practice - and how or whether it is recognized in individuals. So in addition, the list of empathy assessment methods mentioned in the literature set was analyzed to create an overview of the variety in approaches to make empathy measurable/observable. Methods that were based on similar principles (for example a questionnaire or behavioral experiment) or worked on similar levels (for example behavioral or physiological) were clustered. This part was done in parallel and complementary to the main project, which was, to recall, analysing the diversity in empathy definitions. Making an

overview of methodological strategies used in the same literature set served to lay a foundation for reflection on the relationship between empathy assessment and what is meant by empathy conceptually (see section 4).

3. Results

3.1. Defining empathy

In the inspected literature, 31 different understandings of empathy were found. In the analysis, a list of 12 dimensions was discovered that together account for the differences between all these understandings. In other words, what is meant by empathy diverges along 12 dimensions (see Fig. 2). These dimensions will be explicated and discussed in this section. To enhance the structure and readability of this section, the dimensions are grouped into themes: cognitive and/or affective states and processes (1,2,3,4), access to the other’s inner life (5,6), functions of empathy (7,8), self-other distinction (9,10), and self- or other-orientation (11,12).

3.1.1. Cognitive and/or affective states and processes

The most frequently discussed theme in literature on empathy concerns proposed discrepancies, or lack thereof, between cognitive and affective processes and states and whether they ought to be included in definitions of empathy. Here, *cognition* refers to thoughts, beliefs and perspectives, whereas *affect* concerns emotional states and the experience and elicitation of feelings. This categorization is used here so as to comprehensively describe the variety in definitions of empathy that relates to this theme. The term *subject* will be used here to refer to the empathizer and *object* to the person the subject empathizes with. In relation to this theme, what is meant by empathy can diverge across the following four dimensions.

Dimension 1: The state of the object. There is disagreement on whether the other’s affective states, cognitive states, or both, enable empathy in the empathizer. The vast majority of the articles explicitly proposed a definition including both cognitive and affective states of the object, either being assessed through different processes, or altogether. Only five articles focused exclusively on the object’s cognitive states within their definition, and the remainder suggested only emotions as being the enabler of empathy. From here on, the affective and cognitive states of the object will be referred to as O-AS and O-CS, respectively.

Dimension 2: The state of the subject. Similarly, the state of the subject that was understood as empathy was disagreed upon; again being of cognitive nature (S-CS), affective (S-AS) or both. This aspect was discussed more explicitly and heavily in the literature than the previous one. It comes down to the question: is empathy an emotion, a cognitive endeavor, or a combination of these? To recall, dimension 1 refers to the state of the object, and dimension 2 to the state of the subject.

Dimension 3: Cognitive and affective empathy. In slightly less than half of the included papers, differences in the cognitive and/or affective nature of the states of the subject and/or object were made explicit by making a distinction between *cognitive empathy* (CE) and *affective empathy* (AE). However, these terms were not always used to describe the same processes. In 11 definitions the terminology of CE and AE was included, in one of the following ways.

	CE referring to:	AE referring to:
<i>Model 1:</i>	S-CS directed at O-CS	S-AS directed at O-AS
<i>Model 2:</i>	S-CS directed at O-CS	S-CS directed at O-AS
<i>Model 3:</i>	S-CS directed at O-AS	S-AS directed at O-AS
<i>Model 4:</i>	S-CS directed at both O-CS + O-AS	S-AS directed at O-AS

So, for example, the process of understanding the other’s emotional experience (S-CS directed at O-AS) could be called affective empathy (in model 2) or cognitive empathy (in model 3 and 4). Note that for example

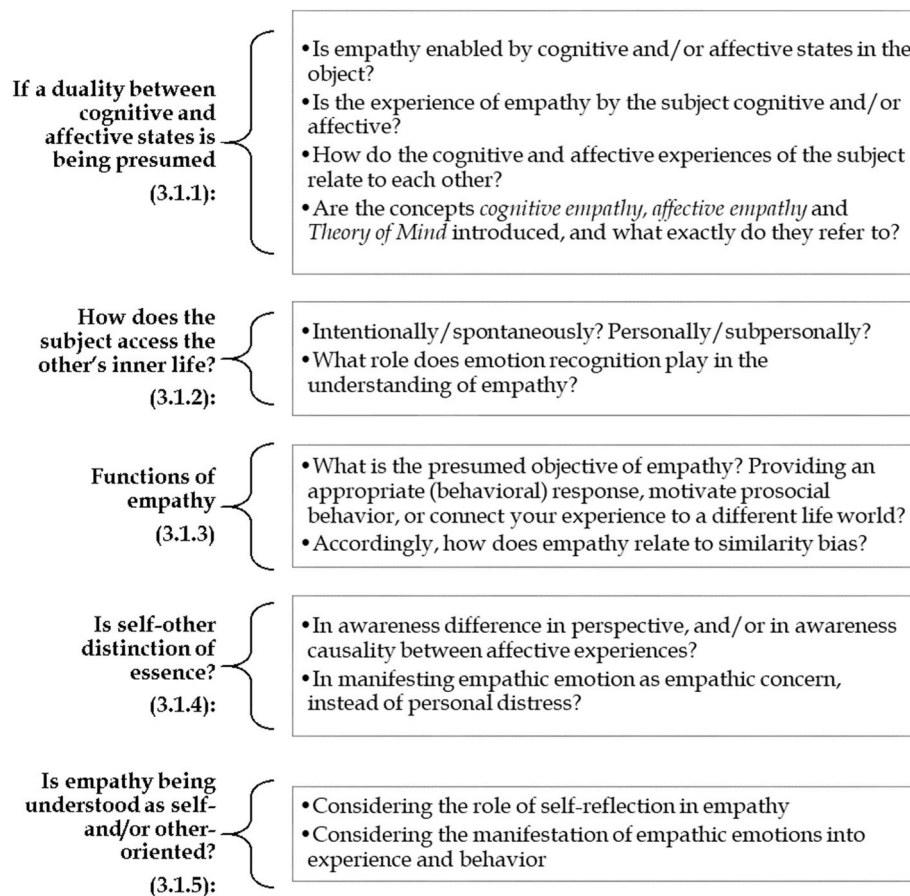


Fig. 2. A framework to guide reflection on the understanding of empathy in autism research.

model 1 and model 2 understand cognitive empathy the same way, but they differ in the way they understand affective empathy. In addition, the term *Theory of Mind* (ToM) is also sometimes used to distinguish between these processes in various ways (most often as S-CS directed at O-CS).

Dimension 4: The relation between affective and cognitive empathic states. The interaction between S-CS and S-AS is debated as well. For example, by including S-CS only as a result of S-AS (as a response to O-AS) (Meng et al., 2019; Stroth et al., 2019). In contrast, several other definitions included S-AS as a result of empathic S-CS, either as the only pathway towards empathic emotion, or as so-called *indirect AE* (*direct AE* referring to the direct relation between S-AS and O-AS). In some interpretations a hierarchy is introduced, differentiating “native” emotional responses from cognitive understanding of the other’s states and emotions, the latter then described as “advanced”.

3.1.2. Access to the other’s inner life and emotions

Dimension 5: Approaches to access the object’s state. Each approach to empathy faces the following issue: how can one access or yet catch a glimpse of someone else’s inner life? Most theories on this topic focused on behavior as a medium for communication between two individuals, with each their own inner life. Through verbal and nonverbal expressions of the object of empathy, the subject has access to their mental and emotional states. Some explicitly acknowledge that these expressions contain socially constructed cues, which facilitate the translation between one experiential life world and the other. An issue that prominently emerged in the analysis regarding this theme was the question whether accessing and addressing another’s mental and emotional states is active or passive, unfolding on a conscious or subconscious level, and whether empathy is an automatic experience or an intentional endeavor. While some include spontaneity or naturalness in

their definition of empathy, others contrastingly refer to empathy as making an effort to understand and attune to someone’s (sometimes completely) different life world than yours. In some definitions, but not all, a differentiation is made between AE and CE in this sense, posing AE as an intuitive, basal process, whereas CE requires effort and intention.

Dimension 6: The position of emotion recognition. The role ascribed to emotion recognition varied in such a prominent way, such that while it relates to the previous dimension, it adds a dimension of its own. Emotion recognition was most often implicitly reduced to inferring an emotion from facial expressions, behavior or situational contexts (opposed to, for example, literal linguistic expressions of emotions). Importantly, there is disagreement on whether emotion recognition is an empathic process in itself or can be part of it; and if not, whether it an essential precursor, mediator, or simply a useful information source. Emotion recognition is often included in CE, but sometimes in AE. The placement of emotion recognition in the understanding of empathy is especially of importance as this ability was not infrequently used as a measure for empathy, which will be discussed later on.

3.1.3. What is empathy supposed to do, and what not

Dimension 7: The function of empathy. In some cases objectives of empathy were included as properties of empathy itself in the definition. Different interpretations of this are not necessarily incompatible, but differ from each other in the way they frame empathy and its role in social interaction. The most popular example is the elicitation of an “appropriate emotion” in the subject, in response to O-AS. This had been proposed as an alternative to the requirement of empathy having to evoke the same emotion as experienced by the object (which was sometimes referred to as empathy, and sometimes referred to explicitly as not being empathy, but rather emotion contagion or mimicry) (Baron-Cohen and Wheelwright, 2004). For example, someone may feel

sadness as someone else feels scared. Even though this is not the same as the emotion the other is feeling, it seems “appropriate”, and could therefore be labelled as empathy. To some researchers, not merely the elicitation of an emotion, but the execution of specific behavioral responses (those considered to be appropriate to the situation) were included in the definition of empathy itself. From an alternative perspective, this behavior itself is not included in the understanding of empathy itself, but rather the objective of empathy being to provide motivation to execute such behavior. In this context, the behavior was often referred to as “prosocial behavior” rather than “empathic behavior”. This places empathy in an important position to facilitate relationship and community building, and social bonding in general. This narrative was frequently situated in an evolutionary or developmental perspective. Lastly, others presented accessing someone else’s inner life in itself as the goal of empathy. This included definitions of empathy as being open to the life world of someone else, or forming an interpersonal bridge. This could mean appreciating the similarity of the other’s life to yours through identification on the one hand (Komeda et al., 2015), or, contrastingly, the ways in which it differs from yours on the other (M. Eyuboglu, Baykara, and D. Eyuboglu et al., 2018; Jurecic, 2006).

Dimension 8: A place for similarity bias. An interesting paradox is the emphasis on similarity between the subject and object on the one hand, and self-other distinction in terms of diversity on the other. This relates to the different functions ascribed to empathy. From the perspective of empathy as a strategy for social bonding with its evolutionary benefits, similarity biases make perfect sense as being inherent properties of empathy. Contrastingly, in a view of empathy as an endeavor to understand a perspective or life world different from yours, such biases would not be seen as characteristics of empathy, but rather ways of “pollution” of the empathic ambition. This shows how a difference in the definition of empathy can impact not only the role ascribed to it in social interaction, but also its value in dealing with diversity in society: either bridging gaps or strengthening them.

3.1.4. Self-other distinction

Dimension 9: Awareness of self-other distinction. An aspect in which a seeming paradox presented itself was the emphasis on either self-other distinction or congruency. In a subset of the definitions, scattered over the dimensions discussed before, self-other distinction played a prominent, or even essential role. This was understood as the awareness that the other is different from you, and has their own life world, thoughts and emotions. On an exclusively cognitive level, it referred to the understanding that the other’s beliefs and thoughts are different from yours. Concerning emotions, this referred to the awareness in the subject that their emotional experience is an empathic response to the other’s. To some, the awareness of this causality makes the difference between empathy and emotion contagion or mimicry, implying the latter is not actually empathy, however to others it is (or a variety of it, referred to specifically as “motor empathy”). Interestingly, to some, this self-other awareness on the emotional level was included in affective empathy, while others defined this as cognitive empathy.

Dimension 10: The effect of self-other distinction. This form of self-other distinction was sometimes used to make sense of the relationship between personal distress and empathic concern as manifestations of S-AS. In this narrative, lack of understanding of the causality between S-AS and S-OS increases personal distress as a result of empathic connection. Instead, proper self-other distinction could protect the subject from this effect, and rather let the S-AS motivate prosocial behavior through expression and acts of concern.

3.1.5. Self- or other-orientation

Dimension 11: Self-awareness. While empathy is often framed as an other-directed, or at least interpersonal phenomenon, self-reflection and self-awareness prominently came to the fore in a diverse subset of the included body of literature. This, either as playing an important role

in, or actually being a part of, empathy. In one model of empathy for example, empathy was presented to exist on a scale from self to other: with self-oriented empathy (understanding, awareness and reflection on own thoughts and emotions) on one end and other-oriented empathy (considering and responding to the object’s perspective and feelings) on the other (Robinson, 2020). This understanding of self-oriented empathy plays a part in other models as well, yet not as being an empathy-kind, but as an important mechanism to facilitate empathy. Self-awareness and reflection came to the fore as needed for self-other distinction, in making sense of the social world, and of emotions (for example, as modeled in Bird and Viding (2014)). In relation to this, the comorbidity of autism with alexithymia presented itself as a topic of interest. This trait is characterized by difficulties in understanding, describing, and recognizing one’s own emotions, and might therefore (indirectly) interfere with empathy (Mul et al., 2018).

Dimension 12: Self- or other-oriented empathic emotions. Finally, as discussed in dimension 10, a proper self-other distinction is sometimes suggested to relatively decrease personal distress and make place for empathic concern. These experiences are framed to be, respectively, self-oriented and other-oriented. According to this narrative, self-awareness is needed for intact self-other distinction, and as a result, for other-oriented empathic emotions. Keep in mind that the term “self-oriented empathy” can refer to both self-awareness (which is, as proposed, essential for other-orientation), but also to personal distress as a self-oriented manifestation of empathic emotion.

In summary, defining empathy appears to be a complex endeavor concerning either or both similarities and differences, self- and other-orientation, self- and other-understanding, and connecting with, while separating oneself from, the other.

3.2. Methods to measure empathy

In the previous section, the dimensions that make up the diversity of meanings of empathy was discussed. Considering the diverging nature of what is meant by empathy, it is unsurprising that there is a wide assortment of methods used to measure it. In total, 52 methods were found in the included literature. In this section, the types of methodologies that were found are summarized. By exception articles included extensive reflection on different methods, and defended their choice in relation to the definition they provided.

In half of the articles, self-report questionnaires were used as (one of) the method(s) to measure empathy. In some cases, parents or caregivers filled out such questionnaires to assess empathy of a child. Such measures focus on what is sometimes called *trait empathy*, opposed to *state empathy*. This means that these questionnaires reflect on one’s empathic tendency, ability or drive in social interactions in general, in contrast to experimental procedures that assess one’s responses to specific social stimuli.

Other methods to assess empathy used self-report involved interviews on, for example, moral reasoning (Gleichgerricht et al., 2013; Senland and Higgins-D’Alessandro, 2016), or reactions to a friends’ distress (Jamil et al., 2017). Other procedures included movies, stories or game playing as stimuli, after which subjects needed to describe what they thought or felt (for example Bellebaum, Brodmann, and Thoma (2014), Lockwood et al. (2013), and Trimmer et al. (2017)). The benefits and pitfalls of self-assessment were frequently discussed in literature (see, for example, Johnson et al. (2009)). Besides the more general issue of bias, one concern that is being raised is the seeming deficit in self-reflection and self-awareness associated with autism (and/or alexithymia, with its high co-occurrence). Interestingly, as discussed before, self-reflection appeared to be of high interest in defining empathy as well.

Avoiding this complexity, other methods rely on observations and reflections of researchers or care-providers. A selection of the studies provided detailed descriptions on how verbal and non-verbal responses were rated on empathic properties (for example, Holopainen et al.

(2019) and Sivaraman (2017)). In Chene et al. (2010), kindness, tolerance, and respect were assessed in interactions, as indirect measures of empathy. Such descriptions reveal many underlying assumptions and understandings of empathy as a concept. Some of these might be described by some as indirect or secondary measures, but whether these should be labelled as such depends on whether and where the measured quality is placed in the definition of empathy.

Another example of a topic of controversy in the definition of empathy that was represented in methodological differences is the role of emotion recognition. Eye-reading and face-reading experiments are frequently used as measures of empathy, sometimes by themselves, but most often as part of a mixed methods approach to capture the multidimensionality of the most frequently used understandings of empathy. These procedures are most prominently presented as a measure for “cognitive empathy” specifically. In some studies this was combined with self-assessment of the subject’s emotional response to an emotional stimulus, as a measure of their interpretation of “affective empathy”. In few articles, methods designed to test ToM were used as a measure for empathy, either exclusively, or in addition to other methods.

Lastly, a share of the empirical studies addressed empathy on a neurological or physiological level. These included, for example, endeavors to map the functional neuroanatomy of empathic experiences, and from there, exploring atypicalities of different neurotypes. The definition of empathy influenced such practices in the type of stimuli and/or the exercise given to the participants. Methods on the physiological level included using measures for arousal to certain stimuli, such as heart rate or skin conductance. Another example is the assessment of motor empathy or mimicry measuring facial muscle activity (Bons et al., 2013). The use of such methods inspires the question where empathic responses should be found: in behavior, in experience, in our body, in our brain? This, again, represented the variation in understandings of empathy as a concept.

4. Discussion

Empathy and autism are frequently connected in academic literature. While all articles examined in this paper explored empathy and autism, the research aims and angles varied substantially. Most studies focused on atypicalities of empathic experiences and behavior associated with autism, while some articles (contrastingly) explored empathy and autism in light of *neurodiversity* appreciation and the *double empathy problem*. At the same time, the meaning that is associated with the concept “empathy” varies fundamentally in multiple aspects. In this study, no less than 31 meaningfully unique understandings of empathy have been identified, varying across 12 dimensions. This can be interpreted as such: each definition can be described as a combination of stances on each dimension, a location in a 12-dimensional space. This study anticipated to finding a variety of meanings of empathy, the degree to which these diverge and the number of areas in which they diverged is noteworthy.

Additionally, several clusters of different methodological strategies have been identified and analyzed with regard to the way they serve to assess specific conceptual understandings of empathy. Interestingly, the methods themselves often revealed more or even contradictory information about the authors’ understanding of empathy compared to the included definition. Explicit theoretical reflection or empirical evidence on the validity or appropriateness of the chosen method as related to their conceptual frame of empathy was rare (see for example Harrison et al. (2020) for a meta-analysis on this issue). This suggests that readers are implicitly burdened with a responsibility to interpret research findings according to the operationalization of empathy that is embedded in the methodology, rather than the theoretical foundation provided.

Some of the dimensions identified here have been discussed before, as is the conceptual confusion of empathy in general (Cuff et al., 2016).

However, this study revealed a more extensive and detailed overview of the variety in areas of confusion. Insights and implications for theories of autism and measuring empathy are discussed below. Finally, a practical framework to facilitate critical and explicit reflection on what is meant by empathy is presented, grounded upon the results of this study.

4.1. Main insights and implications

Firstly, the findings presented here reveal that the confusion concerning the affective versus cognitive nature of empathy goes further than the question whether the experience of the subject is of cognitive and/or affective nature. Various accounts explicitly included interpretations for so-called *cognitive empathy* and *affective empathy*, but their relative meanings varied across authors. To illustrate, a hypothesis that is increasingly supported by empirical studies and theoretical reflections, suggests that the atypical empathic experiences and reactions associated with autism result from an imbalance between these types of empathy; including difficulties with cognitive empathy while having intact or even increased affective empathic experiences (Smith (2009), and, for example, Shalev and Uzevovsky (2020)). Accordingly, deficits in cognitive empathy might be responsible for heightened personal distress as a result of empathic emotions, and complicate manifestation of these emotions as empathic concern. In this narrative, cognitive empathy relates to a clear understanding of self-other distinction. In contrast, others find that autistic persons make more use of cognitive abilities to make sense of others emotions and behavior than those without this diagnosis (for example Schulte-Ruether et al. (2014)). Possibly, this is because a greater cognitive endeavor is required to bridge between autistic and non-autistic mindedness, of which the burden to a great extent lays with the minority (being autistic) (Beck, 2018). Such findings are not necessarily incompatible with each other, if one pays close attention to the way the distinction between cognitive and affective processes is being understood, and which processes are actually being included in these accounts. Cognitive empathy can, for example, refer to the ability to interpret behavioral cues, it can highlight the awareness of self-other distinction, it can be used to describe the endeavor to theorize on the other’s perspective, or merely to the capacity to read facial emotion expressions. Methods to assess this concept vary accordingly, and so does the role cognitive empathy plays in theories on empathy and autism. Similar variability is present concerning affective empathy, referring to, for example, the affective nature of an empathic experience, or to the affective nature of the states in the object that enable empathy. The distinction between personal distress and empathic concern as varieties of affective empathy complicates this even further, as it intertwines with various interpretations of cognitive empathy. This raises the question how feasible, comprehensible, and even useful this distinction might be in the endeavor to make sense of empathic differences. At least in the way it confuses the current research landscape, both in theoretical reflections as in methodology. Furthermore, the meaningfulness of distinguishing between cognitive and affective states is something to be questioned to begin with, which seems to be overlooked in the majority of the accounts included in the present study.

Secondly, emotion recognition arguably is merely one of the ways to assess another’s life world. However, the extent to which it was brought to the fore in much of the research examined, and that empathy is sometimes even being reduced to it in methodologies, is noteworthy. Understanding facial expressions plays a central role in empathizing, according to a significant part of the literature. This prominent focus on facial expression as “communication media for emotions”, is not surprising. However, as autism is often associated with atypical use of this way of communicating emotions (see, for example, Faso et al. (2015)), a more nuanced view on the relationship between empathy and facial emotion expressions might be required. While facial emotion expression tasks seem to be an appropriate assessment of empathy in neurotypicals, the validity to use these methods involving autistic research participants needs to be reflected upon, examining measurement invariance. That is,

unless a majority-privilege is included in the definition of empathy, such that adjustment to certain norms is required for someone to be considered empathic. Such a statement is appropriate in certain interpretations of objectives of empathy, namely those with a focus on empathy as an adaptation to strengthen social coherence, one's position in one's social environment, and proximal relationships (Preston and FransDe Waal, 2002). Such an assumption is, however, inappropriate when ascribing to empathy a role of bridging between individuals, appreciating another's life world, and attuning to one another's needs. Considering different modes of self-expression and communication might open up new perspectives on empathy between autistic people and neurotypicals. Whichever way empathy is being interpreted by a researcher, explicit reflection on this issue is essential in validating the appropriateness of their methodological practices, and, as such, the meaning of their contribution to autism research.

Third, behavioral responses are widely used in empirical studies to assess empathy in research participants, as found here. Therefore, they are (maybe implicitly) included in an understanding of empathy itself in academic practice. This raises a similar issue as discussed previously concerning facial expression recognition. Some studies that used observations of social behavior to assess empathy included detailed descriptions of what kind of responses and actions were understood as empathic and to what extent (for example Holopainen et al. (2019) and Sivaraman (2017)). Socially appropriate empathic responses can be given by someone who is not empathizing with the other at all, but is highly skilled in recognizing social scripts. And vice versa, reactions from someone who experiences heightened empathic emotions might be considered to be "over-emotional". But again, whether these scenarios would be considered to contain empathy depends on the definition. For example, abiding to social etiquette by giving appropriate responses is beneficial for relationships in most cases (Sivaraman, 2017). Being empathetic could be, in that sense, understood as recognizing and responding to the needs of the other. Intelligently following the appropriate social script might provide the other with the sense of support they need, while a sincere but overwhelming response of compassion might not. There is a parallel with the issue of emotion recognition in the reduction of expression into behavioral output. Empathetic responses might not be the same as an expression of experiencing empathy, as facial postures might not always be direct expressions of emotions. This is, unless experiencing empathy is being defined as being aware of which response to give, and feeling an emotion is being defined as showing the appropriate facial expression. Some authors acknowledge this issue in theorizing that autistic people do not necessarily have a deficit in empathy, but have trouble in expressing this into behavior (Cascia and Barr, 2017; Senland and Higgins-D'Alessandro, 2016). Following the account of the double empathy problem, this means having trouble in demonstrating empathy in a way that is attuned to non-autistic needs, questioning the ability of neurotypicals to respond empathically to (i.e. responding to the needs of) people on the spectrum. This latter question was not addressed as a form of empathic behavior in the empirical studies that used behavior as a measure for empathy, but it was explored in papers including anecdotal evidence of perceived challenges (for example in Hodge (2013), Jurecic (2006), and Louis (2008)).

Fourth, the proposed objective of empathy as included in a definition drastically impacts the acceptance of similarity bias as being inherent to empathy or not. If empathy is framed as a capacity that allows one to take a different perspective and connect with the life world of another, signs of strong similarity bias should make someone to be assessed as less empathetic. However, if empathy is understood as inherently biased, the traits of the same person would be considered differently. On the account of the double empathy problem, a parallel can be made for a *neurosimilarity bias*, favoring empathy towards modes of expression similar to yours (either being a characteristic of empathy, or induced externally, depending on the definition of empathy). Making this issue explicit is essential in the debated value of empathy in moral reasoning and in shaping social networks and societal structures, and ultimately,

on the framing of empathy as a virtue. This also relates to the discrepancy between trait and state empathy, a topic of high importance in decisions on methodological practices. State empathy could be considered to be the product of several different factors: the subject's trait empathy, the content and type of stimuli (linguistic, visual, etc.), and the context (in research, for example: instructions, in real life: distractions, relationship to other, etc.). The issue described before can be demonstrated in this model as similarity bias influencing state empathy through being part of empathy as a trait, or through the context.

Lastly, the importance and role of self-reflection and -awareness for empathy has revealed itself here. The frequently assumed other-oriented nature of empathy might be a severe oversimplification, leaving the relation between self-directed emotions and understanding to empathy underexposed. This narrative can imply empathic difficulties being associated with self-centeredness, while this is contradicted by theoretical accounts of empathy and empirical data including self-reference as essential or even integral to empathy (see, for example, Lombardo et al. (2007) and Robinson (2020)). The complexity, again, demonstrates the urgent need for explicit reflection on the understanding of empathy and framing its function in society.

4.2. Recommendations and limitations

As these insights indicate, the confusion on the meaning of empathy shape findings and theories in autism research, as well as their quality. Unfortunately, explicit reflection on defining empathy and on how this informs methodological decisions was most often lacking in the research reviewed in this study, in line with the concerns raised by Fletcher-Watson and Bird (2020). This increases the risk to 1) judge results as contrasting or incompatible, while they would actually fit the same theoretical paradigm, 2) misuse results that support a different interpretation of empathy than used by the reader, or even 3) misinterpretation of results by the authors themselves in cases where methods do not match the presented theoretical framework. Besides the delay of scientific progress this is accountable for, the societal impact is worrisome. The way empathy and autism are being associated in academia contributes to the way autistic people are being framed outside academia as well (by health-care providers, institutions, relatives, and in public discourse in general), affecting daily life experiences of numerous individuals (Welch et al., 2020). Researchers in this field contribute to how autism is being understood, scientifically and, indirectly, socially. This highlights the importance of careful, critical and explicit reflection on the framing of empathy and its relation to autism, as to improve the science of autism in both efficiency/progress and in societal responsibility. Therefore, research on empathy and autism should include explicit reflection on the way empathy is being understood and accordingly, a critical defense of the appropriateness of choice of methodology. Consequently, caution must be taken into interpreting such findings and translating them into a different context. Unfortunately, this is not the current norm in the field.

Based on the findings of this study, the framework in Fig. 2 is recommended to guide reflection on research on empathy and autism. The questions provided there can be used to make sense of the understanding of empathy the authors used, taking into account methodological decisions if assessing empirical studies. Consequently, caution must be taken when combining and comparing different findings if they are founded upon dissimilar understandings of empathy. Lastly, the framework provides topics that require attention in designing and conducting research, and explicit reflection in documentation.

Next to the need to systematically embed reflection on empathy, some specific topics came to the fore that require more attention. First, the issue of measurement invariance in measuring empathy in autistic people urgently requires investigation. Noteworthy, a review of a variety of self-report questionnaires on empathy used in autism research found high evidence to qualify the most popular questionnaires (for example the Empathy Quotient varieties) as insufficient, as both

evidence for content validity and measurement invariance appeared to be lacking for autistic samples (Harrison et al., 2020). In other words, it is unsure whether these methods appropriately assess empathy content-wise (accepting the definitions these methods were created with and for), and whether they assess the same traits in autistic individuals as in a neurotypical sample. Concerning their investigation, Harrison et al. wrote: “Until measurement invariance is established, using these measures to demonstrate empathy deficits in autistic individuals may be as good as using a Stroop task to examine executive functioning deficits in those with color blindness” (Harrison et al., 2020). Such critical investigations are also required for other types of procedures, for example behavioral studies, with respect to the relationship between behavior and expression. Another area that might be fruitful for advancing our understanding of the relationship between autism and empathy, and for design of care to address actual challenges faced by individuals on the spectrum, concerns the relationship to *the self*. Research focusing on self-awareness and embodiment might shed light on the relationship between seeming empathy deficits and challenges in experiencing the self. Finally, for all recommendations given here, inclusion of autistic people in design of research and methodologies is of essence to overcome “neurotypical” biases currently underlying the research field (Fletcher-Watson and Bird, 2020; Welch et al., 2020).

The present study has some limitations as well. Whereas the body of literature included in the analysis was extensive, it was not complete. For example, studies without an explicit focus on empathy and autism were not included, while some of these might be of importance in the area. Books were also not excluded, as well as non-English literature. Secondly, the analysis was done on a linguistic and interpretive basis. As a result, it could be that for some articles the meaning of empathy that was extracted from it does not fully cover what the authors actually mean by empathy. While it is less likely that this would have resulted in a completely new dimension rather than a different position on the twelve dimensions presented here, this possibility is not to be excluded. This even more highlights the importance of explicit documentation of what is meant by empathy in an article about the concept.

5. Conclusion

Empathy can mean many different things. In 111 papers on autism and empathy, 31 unique conceptual interpretations of empathy were found. These diverged across 12 dimensions. Sensitivity to these areas is recommended to interpret and conduct research on empathy and autism, as they drastically shape the meaning and impact of findings and claims. Additional attention is required to empirical studies, as to reflect on whether strategies to measure empathy align with what is meant by empathy conceptually.

Credit author statement

Caroline Bollen: Conceptualization, Methodology, Formal analysis, Data curation, writing, Visualization. Janna van Grunsven: Supervision (no author). Sabine Roeser: Supervision (no author)

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgment

This work is part of the research program Ethics of Socially

Disruptive Technologies, which is funded through the Gravitation program of the Dutch Ministry of Education, Culture, and Science and the Netherlands Organization for Scientific Research (NWO grant number 024.004.031).

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.metip.2022.100109>.

References

- Baron-Cohen, S., Wheelwright, S., 2004. The empathy quotient: an investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *J. Autism Dev. Disord.* 34 (2), 163–175. <https://doi.org/10.1023/B:JADD.0000022607.19833.00> issn: 0162-3257.
- Beck, Timothy J., 2018. Tracing disorder across theories of autism, empathy, and mental health care. *Disabil. Soc.* 33 (8), 1303–1326. <https://doi.org/10.1080/09687599.2018.1491389> issn: 0968-7599.
- Bellebaum, Christian, Brodmann, Katja, Thoma, Patrizia, 2014. Active and observational reward learning in adults with autism spectrum disorder: relationship with empathy in an atypical sample. *Cognit. Neuropsychiatry* 19 (3), 205–225. <https://doi.org/10.1080/13546805.2013.823860> issn: 1354-6805.
- Bird, Geoffrey, Viding, Essi, 2014. The self to other model of empathy: providing a new framework for understanding empathy impairments in psychopathy, autism, and alexithymia. *Neurosci. Biobehav. Rev.* 47, 520–532. <https://doi.org/10.1016/j.neubiorev.2014.09.021> issn: 0149-7634.
- Bons, Danielle, et al., 2013. Motor, emotional, and cognitive empathy in children and adolescents with autism spectrum disorder and conduct disorder. *J. Abnorm. Child Psychol.* 41 (3), 425–443. <https://doi.org/10.1007/s10802-012-9689-5> issn: 0091-0627.
- Cascia, JoAnne, Barr, Jason J., 2017. Associations among vocabulary, executive function skills and empathy in individuals with autism spectrum disorder. *J. Appl. Res. Intellect. Disabil.* 30 (4), 627–637. <https://doi.org/10.1111/jar.12257> issn: 1360-2322.
- Chene, Yufang, et al., 2010. Enhancing empathy instruction using a collaborative virtual learning environment for children with autistic spectrum conditions. *Comput. Educ.* 55 (4), 1449–1458. <https://doi.org/10.1016/j.compedu.2010.06.008> issn: 0360-1315.
- Cuff, Benjamin MP., et al., 2016. Empathy: a review of the concept. *Emotion review* 8 (2), 144–153.
- Eyuboglu, Murat, Baykara, Burak, Eyuboglu, Damla, 2018. Broad autism phenotype: theory of mind and empathy skills in unaffected siblings of children with autism spectrum disorder. *Psychiatry and Clinical Psychopharmacology* 28 (1), 36–42. <https://doi.org/10.1080/24750573.2017.1379714> issn: 2475-0573.
- Faso, Daniel J., Sasson, Noah J., Pinkham, Amy E., 2015. Evaluating posed and evoked facial expressions of emotion from adults with autism spectrum disorder. *J. Autism Dev. Disord.* 45 (1), 75–89.
- Fletcher-Watson, Sue, Bird, Geoffrey, 2020. *Autism and Empathy: what Are the Real Links?*
- Gleichgercht, Ezequiel, et al., 2013. Selective impairment of cognitive empathy for moral judgment in adults with high functioning autism. *Soc. Cognit. Affect Neurosci.* 8 (7), 780–788. <https://doi.org/10.1093/scan/nss067> issn: 1749-5016.
- Harrison, Jessica L., et al., 2020. Empathy measurement in autistic and nonautistic adults: a cosmin systematic literature review. *Assessment*. <https://doi.org/10.1177/1073191120964564> issn: 1073-1911.
- Hodge, Nick, 2013. Counselling, autism and the problem of empathy. *Br. J. Guid. Counsell.* 41 (2), 105–116. <https://doi.org/10.1080/03069885.2012.705817> issn: 0306-9885.
- Holopainen, Annaleena, et al., 2019. Does theory of mind training enhance empathy in autism? *J. Autism Dev. Disord.* 49 (10), 3965–3972. <https://doi.org/10.1007/s10803-018-3671-1> issn: 0162-3257.
- Jamil, Ruby, Gragg, Marcia N., DePape, Anne-Marie, 2017. The broad autism phenotype: implications for empathy and friendships in emerging adults. *Pers. Individ. Differ.* 111, 199–204. <https://doi.org/10.1016/j.paid.2017.02.020> issn: 0191-8869.
- Johnson, Shannon A., Filliter, Jillian H., Murphy, Robin R., 2009. Discrepancies between self- and parent-perceptions of autistic traits and empathy in high functioning children and adolescents on the autism spectrum. *J. Autism Dev. Disord.* 39 (12), 1706–1714. <https://doi.org/10.1007/s10803-009-0809-1> issn: 0162-3257.
- Jurecic, Ann, 2006. Mindblindness: autism, writing, and the problem of empathy. *Lit. Med.* 25 (1), 1–23. <https://doi.org/10.1353/lm.2006.0021> issn: 0278-9671.
- Komeda, Hidetsugu, et al., 2015. Autistic empathy toward autistic others. *Soc. Cognit. Affect Neurosci.* 10 (2), 145–152. <https://doi.org/10.1093/scan/nsu126> issn: 1749-5016.
- Lockwood, Patricia L., et al., 2013. Dissecting empathy: high levels of psychopathic and autistic traits are characterized by difficulties in different social information processing domains. *Front. Hum. Neurosci.* 7 <https://doi.org/10.3389/fnhum.2013.00760> issn: 1662-5161.
- Lombardo, Michael V., et al., 2007. Self-referential cognition and empathy in autism. *PLoS One* 2 (9). <https://doi.org/10.1371/journal.pone.0000883> issn: 1932-6203.

- Louis, Maureen M., 2008. Walking the walk: my autistic son and the scholarship of empathy. *Wom. Stud. Commun.* 31 (2), 233–239. <https://doi.org/10.1080/07491409.2008.10162538> issn: 0749-1409.
- Meng, Jing, et al., 2019. Top-down effects on empathy for pain in adults with autistic traits. *Sci. Rep.* 9 <https://doi.org/10.1038/s41598-019-44400-2> issn: 2045-2322.
- Milton, Damian EM., 2012. On the ontological status of autism: the 'double empathy problem'. *Disabil. Soc.* 27 (6), 883–887.
- Mul, Cari-lene, et al., 2018. The feeling of me feeling for you: interoception, alexithymia and empathy in autism. *J. Autism Dev. Disord.* 48 (9), 2953–2967. <https://doi.org/10.1007/s10803-018-3564-3> issn: 0162-3257.
- Paul, Chown, Nicholas, 2014. More on the ontological status of autism and double empathy. *Disabil. Soc.* 29 (10), 1672–1676. <https://doi.org/10.1080/09687599.2014.949625> issn: 0968-7599.
- Polonioli, Andrea, 2017. A Plea for Minimally Biased Empirical Philosophy.
- Preston, Stephanie D., Frans, BM De Waal, 2002. Empathy: its ultimate and proximate bases. *Behavioral and brain sciences* 25 (1), 1–20.
- Robinson, Anna, 2020. Enhancing empathy in emotion-focused group therapy for adolescents with autism spectrum disorder: a case conceptualization model for interpersonal rupture and repair. *J. Contemp. Psychother.* 50 (2), 133–142. <https://doi.org/10.1007/s10879-019-09443-6> issn: 0022-0116.
- Schulte-Ruether, Martin, et al., 2014. Age-dependent changes in the neural substrates of empathy in autism spectrum disorder. *Soc. Cognit. Affect Neurosci.* 9 (8), 1118–1126. <https://doi.org/10.1093/scan/nst088> issn: 1749-5016.
- Senland, Amie K., Higgins-D'Alessandro, Ann, 2016. Sociomoral reasoning, empathy, and meeting developmental tasks during the transition to adulthood in autism spectrum disorder. *J. Autism Dev. Disord.* 46 (9), 3090–3105. <https://doi.org/10.1007/s10803-016-2849-7> issn: 0162-3257.
- Shalev, Ido, Uzefovsky, Florina, 2020. Empathic disequilibrium in two different measures of empathy predicts autism traits in neurotypical population. *Mol. Autism.* 11 (1) <https://doi.org/10.1186/s13229-020-00362-1> issn: 2040-2392.
- Sivaraman, Maithri, 2017. Using multiple exemplar training to teach empathy skills to children with autism. *Behavior Analysis in Practice* 10 (4), 337–346. <https://doi.org/10.1007/s40617-017-0183-y> issn: 1998-1929.
- Smith, Adam, 2009. The empathy imbalance hypothesis of autism: a theoretical approach to cognitive and emotional empathy in autistic development. *Psychol. Rec.* 59 (3), 489–510. <https://doi.org/10.1007/BF03395675> issn: 0033-2933.
- Stroth, Sanna, et al., 2019. Empathy in females with autism spectrum disorder. *Front. Psychiatr.* 10 <https://doi.org/10.3389/fpsy.2019.00428> issn: 1664-0640.
- Trimmer, Emily, McDonald, Skye, Ann Rushby, Jacqueline, 2017. Not knowing what I feel: emotional empathy in autism spectrum disorders. *Autism* 21 (4), 450–457. <https://doi.org/10.1177/1362361316648520> issn: 1362-3613.
- Welch, Christie, et al., 2020. From "since" to "if": Using Blogs to Explore an Insider-Informed Framing of Autism". *Disability & Society*, pp. 1–24.
- Zalla, Tiziana, et al., 2011. Moral judgment in adults with autism spectrum disorders. *Cognition* 121 (1), 115–126.