

11 A conceptual framework for empathy in humans and nonhuman animals

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Can we develop a conceptual framework that allows us to characterise similarities and differences between cases of empathy in humans and nonhuman animals (hereafter “animals”)? We suggest such a framework in three steps. First, we develop a new conceptual framework by distinguishing central components of empathy starting with a paradigmatic case of human empathy. Second, we characterise different types of empathy as they develop in human ontogenesis. Third, we describe which of these types of empathy can be found in other species based on animal studies. The integration of phylogenetic and ontogenetic perspectives enables us to outline how this conceptual framework can fruitfully be applied to explicate the relation of empathy in humans and other animals.

Introduction¹

Let us start with a provisional characterisation of empathy that we want to develop into a scientific concept of empathy: In the *Cambridge dictionary*, we can read that empathy is “the ability to share someone else’s feelings or experiences by imagining what it would be like to be in that person’s situation.”² This is a description inspired by a typical case of human empathy, e.g. the empathy of parents for their children. We argue below that such typical cases of empathy involve a registration of the other’s affective state, an attitude of caring for the other, and then also a typical response behaviour. But this need not be a sharing of someone else’s feeling. A typical case of empathy is also one in which I register the sadness of the other and then I comfort him with the attitude of caring. Often, empathy need not involve a sharing of feelings but can be based on having complementary affective states or processes. Furthermore, imagining what it would be like to be in someone else’s situation is a quite demanding cognitive ability of high-level mental simulation, which implies that only agents who have this ability can empathise. This is not plausible since empathy can also be observed in more basic cognitive situations as we will demonstrate. Thus, we need to develop a systematic and scientifically grounded concept of empathy.

Why should we care about empathy? Intuitively, everyone may agree that empathy is the salt in the soup of our intersubjective life with family and friends. Even when interacting with enemies, one can accept from a rational perspective that some empathy with them seems to be relevant to overcome conflicts or to stop an escalation because it prevents a dehumanisation of enemies. Only looking at children, we have extensive scientific evidence for a multiplicity of functional roles of empathy during early education:

The scope of functions that empathy in children can mediate include social understanding, emotional competence, prosocial and moral behaviour, compassion and caring, and regulation of aggression and other antisocial behaviours. It should be emphasised that empathy is not equivalent to these personal and interpersonal competencies, nor is it a magic elixir that automatically produces social competence and prosocial behaviour. However, it is a very important factor in the matrix of developmental variables that mediate these cognitive and affective behaviours, all of which are important to schooling.

(Feshbach and Feshbach 2009, 86)

Furthermore, empathy can add another dimension of social interaction along which animals might act for a reason, as proposed by Glock (2019). In line with his approach, we are also looking for a middle ground that not only does not undersell, but also does not exaggerate the abilities of nonhuman animals as, e.g., such a middle ground is developed in detail for concepts (Glock 2000; Newen and Bartels 2007).

Although there is a large agreement on the relevance of the concept of empathy, there is still no consensus on how to systematically characterise the concept such that empathic processes are described adequately and we are able to distinguish them from related phenomena.

How can we methodologically reach such a proposal? *First of all*, we think that we should not aim for a definition with jointly necessary and sufficient conditions of empathy for two reasons: (a) Looking at the variety of phenomena associated with empathy and the proposals available in the literature (see below), we think that it is not very promising to continue any search for such a type of definition. (b) This type of definition is understood as the definitional understanding of concepts (Laurence and Margolis 1999, 3–81) and it only holds for concepts with very constrained features (e.g. bachelors are unmarried men) or for scientifically introduced concepts such as *gene* or *atom*. But *empathy* is a concept anchored in folk psychology and it captures such a wide range of phenomena that we propose to aim for a multidimensional characterisation of the concept such that we can discover a range of typical components and sub-features of these components, which allow us to systematically describe ideal cases of empathy and the family resemblance relations

of related phenomena to these ideal cases. *Second*, we suggest that we take a look at the best description of empathy during the development of young children because this enables us to separate relevant features that are involved in full-blown empathy. As a consequence, we may not only expect a typical case of full-blown empathy but also a sequence of idealised types of empathy that develop during ontogenesis on the way to acquire full-blown empathy. *Third*, we furthermore suggest that the framework should be rich enough to account not only for empathy in humans and during their ontogenesis but also for nonhuman animals. The latter aspect is taken as one of the important aspects that has so far been underestimated for a fruitful concept of empathy: We should account for the fact that such an ability is evolutionarily anchored and, therefore, especially try to bring together observations from ontogenetic and phylogenetic development with typical cases of full-blown empathy. One may reply that the dimension of animal empathy is too unclear to be considered as a constraint. Let us briefly summarise this challenge: Until recently, empathy has been thought of as a uniquely human ability since research investigating this ability has been strongly influenced by the Bischof-Köhler hypothesis (Bischof-Köhler 1985) postulating that the behaviour of nonhuman animals is controlled only by their own current motivational states. Hence, nonhuman animals cannot anticipate future motivational states or act on the motivational and emotional states of others. However, the past two decades of research have revealed increasing evidence of behaviour which indicates that we should at least investigate the possibility of empathy in nonhuman animals, e.g. prosocial behaviour in rodents (Bartal et al. 2011). Focusing specifically on the mechanisms underlying prosociality in rodents, studies showed overlaps of behavioural flexibility, similar behavioural dispositions (e.g. familiarity bias, sex bias with females showing more helping behaviour), as well as similar brain circuits compared to humans (Meyza et al. 2017). Many other observations lead to the criticism of the traditional human-centered view on empathy, e.g. by de Waal (2009). He argues that “being in tune with others, coordinating activities, and caring for those in need isn’t restricted to our species. Human empathy has the backing of a long evolutionary history” (de Waal 2009, x of preface). Since the debate about empathy in nonhuman animals is not settled, one benefit of a conceptual framework for empathy would be that we can systematically classify different types of empathy in such a way that we can apply it to nonhuman animals.

Criteria of adequacy for a concept of empathy developed from a typical case

Tom lives with his old neighbour in Corona-times, and she tells him that she suffers from isolation and that she is sad that she is no longer able

to cook any complex meals but has to deal with simple cuisine due to her diminishing abilities. Since Tom knows her quite well, he is aware of the fact that she does not want any fancy meals that one could easily order from a restaurant, but she prefers a special cooking that has to be self-made. Tom feels sorry for her and decides to cook and bring her favourite meal for her upcoming birthday. She is delighted.

This story involves the characteristic components of full-blown empathy. The core intuition is that empathy typically involves the *registration* of the others' relevant mental states or processes ("state" for short in the following), including the affective state. This is combined with the *attitude* to take care of the other and the *selection of a supporting action* that accounts for the mental states and the situation of the person. More precisely: We think that we can cluster relevant elements into three main components, namely (1) registration, (2) attitude, and (3) behavioural response. In this example, you (1) *register and/or activate* the old lady's (1a) *affective state* of being sad, (1b) *the relevant situation* she is in, namely of not being able to cook adequately, and (1c) *her relevant mindset*, namely the desire for her favourite meals. Furthermore, Tom acts based on (2) *an attitude of care for the other*.³ And (3) Tom decides to act such that he fulfills *her* desires (or needs), i.e. his action is typically other-directed. Thus, we want to exclude the behaviour of a cognitive system which lacks a relevant self-other distinction: Without this as a minimal basis for the response behaviour, we may at best observe a borderline case of empathy. But having a self-other distinction still allows for self-directed response behaviour, although this is not typical for full-blown empathy, e.g. if Tom would feel sorry for her but avoid any contact not to be reminded of her situation.

We take these to be the paradigmatic criteria of full-blown empathy understood as three typical components. A Wittgensteinian understanding of the concept of empathy allows us to exclude cases of non-empathy and to describe borderline cases: This understanding of empathy does not aim for a classical definition but starts out with the most typical examples as core cases of empathy, rather than a description of necessary and sufficient conditions of empathy. We suggest the following implementation of the Wittgensteinian idea of family resemblance: If we have three characteristic components of empathy, then a phenomenon that does not realise any is clearly not a case of empathy. If from three components, only one is realised, we have a borderline case. If two of three components are realised, we enter the area of fruitful descriptions of family resemblance cases. If all three components are fully realised, this is a case of full-blown empathy.

To offer a new framework for a characterisation of empathy, we need to describe how the three main components can be realised with typical sub-features: This is the basis to describe a variety of cases of empathy and enable multi-realisation. Before we develop this new account, we

critically discuss the two most influential theories of empathy that are flexible enough to account for phylogenetic evidence.

Criticizing two central conceptual frameworks

The two most promising approaches on empathy and its related phenomena are the so-called Russian doll model by de Waal and Preston (2017) and the combination model by Yamamoto (2017).

The basic pillar of the Russian doll model (de Waal and Preston 2017) follows a developmental strategy: Empathy needs a perception-action coupling mechanism as a necessary basis, and important applications of this mechanism are the abilities of motor mimicry and emotional contagion. According to the authors, all other empathic abilities are built on this core element. This application of basic forms of empathy is widened with the additional abilities of sympathetic concern and consolation. Furthermore, the most complex forms of empathy additionally involve higher-cognitive empathic abilities such as perspective taking

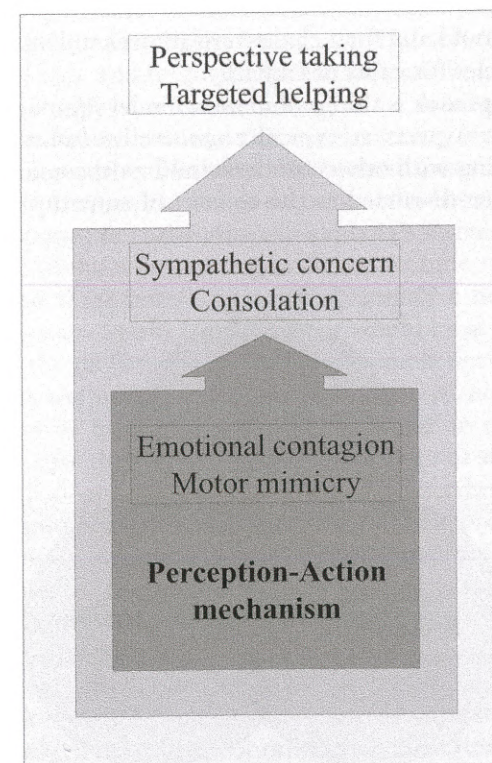


Figure 11.1 Russian doll model. Adapted from: de Waal and Preston (2017)

and targeted helping. From a developmental view, this model might look appealing at first sight, because it captures important aspects of the typical line of development of empathic abilities in human children, and we appreciate the ontogenetic perspective. Still, this conceptual framework is inadequate since the doll model implies (i) that the relevant cognitive abilities are unfolded one on top of the other and (ii) that they contribute to a full-blown case of empathy in the same way. (Ad i): Psychopathy is a counterexample to the presupposition of a sequential unfolding of these abilities: First-grade psychopaths typically lack sympathetic concern, but they are experts in perspective taking and, in principle, also in targeted helping although they might misuse this ability for achieving their own goals (Anderson and Kiehl 2014). (Ad ii): Furthermore, these components of the model do not belong to the same functional level: Sympathetic concern is an *attitude with a content* that is activated in typical cases of empathy, while perspective taking is a general *cognitive ability* that normally supports targeted helping. The latter enables an advanced self-other distinction, which is helpful both for the registration of the mental state of the observed person and for the response behaviour directed at this person. We are better off with a framework that allows for relevant cognitive abilities that are not necessarily grounded on each other, and we should aim for a characterisation that distinguishes different functional roles for cases of empathy.

A different approach is the combination model (Yamamoto 2017). He emphasises three aspects as typical *cognitive or behavioural goals* of empathy: matching with others, understanding others, and prosociality. The abilities often discussed in the context of empathy can be mapped

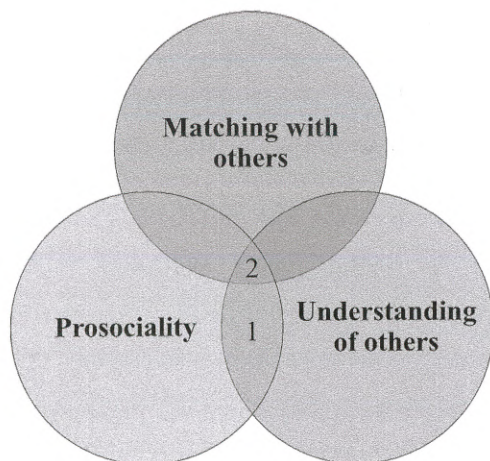


Figure 11.2 Combination model. Adapted from: Yamamoto (2017)

onto these three factors. Matching with others includes synchrony, mimicry, and emotional contagion. Understanding of others involves perspective taking, Machiavellian intelligence, and also Schadenfreude. Prosociality can be realised by food sharing or prosocial choice. In this model, more complex cases of empathy can be assigned to specific overlaps of factors, e.g. targeted helping consists of understanding others and prosociality (intersection 1). Finally, for sympathy, consolation, calculated reciprocity, and advantageous inequity aversion, all three factors are necessary (intersection 2). This approach avoids the problems of the Russian doll model since the three factors need not be sequentially based on each other and characterise different functional roles for sub-features involved in empathy. However, the model includes the claim that cases realizing only one factor can be categorised as clear cases of empathy even if these are basic ones. This is not convincing as can be illustrated by two examples: If prosocial behaviour is realised as an inborn reaction pattern or—more importantly—it is just understood as a certain type of beneficial behaviour independent from the *registration* of the mental state of the other and independent from the typical caring *attitude* toward the other, then this is not a case of empathy: The latter is, for example, realised if Tom is accidentally cooking the old lady's favourite meal just because he aims at becoming a specialised cook. He does not care for the old lady and forgot about her sadness. But after his cooking event, he brings a portion to every neighbour waiting for the evaluation of his cooking abilities and this involves bringing the old lady her favourite meal just at her birthday. This case is intuitively not a case of empathy. In our framework, this is accounted for because the behaviour is neither a response to registering the old lady's sadness about her vanishing cooking abilities nor acting with an attitude of caring for her. Only one of our three criteria is satisfied, namely a normally adequate prosocial behaviour. In our framework, it would be at best a borderline case but since the de facto prosocial behaviour is not even intended as such this shifts the case even more into a case of non-empathy. This example cannot be handled within the combination model conceptual framework because the relevant factors alone are not sufficient and prosociality as well as matching with others only describes the *behavioural response* in typical cases of empathy. Thus, this approach is too inclusive. We require the registration of the other's mental state as well as an attitude of caring for the other as relevant factors in some way. A second example that should be excluded from cases of empathy is motor mimicry, despite this being a typical case of matching with others: In these cases, the motor behaviour of another agent is copied, probably based on the activation of mirror neurons. These are specific neurons found in mammals, which are active not only when an action is performed by the subjects, but also when the subject perceives another individual performing the action (Iacoboni 2009). Evidence for this system outside the

mammalian lineage is scarce, but a study with songbirds suggests that a similar one might exist in birds and possibly other, older species (Miller 2008). This is an interesting behaviour but it should not be included as a case of empathy since it is only a matching motor reaction: Just matching with others' behaviour is not sufficient for empathy. This is adequately described in our framework because motor mimicry does not involve the registration of the other's affective state (or any mental state), nor any attitude directed toward the other. Furthermore, the behavioural response does not involve any relevant self-other distinction.

Thus, both kinds of approaches seem promising at first sight but open up to several problems. Hence, this chapter aims at finding a better conceptual framework of empathy.

A multi-component model of empathy

To develop a systematic overview of different forms of empathy, we need to clarify which kinds of phenomena we should account for. One central source of inspiration for our approach comes from developmental psychology, especially the ontogenetic model of Hoffman (2000). He defines five levels of empathy in child development: (1) Emotional Contagion, (2) Egocentric Empathic Distress, (3) Quasi-Egocentric Empathic Distress, (4) Veridical Empathic Distress, and (5) Empathic Distress Beyond the Concrete Situation. Number (4) in his model is what we call full-blown empathy and number (3) we call intermediate *empathy*. Inspired by this model, we aim at developing an analogous five-type model with a special focus on its applicability for animal cognition since we want to explicitly integrate the phylogenetic perspective into our theoretical framework and outline its fruitful application. But our multi-component model is different from his model since, first, it systematically distinguishes the core functional roles of registration, attitude, and behavioural response. Second, we characterise for each component the typical sub-criteria indicating possible implementations. Third, this enables us to precisely characterise the similarities and differences of the relevant phenomena and types of empathy.

The different forms of empathy are listed in the columns, rows are dedicated to underlying sub-criteria, whereby marking with 'x' means that a sub-criterion is involved in the phenomenon while an empty box expresses a non-involvement. Marking with '-' means that a criterion is not applicable to this form of empathy at all. In the case of pure cognitive empathy, the attributes 'positive' (pos.) and 'negative' (neg.) mark two different sub-phenomena of pure cognitive empathy.

We suggest the following three components and sub-criteria as motivated above: We can *register* the affective state, the relevant situation, and the mindset of the other. We can activate *the attitude of caring* for the other in a positive or negative way; and we realise a *behavioural*

Table 11.1 The multi-component model of empathy

	Motor mimicry	Emotional contagion	Egocentric empathy	Intermediate empathy	Full-blown empathy	Future-oriented empathy	Pure cognitive empathy	
							Pos	Neg.
Registration								
Affective state								
(ii) Situation	X		X	X	X	X-future	X	X
(iii) Mindset			X		X	X-future	X	X
Attitude of care for other				X	X	X		
Response								
(a) Triggered affective state		X	X	X	X	X		
(b) Relevant self-other distinction			X	X	X	X		X
(c) Self-directed			X					
(d) Other-directed				X	X	X		X

response, which typically is other-directed but can also be self-directed or may not even involve a relevant self-other distinction.

Most empathy researchers including Hoffman (2000) suggest that *emotional contagion (ideal-type 1)*, i.e. laughing when someone else is laughing, should be evaluated as a case of empathy. In our model, it is at best a borderline case since it fulfills only one out of three criteria. It involves the registration of the affective states of the other (in contrast to motor mimicry), followed by a transfer of this state onto the observer, thereby leading to an affective response matching that of the other. But this response is a fully automatic reaction to registering the affective state, thereby lacking the other two components, namely an attitude of caring and a relevant self-other distinction as being involved in the response behaviour. Emotional contagion is shown by new-born infants (Martin and Clark 1982) and is demonstrated in quite a variety of species, e.g. rodents (Langford et al. 2006), dogs (Yong and Ruffman 2014), and kea parrots (Schwing et al. 2017). From an evolutionary perspective, it is more demanding than just motor mimicry but it may also be mainly realised on the basis of mirror neurons since there is evidence for mirror neurons that are active in the case of expressions of pain and disgust (e.g. Wicker et al. 2003) and it is argued that there exists a mirror neuron system for emotions in general (Bastiaansen et al. 2009).

Ideal-type 2, which is the first clear but still basic form of empathic phenomena, is *egocentric empathy*. Typical phenomena include aversive behaviour or what may be called an ‘as-if-it-was-me behaviour’ (Hoffman 2000). From a developmental perspective, one concrete example observed in toddlers could be described as follows: One child falls and hits her knee. She is observed by another child, while she holds her knee and starts crying. The observing child now also holds his own knee and starts crying, as if he himself had been injured. A more basic behavioural response can be observed in the following case: One child A registers that another child B is very sad. But instead of helping B, A only seeks shelter with her mother to move away from the stressful challenge. This behaviour is shown by children of about ten months of age (Hoffman 1975; Zahn-Waxler et al. 1984). There is also evidence for a similar pattern in apes (de Waal 2009) and rodents (Mezza et al. 2017), demonstrating this kind of aversive behaviours toward distressed conspecifics. In our model, egocentric empathy involves two of three components, namely first, the registration of the affective state of the other and of the relevant situation; and second, the behavioural response. It involves a relevant self-other distinction, but remains self-directed, i.e. the agent tries to deal with the affective challenge by moving away from it (changing it for oneself) but not by changing it for the other. What is lacking is the attitude of caring for the other. One central feature to advance from pure emotional contagion to egocentric empathy is some clear form of registering the self-other distinction as it is e.g. realised in

the ability of joint attention developing in children between the age of nine and 12 months (Corkum and Moore 1998; Tomasello 1999). The recognition of the triadic relationship between self, other, and environment has also been shown for apes (Itakura 1996) using an eye-tracking paradigm. Furthermore, dogs are able to not only follow gazes, but also react differently depending on the other’s attention (Marshall-Pescini et al. 2013), thereby suggesting the ability to recognise and maintain the triadic relationship. Taken together, this makes it plausible that the aversive behaviours cited above are cases of egocentric empathy.

Ideal-type 3, which we call *intermediate empathy*, involves direct helping behaviour as a typical phenomenon. In human ontogenesis, this can be observed in 12-month-old children’s consolation behaviour (Zahn-Waxler et al. 1984). Another example is the following response to a crying friend: The boy first looked at the friend, then took her hand, but brought her to his own mother for comfort, although the friend’s mother was also present (Hoffman 1978). A further step is made, if a child’s observation of another person being sad, because she cannot reach her favourite toy, leads to direct helping, roughly starting when children are two years of age. In our model, this now involves all three components, namely the registration of the affective state and the relevant situation (sadness because of not getting the toy), and there is an attitude of caring for the other involved, as well as a response-behaviour that is other-directed (supporting him to get the toy) (Warneken 2006). Can we observe these behaviours in animals too? Chimps help a human experimenter to obtain an out-of-reach object, irrespective of whether or not they are offered a reward for doing so (Warneken et al. 2007). Capuchin monkeys do so in low-cost situations only (Barnes et al. 2008). Further evidence for this third type of empathy in animals comes from studies in which one animal observes a conspecific in distress and has the option to help by opening a cage or reducing negative effects. This helping behaviour is shown at least for primates (Yamamoto et al. 2012) and rodents (Sato et al. 2015). The animals demonstrate a motivation to help others instead of receiving a reward. We interpret this behaviour as an indicator that the attitude of caring is implemented since in the case of nonhuman animals we can only rely on behavioural indicators of an attitude.

Another interesting behaviour is consolation behaviour, which is less clear in its evaluation. Since it directly reduces not only the other’s but also the observer’s distress, it is not settled whether it is indeed an other-oriented response rather than a self-oriented one. There is evidence for consolation behaviour in apes (Romero et al. 2010; Clay and de Waal 2013), other primates (Palagi et al. 2014), as well as in dogs (Cools et al. 2008), wolves (Zimen 2003), elephants (Plotnik and de Waal 2014), and corvids (Seed et al. 2007), which would have to be examined in more detail to prove that it is other-oriented in nature across species.

Interestingly, as in humans, mostly the losers of a conflict are soothed in this way, supporting the hypothesis of empathic consolation as a case of intermediate empathy rather than gathering rank-specific advantages or own comfort only. At least for chimps, the behavioural biases for consolation are similar to those shown for human empathy, such as sex difference, or social closeness (Romero et al. 2010). This makes it likely that similar mechanisms are at work here, thereby supporting the hypothesis of consolation being an indicator for other-oriented empathic abilities.

Ideal-type 4 is full-blown empathy, which is typical for our everyday life. The important difference to type 3 of empathy is that the registration involves not only the affective state of the other and the relevant situation but in addition the registration of the other's mindset (which usually is different from one's own). Thus, it presupposes the ability of *cognitive perspective taking*, which is usually tested by the false-belief task, in addition to visual perspective taking. Let us think back to our example of Tom and the old lady: Even with the attitude to care for the other, the spontaneous response behaviour can only result in cooking the old lady's favourite meal as caring for her if you are aware of her preferences and account for them. If this ability is not yet developed, children may bring their own favourite toy as a birthday present for the mother, ignoring the different preferences. To investigate the sensitivity for others' mental states, there is a battery of false-belief tasks (FBT) established in developmental psychology, namely three implicit FBT (violation of expectation, anticipatory looking, active helping paradigm) and the classical explicit language-based FBT (de Bruin and Newen 2012). While the expectation violation paradigm is already passed by 15-month-old children (Onishi and Baillargeon 2005), and there is a debate about earlier observations, e.g. Kovacs et al. (2010), the active helping paradigm as an enactive form of implicit task is passed only at 18 months of age (Buttelmann et al. 2009); and the explicit FBT is not passed before age 4 (Wellman et al. 2001). To investigate evidence for sensitivity for the cognitive perspective of another agent in the realm of animals, we need to focus on nonlinguistic tests, i.e. the implicit FBTs. Is there evidence of full-blown empathy in animals? Yes, there is some direct and some indirect evidence, which taken together indicate that we can find full-blown empathy in some species. Krupenye et al. (2016) demonstrated that apes are able to pass the implicit FBT in the variant called the anticipatory looking paradigm. Although it is debated whether anticipatory looking demonstrates sensitivity for false belief, it is clear that it involves some sensitivity for false information of the other agent and this is sufficient for our argument. There is further evidence that this is not an over-interpretation since apes also pass the more demanding implicit FBT, namely the active helping FBT (Buttelmann et al. 2009, 2017), i.e. this helping behaviour presupposes that the apes are sensitive to the conspecific's being misinformed. Apes pass the active helping paradigm (Buttelmann et al. 2017), as they reliably open

only those boxes that the observed individual desires without specific perceivable cues, leading to the same result. In more detail, there is a recent analysis of passing the helping behaviour paradigm which does not presuppose full-blown belief representations: It can be modelled by ascribing the ability to represent not only regular mental files of a relevant object (where it is located or what preference one has for it), but also perspectival mental files of the same object (where the other thinks it is or what preference the other has for it) (Newen and Wolf 2020). At least great apes (bonobo, chimpanzee, and orangutan) have been shown to pass two demanding implicit FBTs: Thus, the first component of registering the cognitive state of others is realised, at least to an interesting degree. Furthermore, the active helping paradigm indicates the attitude of caring for the other, but we have to admit that having evidence for the attitude independent from the response behaviour is an open question when applying the framework to animals. The third component is a response behaviour that accounts for the others' affective state. The helping activities clearly account for the desire expressed by the other to get a certain object. Thus, this indicates that at least great apes are able to act with full-blown empathy. For other species this mainly remains to be investigated systematically. Furthermore, this evaluation needs additional tests or even may be revised due to the ongoing replication crisis of the FBTs (Kulke et al. 2018).

Indirect evidence for an understanding of the other's mental states comes from research on the awareness of the momentary abilities of the other in tasks distinguishing unwillingness and inability to fulfill the task. At least primates and birds understand the difference whether a specific individual is unable or unwilling to perform certain actions (capuchin monkeys: Phillips et al. 2009; macaques: Canteloup and Meunier 2017; New Caledonian crows: Taylor et al. 2012), thereby showing the ability to understand the cognitive potential of the other. Further evidence comes from ravens that recognise the others' visual access solely on the basis of auditory input (Bugnyar et al. 2016). Taken together, there is quite some evidence that at least the helping behaviour of chimpanzees could be interpreted as a case of full-blown empathy. For other species we can observe some evidence for sensitivity for the cognitive perspective of others, but this is in need of further investigation before one can settle the question whether more species are able to realise full-blown empathy.

Ideal-type 5 of empathic abilities is what we call future-oriented empathy. Here, the affective information is typically overridden by information directed at the near or far future of the other, thereby leading to a response not trying to improve the other's current situation, but her future; e.g. if a child is sad because the mother insists that she does her homework, the mother may continue to insist despite noticing the sadness of her daughter because she anticipates the relevance of success in school for her in a few years. The mother anticipates that she will be happy about the success later and therefore does not do something to

stop the sadness now. Hence, the capacity for future planning and an adaptation to the other is necessary.

The additional ability needed here is episodic foresight. Evidence from developmental psychology shows a strong connection of episodic foresight and episodic memory. Children are able to think about others' future and their own already at the age of three years (Payne et al. 2015) in a basic form; it unfolds into more sophisticated forms until reaching an adult level at the age of 14–16, strongly depending on the personal background and other perspective-taking abilities (Hoffman 2000). Since both abilities seem to be so strongly interconnected, and even rely on overlapping brain circuits (Addis et al. 2007; Szpunar et al. 2007; for a critical review see Schacter et al. 2012), evidence for episodic memory can be taken as an indication of episodic foresight. Can we observe episodic foresight in animals? Raby et al. (2007) confirmed episodic memory in western scrub jays by using a what-where-when paradigm. The birds were not only able to remember what they cached where and when, but they could also operate flexibly on this information, thereby indicating a capacity for episodic-like memory. This result was further investigated and confirmed by Correia et al. (2007), where scrub jays could not only use their memory to plan for the future, but also did so if their current motivational state would suggest a different behaviour, meaning that the birds can act according to their future needs even against their current desires, thereby providing good evidence to reject the Bischof-Köhler-Hypothesis. This goes even beyond the usage of episodic memory in the here and now, since in the mentioned study it is necessary to combine episodic memory with the anticipation of future needs to plan for the future. The ability to form and use what-where-when memory was also tested and confirmed in other corvid species such as magpies (Zinkivskay et al. 2009), as well as in rodents (Babb and Crystal 2005; Crystal 2013). Interestingly, evidence for the what-where-when memory in chimpanzees is still missing (Dekleva et al. 2011). This evidence for episodic foresight only hints at future-oriented empathy if it can be combined with strong indications for cognitive perspective taking. This was tested by Stulp et al. (2009), showing that scrub jays react across different modalities when being observed during caching. This implies that there is an amodal representation of being observed, which illustrates an amodal version of perspective taking. Additionally, Ostojic et al. (2013) found that male jays can recognise desire-states of female jays during food sharing based on registering what the female had been fed last; their food offer accounts for the female's preferences (at least partially), inhibiting their own preference. Taken together, this evidence supports the hypothesis that animals are able to anticipate future states of others and act flexibly on this information.

There are also some single case studies describing how apes use future-oriented empathy to prevent harm to others before the harmful situation even occurs (de Waal 2009; Hirata 2009).

Even though some nonhuman animals possess the capacity for primitive forms of future-oriented empathy, the more sophisticated ones appear to be uniquely human. A typical example is the situation of an individual observing a disabled child playing happily in the sandbox. The observer might commiserate even though the child is in a happy state at the moment. This is because of the knowledge of the future of the child, how it will be acted upon, and on which things of life it might miss out. Here, it is necessary to perceive others as persons with personal pasts and futures extending over several years, which seems to be an ability uniquely human.

Special cases of empathy and related phenomena

There are several *special cases* of empathy, which can also be included within the proposed framework. One of these that we want to discuss in more detail is *pure cognitive empathy*. One characteristic feature is that it involves the registration of the other's affective state but in this case it does not lead to a corresponding affective state in the observer or at least the corresponding response behaviour is not based on an affective state in the observer. We can distinguish at least a positive and a negative case of pure cognitive empathy in the sense that care for others is involved in the realisation or not.

Let us start with *the positive case*: Paradigmatic everyday cases of pure cognitive empathy are given when professionals try to help their clients who are in bad physical or psychological condition. In such cases, surgeons or, respectively, psychiatrists need to register the physical and/or psychological situation, including the affective state of the client; they could do this by relying on a cognitive evaluation of the situation or try to downgrade or even inhibit their own affective involvement to keep their professional distance. Despite having an adequate understanding of the affective situation of the other and maybe also expressing this, there needs to be implemented a sense of distancing with an appropriate level of detachment from the others' emotion (Hojat et al. 2002). This may still be accompanied with an attitude of caring for the other and with a supporting response behaviour, but if there is no corresponding affective state in the observer, then this is either just based on a pure rational evaluation or it is based on a strong inhibition of a disposition for an affective response. Thus, positive cognitive empathy is paradigmatically realised in such a professional stance which seems to be often involved in the treatment of patients in the long run. In comparison to full-blown empathy in the positive versions of cognitive empathy, only one feature is missing, namely the affective involvement of the observer.

A *negative case of pure cognitive empathy* is realised in some version of psychopathy. Psychopathy is a complex mental disorder with a rich cluster of symptoms. Already through childhood and youth, lack

of emotionality together with high aggression potential and intentional instrumentalizing violence is characteristic for this disorder (Frick and Marsee 2006; Vitacco and Vincent 2006). We focus just on primary psychopaths, also called ‘low-anxious psychopaths’. We classify their typical behaviour as a case of negative cognitive empathy, because in comparison to positive cognitive empathy the attitude of caring for others is missing. This leads to the well-known characteristic that psychopaths can easily use their knowledge about others to take actions of utilizing others irrespective of the potential harm and distress caused without remorse or intrinsic inhibition. The relevant underlying features we want to highlight are the following: (i) Psychopaths experience their own negative emotions and especially fear in an extremely reduced way (Del Gaizo and Falkenbach 2008, 209). They do not get ‘infected’ by the stress sweat of other people; non-psychopaths, in contrast, get anxious when they breathe in others’ stress sweat (Dutton 2013, 20, 45ff). (ii) Nevertheless, psychopaths are often as good as non-psychopaths in identifying the emotions of others: On the ‘Reading the mind in eyes’ test, psychopaths and people with psychopathic traits are as good as non-psychopaths in identifying the emotions of other people. On this test, the subjects have to identify emotions by means of photographs of the eye area of others. People with autism, by comparison, make a lot of mistakes on the ‘Reading the mind in eyes’ test (Richell et al. 2003, 525).⁴ Thus, a first-grade psychopath can adequately observe the other’s affective state, situation, and mindset but he does not automatically activate a complementary affective state. Thus, he can easily choose an attitude of not caring for the other but only for himself and thus misuse the knowledge of the other for manipulations. For these special cases like cognitive empathy, one may also ask when they show up in ontogenetic development and whether animals could also have them. But here we constrain ourselves to outline the conceptual possibilities of special cases not yet mentioned in our list of types of empathy to indicate that there is room for many more combinations of sub-features. This involves the possibility to systematically describe many related phenomena often discussed in the context of empathy too. Adriaense et al. (2020) mention e.g. ‘Knowing Another Person’s Internal State, Including His or Her Thoughts and Feelings’ (64): In our model, this can be equated with the *registration dimension* of full-blown empathy. Thus, we offer a promising conceptual framework.

Summary and conclusion

Our multi-component account allows us to characterise a variety of ideal types of empathy from an evolutionary perspective: We exclude motor mimicry and characterise emotional contagion as a borderline case, while there are three typical cases of empathy: egocentric, intermediate, and full-blown empathy. These types of empathy are characterised

in detail by relying on our three components of registering, caring, and acting out a behavioural response. Since each component is analysed as based on typical sub-features, we are able to describe how the demands of more complex forms of empathy systematically increase before reaching full-blown empathy. But this account does not only allow us to tell a standard phylogenetic and ontogenetic accumulation story, but also, since typical features of full-blown empathy can be realised in a variety of ways or some can even be lacking, our account should be understood as describing profiles of empathy with the variants in Table 11.1 as ideal-typical steps in a normal development. But profiles can vary and thus we can expect to observe special cases of empathy like pure cognitive empathy. Using our multidimensional account of empathy for a comparative perspective we are able to claim that the first four types of phenomena can be found in animals, where the more demanding the type of empathy the fewer species can implement it. Full-blown empathy can be reasonably observed in great apes and may be expected in other social animals which are candidates for the ability of cognitive perspective taking. But this needs to be investigated in future research. We think that our conceptual framework is a preferable tool in contrast to existing theories of empathy that allows us to start systematic empirical investigation and comparisons of empathy in humans and nonhuman animals.

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Notes

- 1 A short version with overlapping ideas and overlapping sections is published in the conference proceedings of the Cognitive Science Society 2021: Newen, A. and Griem, M. 2021. A Conceptual Framework for Empathy and Its Application to Investigate Nonhuman Animals, *Proceedings of the Cognitive Science Society*. The Sections ‘Criteria of adequacy for a concept of empathy developed from a typical case’ and ‘Criticizing two central conceptual frameworks’ are mainly overlapping, the other sections are different.
- 2 This is taken from: <https://dictionary.cambridge.org/de/worterbuch/englisch/empathy>, last accessed 30 March 2022.
- 3 This needs a short explication: To avoid over-intellectualizing this component, we allow for non-conceptual attitudes of caring (in line with Glock’s characterisation of nonrepresentational types of thinking, Glock 2013); and we need to distinguish the case in which someone is not able to develop an

attitude of caring (cases of non-applicability of the caring attitude) from the case in which someone is able to care for the other but decides not to do so; the latter is realised in the case of psychopathy when the psychopath misuses an adequate understanding of the relevant affective state, situation, and mindset of the other to hinder and not to help.

- 4 This asymmetry in a high-level ability of observing the emotions of others and a low-level ability of experiencing emotions is a challenge for mirror neuron theorists. One suggested solution is that psychopaths normally have strongly reduced pain experience while witnessing the pains of others. When asked to empathise, however, they can activate their own feeling. They seem to be able to switch a corresponding affective state on which is normally not activated. Thus, mirror neurons may play a complex role but the observation is not a knock-down observation for mirror neuron theorists (Meffert et al. 2013).

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