Vicarious experiences: perception, mirroring or imagination?[1]

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Introduction

Empathy is the subject of much current psychological investigation and philosophical scrutiny. We take it as a fundamental condition of adequacy on an account of empathy that it should be able to reflect both the similarities and the differences between empathetic experiences and the following related psychological phenomena: the target's affective or emotional state that is the cause of the empathetic experience; emotional contagion; non-empathetic mindreading; and sympathy. In previous work, we have offered an account of empathy (Vignemont & Singer, 2006; Vignemont and Jacob, 2012; Jacob, 2011; Jacob,

2015) that rests on the following four fundamental ideas.

First, the term 'empathy' primarily applies to one's responses to a restricted subset of others' psychological states, namely others' *affective* and *emotional* experiences, not to their propositional attitudes (beliefs, intentions or desires). [2] Secondly, both empathy and emotional contagion are *vicarious* experiences, i.e. a kind of experience that is caused by the awareness of another's affective experience and that also resembles the experience that caused it. In a nutshell, both empathetic responses and emotional contagion satisfy what we call the *interpersonal similarity* condition. Thirdly, although both empathetic responses and contagious responses to another's emotion are vicarious experiences, they nonetheless have different directions of intentionality: while contagious responses are *self-centered*, empathetic responses are *other-directed*. This difference reflects different degrees of embodiment. Finally, the generic mechanism that generates empathetic responses is the process of *mental imagery*, i.e. a process of non-propositional imagination, whereby one's standard affective resources are used *off-line*, rather than on-line.

Here, in order to highlight the specificity of our model of empathy, we shall at first contrast it with two other influential theoretical frameworks: the direct-perception model and the mirroring approach. In the first section, we examine the view held by advocates of the direct-perception model that empathy is a perceptual experience of others' affective states. In the second section, we examine the mirroring approach to empathy. In the next pair of sections, we summarize our own approach to empathetic pain and respond to recent objections to our account of empathetic pain. In earlier work, we focused mostly on empathetic pain because much is known about brain activities underlying pain, empathy for pain and contagious pain. In the last section of the present chapter, we examine to what

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[2] For a more relaxed view according to which one can empathize with another's action, see Rizzolatti and Craighero (2005: 108): « by observing others, we enter in an "empathic" relation with them. This empathic relation concerns not only the emotions that others feel but also their actions. »

extent our account can be generalized to empathetic responses to others' affective experiences other than pain.

1. The direct-perception model

While it is generally agreed that the primary target of an individual's empathetic response is another's affective state (i.e. a state whose content involves an evaluative dimension), one of the most controversial issues in recent debates has been to what extent interpersonal similarity is a necessary condition for empathy, i.e. to what extent empathy involves affective sharing. Some philosophers from the Phenomenological tradition deny that it is a necessary condition and instead endorse a direct-perception model of empathy (Scheler, 1954; Zahavi, 2011; Gallagher, 2008), in accordance with the Schelerian dictum that "empathy has to do with a basic understanding of expressive others." After briefly reviewing their main claims, we shall question their account of empathy, including their application of their model to address the problem of other minds.

1.1. Empathy without affective sharing

Advocates of the direct-perception model of empathy reject the interpersonal similarity condition on empathy. To the extent that one primarily empathizes with another's affective experience, what advocates of the direct-perception model deny is that one's empathetic experience is itself a kind of affective experience. Instead, empathy turns out to be a basic or primitive epistemic awareness (or knowledge) of another's affective experience, which may itself be devoid of any affective content. Thus, the direct-perception model rests on a pair of basic assumptions, the first of which is that human expressive bodily behaviour is, in Zahavi's own (2008; 2011) terms, "soaked with mindedness". The second twin assumption is that the perception of another's expressive bodily behaviour enables one to be directly

acquainted with the content of her affective experience, as it is instantiated, made manifest or "given" in her expressive bodily behaviour.[3] Thus, empathy so conceived turns out to be a primitive kind of knowledge of another's affective experience restricted to one's perceptual acquaintance with another's expressive bodily behavior and devoid of any affective dimension.[4]

What is likely to make this view of empathy attractive to Phenomenologists is that it affords a direct and immediate epistemic access to aspects of others' mental lives (their affective experiences) that is taken to stand in sharp contrast with either the theory-theory or the simulation approach to mindreading, both of which are taken to rest on complex inferential processes. It further seems to hold the promise to offer a simple solution to the philosophical problem of other minds.

However, it turns out to lack the resources for drawing the intuitive distinction between empathy and non-empathetic mindreading. On the direct-perception model, empathy is what enables me to have primitive non-inferential epistemic access to your emotions. It is a primitive kind of knowledge because it is limited to the boundaries of my perceptual acquaintance with your expressive behaviour. Indeed, it seems clear that all of us have the capacity to ascribe emotions to others, without feeling what they feel: I can form the belief that you are in pain or that you are jealous of your partner without feeling either pain or jealousy (let alone about your partner). But if (in accordance with the Phenomenological conception) affective sharing is not required for empathy, then it is not clear how to distinguish between empathizing with your affect and forming a perceptually based belief about your affect. Moreover, the direct-perception model gives rise to an uncomfortable

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[3] As Zahavi (2008: 518) puts it, « affective and emotional states are not simply qualities of subjective experience, rather they are given *in* expressive phenomena, i.e. they are expressed in bodily gestures and actions, and they thereby become visible to others. »

[4] By restricting empathy to the boundaries of one's perceptual acquaintance with another's expressive behaviour, advocates of the direct-perception model exclude the possibility that one may empathize with a person who is absent while being referred to by a reliable speaker.

dilemma, as we shall now argue.

1.2. A dilemma for the direct-perception model?

The direct-perception model gives rise to the following dilemma: either another's overt expressive behaviour is constitutive of her affective experience or it is not. If it is not, then by perceiving another's expressive behaviour, one does not ipso facto perceive her affective experience. On the other hand, the assumption that another's expressive behaviour is constitutive of her affective experience seems tantamount to accepting behaviourism (Jacob, 2011).

One may believe that the Phenomenological account of what makes expressive behaviour *expressive* (namely that it is *soaked with mindedness*) makes their approach immune to the behaviourist horn of the dilemma. But things are no that simple. Arguably, the expressivist conception of behaviour is not meant to apply to every single psychological state: only an individual's goals and affects, not her beliefs (let alone her mathematical or scientific beliefs), are held by Phenomenologists to be manifest (or given) in her expressive behaviour. If so, then one could only directly perceive another's goals and affects, not her beliefs.[5] However, what is the further principle that enables Phenomenologists to assert that only her affect, not her relevant belief, can be directly perceived? It seems that an agent's goal-directed behaviour does not merely reflect the agent's goal, but some of her beliefs (about e.g. the target's location) as well. Similarly, the behaviour whereby an agent expresses her fear is likely to reflect her belief about the location and the dangerousness of the source of her fear. But if so, then an agent's expressive behaviour should be said to make her belief as well as her affect or her goal manifest. If not, then it is not clear what Phenomenologists are committed to by their claim that expressive behaviour is soaked with mindedness.

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[5] "What is being suggested is not that every aspect of the mental life of others is perceptually accessible" (Zahavi, 2011: 551).

Some advocates of the direct-perception model have explored a second response to the above dilemma: they have tried to argue that an agent's expressive bodily behaviour constitutes a *proper part* of her affective experience. If so, then by perceiving an agent's expressive behaviour, one perceives the affect of which it is a part (Krueger, 2012; Krueger & Overgaard, 2012). But one could only see something (e.g. an individual's full body or a full tomato) by seeing one of its parts (e.g. the individual's head or the front of the tomato) if the latter is indeed an uncontroversial part of the former. The main problem with this second response to the dilemma is, as Smith (in press) notices, that an individual's expressive behaviour is *not* an uncontroversial part of her affective experience. Affects are psychological states, but behavioural expressions are processes. Behavioural expressions, but not psychological states, have parts; furthermore, the former are effects, not parts, of the latter (Vignemont, forthcoming).

Finally, not only does the direct-perception model give rise to an uncomfortable dilemma, but it is also far from clear that it can reasonably hope to resolve the philosophical problem of other minds, as we shall now argue.

1.3. *The problem of other minds*

The philosophical problem of other minds is widely construed as the task of providing a response to the skeptical challenge directed to one's claim to know that there are other minds. The Phenomenologists reject the solution to the problem of other minds based on the argument by analogy because it rests on the Cartesian asymmetry between direct first-personal access to one's own mind and indirect third-personal access to others' minds. On the one hand, the Cartesian asymmetry "underestimates the difficulties involved in self-experience and overestimates the difficulties involved in the experience of others" (Zahavi, 2008: 518). On the other hand, only if each of us were directly (i.e. perceptually) acquainted

with the minds of others could one hope to dissolve the "skeptical conundrum" about the existence of other minds: "We should avoid construing the mind as something visible to only one person and invisible to everyone else" (Zahavi, 2007: 33).

However, it is far from clear that the direct-perception model of empathy can really answer the skeptical challenge in the case of the problem of other minds, for three conspiring reasons. First of all, being able to see another's anger is not a necessary condition for being able to see (and therefore to know) that another is angry. As Dretske (1969, 1973) has argued, one can see that another is angry if one sees another's behavioural display of anger and if it is reliably correlated with her feeling angry.

Nor is the fact that one can see something that is visible and which happens to exemplify property F sufficient for one to be able to see that it is F. As Dretske (1973) has argued, seeing a fully visible spy or a fully visible counterfeit bill is not sufficient for seeing, and thereby knowing, that the former is a spy and the latter a counterfeit.

Now, if we grant (for the sake of argument) that instances of anger (or fear) at particular places and times are visible and can be directly seen, it is far more contentious that one could further be *visually acquainted* with others' anger, with their affects in general, let alone with their minds (or mindedness). Clearly, the fact that Mary is angry (or scared) logically *entails* that there are other minds. So if I see, and thereby know, that she is angry (or scared), then I can *infer* that someone else has a mind and therefore believe that there are other minds (if I have the concepts *anger* and *mind*). But it is implausible that I could visually experience others' mindedness. If so, then the direct-perception model of empathy does not seem to have the resources to adequately address the skeptical challenge in the case of the problem of other minds.

2. Mental simulation, mirroring and empathy

While advocates of the direct-perception model entirely reject the interpersonal similarity condition on empathy, advocates of the simulation approach to *mindreading* endorse it as a necessary (or a strongly enabling) condition, not only on empathy, but also on mindreading others' psychological states in general (Goldman, 2006). Following the discovery of mirror neurons in the premotor cortex of macaque monkeys, Gallese and Goldman (1998) have argued that mirroring processes can be construed as processes of mental simulation, whereby the same area is being activated in both the agent's and the observer's brain. This paved the way for the mirroring approach to empathy.

2.1.The mirroring approach to empathy

Mirror neurons were first found to fire both endogenously when an animal performs a transitive goal-directed action and exogenously when it observes another execute the same kind of action (Rizzolatti et al., 2001). So exogenous mirror neuron activity in an observer's brain was taken to be a covert vicarious motor response to another's overt goal-directed action. On the basis of the two-step direct-matching model of action understanding, Gallese and Goldman (1998) further hypothesized that the function of mirroring was to mindread the agent's goal or intention along the following lines.

First, the perception of an agent's goal-directed action is supposed to cause the observer to covertly replicate the agent's bodily movements. Secondly, by covertly replicating the agent's bodily movements, the observer is supposed to come to share the agent's goal or intention. What makes the mirroring approach to social understanding appealing is its parsimony: the very same resources that are necessary for executing an action are also taken to be sufficient for perceiving and understanding others' actions. Since it meets the interpersonal condition, the mirroring model can also aspire to shed light on empathy. If so, then the first challenge for the mirroring approach to empathy is: how could it satisfy the

affectivity condition? There are two basic ways to address this challenge according to whether mirroring processes are taken to be exclusively motoric or not, i.e. whether what can be directly matched onto an observer's motor repertoire must be restricted to an agent's bodily movements, at the expense of her sensations and affects, or not. While advocates of the more conservative strategy are prone to restrict mirroring to motor processes, advocates of the more liberal strategy are not.

On the face of it, it seems as if only an agent's bodily movements, not her sensations and affects, could be directly perceived and therefore directly matched onto an observer's motor repertoire. This is presumably why Rizzolatti et al. (2004: 431) define mirror neurons as a specific class of neurons that discharge both when an agent acts and when it observes "a similar action done by another monkey or the experimenter."

But as Goldman (2009a), the advocate of the liberal strategy, has pointed out, this could only be a definition of *action*-mirroring (or *motoric* mirroring), not of mirroring in general, on the grounds that mirror neurons should not be restricted to action-related events, and should instead be equally allowed in the domains of touch, pain and emotion (as suggested by findings reported by e.g. Keysers et al., 2004 and Wicker et al., 2003). As a result, Goldman (2009a) proposes a more flexible definition of mirroring events, whereby mirror neurons can be endogenously activated when an individual undergoes "a certain mental or cognitive event" and exogenously activated when an individual "observes a sign that another individual undergoes or is about to undergo the same type of mental or cognitive event." In a nutshell, on Goldman's liberal strategy, the output of mirroring satisfies the affectivity condition because the input to mirroring already does.

However, Goldman's flexible definition of mirroring seems to face the following dilemma. Either the input to mirroring (or direct-matching) is purely perceptual or it is not. By assuming that the input to mirroring is purely perceptual, one seems to thereby endorse

the direct-perception model of others' sensations, affects and emotions. But if so, then, as advocates of this model have argued (Gallagher, 2008; Zahavi, 2008), why should mirroring be necessary at all? In any case, the direct-perception model itself is vulnerable to our criticisms above. On the other hand, if mirroring is *not* restricted to perceptual inputs, then (as we shall argue shortly) it becomes difficult to distinguish mirroring from *imagining*.

The alternative strategy called "embodied simulation" by Gallese (2009) rests on acceptance of the motoric requirement that only an agent's bodily movements could be matched onto the observer's motor repertoire, in accordance with Rizzolatti et al.'s (2004) definition. According to embodied simulation, mirroring processes have the capacity to convert an input that does not meet the affectivity condition into an output that does. On the direct-matching model of action understanding, if an agent performs a goal-directed action, mirroring takes as input the agent's bodily movements. By covertly rehearsing the agent's bodily movements, which can be directly perceived, the observer comes to share the agent's goal or intention, which cannot be directly perceived. So mirroring should be able to convert the perception of an agent's perceived bodily movements into a shared goal or intention. Furthermore, the direct-matching model of action understanding can be easily extended to *expressive* actions: if the agent performs an expressive action, mirroring also takes as input the agent's bodily movements. Moreover, by covertly rehearsing the agent's bodily movements, the observer comes to share the agent's affect, which cannot be directly perceived. In a nutshell, embodied simulation assumes that mirroring can convert the perception of an agent's bodily movements into a shared affect.

The basic challenge for the approach to empathy based on embodied simulation is whether it has the resources to distinguish empathetic responses, which satisfy the ascription condition, from contagious responses, which do not. It is unlikely that mirroring another's affect alone could be sufficient for empathizing because by mirroring an agent's expressive

action, one could at best share her affect. But sharing is not ascribing.

In response to this basic challenge and on behalf of embodied simulation, Gallese and Sinigaglia (2011) have tried to draw a distinction between two kinds of attribution or ascription, which they call respectively *functional* and *representational*. They acknowledge that the mirror mechanism can only play a causal, not a constitutive role, in representational attribution, but they claim that it plays a constitutive role in functional attributions. To attribute a belief, an intention or an affect to an agent in the representational sense amounts to forming a belief about (or metarepresenting) the agent's relevant belief, intention or affect. Clearly, Gallese and Sinigaglia concede that sharing another's intention or affect is not sufficient for ascribing it in this representational sense. On the other hand, they argue that there is another *functional* sense in which "an attribution is a representation of a goal, intention or belief which plays some role in enabling one to deal with an agent by virtue of its being appropriately related to that agent's goal, intention or belief" (*Ibid*.: 517). For example, it seems as if one meets the condition for attributing a goal or intention to an agent in the functional sense if one entertains a common or joint goal with another on the basis of which one can perform some joint action (e.g. moving a piece of furniture together). But if so, then it seems as if there is no real difference between sharing another's goal or intention and attributing this goal or intention to another in the functional sense. Attributing in the functional sense looks much more like sharing than like attributing. In this functional sense then, there is no real difference between sharing another's affect and attributing this affect to another. But if so, then attributing an affect to another in the functional sense may meet the condition for experiencing contagious vicarious affects, but not for empathizing.

2.2. Low-level and high-level processes of mental simulation

Goldman's (2006) simulation-based approach to mindreading rests on two distinctive

ingredients. On the one hand, he does not take simulation (let alone mirroring) to be constitutive of mindreading: instead, he takes the former to be at best causally relevant to, but not sufficient for, the latter which further involves the ascription (or projection) of a psychological state to another. On the other hand, he draws a distinction between high-level and low-level processes of mental simulation. On his account, while mirroring exemplifies low-level simulation, imagination exemplifies high-level simulation. But as we noted in the previous section, and as we shall now spell out more fully, this is not compatible with Goldman's (2009a) flexible definition of mirroring.

As Goldman (2009b) has put it on behalf of his version of the simulation approach to mindreading, "empathy is a key to mindreading [...], the most common form of mindreading." Empathy could only be the most common form of mindreading if interpersonal similarity was a necessary condition for both empathy and mindreading, in accordance with the simulation approach to mindreading. Unlike Goldman, we take interpersonal similarity as a condition on empathy, not on mindreading in general: one could form a belief about another's affect without feeling what she feels. The evidence further suggests that empathy is not the default answer to one's awareness of another's affect (in particular, pain).[6] We do not accept the simulation approach to mindreading, because although we take interpersonal similarity as a necessary condition on empathy, we do not take it as a necessary condition on non-empathetic mindreading. Nor do we think that Goldman's (2009b) distinction between a mirroring and a reconstructive route to empathy best reflects his insightful distinction between low-level simulation (mirroring) and high-level simulation (imagination). Instead, we think that the duality between contagious affective experiences and empathetic vicarious affective experiences better reflects Goldman's distinction between low-level and high-level processes of mental simulation.

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[6] Cf. Singer et al. (2006).

It is widely recognized that there are at least two broad kinds of imaginative processes: propositional imagination (as when one imagines or supposes that *p*) and mental *imagery* or non-propositional imagination (as exemplified by visual or motor imagery). Only the latter is relevant to the analysis of high-level simulation. As it turns out, the combination of Goldman's internalized definition of endogenous mirror neuron activity and of his liberal definition of exogenous mirror neuron activity is not entirely consistent with his own distinction between mirroring and imagining. Just to take one example, motor imagery, which he takes to be an example of high-level simulation, would meet the conditions for mirroring on his liberal definition.[7] Since we fully accept Goldman's latter distinction, we cannot accept his liberal approach to mirroring.

We fully endorse a simulation-based approach to *vicarious* experiences. On our view, experiencing vicarious pain, or any other emotion, is to *imagine* being in pain, or feeling any other emotion. We assume that non-propositional imagining is equivalent to a process of mental simulation, whereby a psychological mechanism is being used *off-line*. Given its basic information-processing function, a cognitive mechanism takes canonical inputs and produces a canonical output in response. For example, when working *on-line*, vision takes retinal inputs and produces visual percepts; the motor system transforms motor instructions into the execution of motor acts; the decision system takes goals and beliefs as inputs and produces a decision as a basis for action. However, as several scientists and philosophers have argued, a cognitive mechanism can also be taken *off-line*. For example, visual imagery has been construed as an instance of imagining seeing (or visualizing) something, whereby one's visual system is run off-line: it is provided with inputs from memory, not retinal inputs. In response, it produces a visual image, instead of a visual percept. Motor imagery

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[7] The distinction between low-level and high-level simulation is problematic (Vignemont, 2009). Consequently, whereas Goldman (2009a) clearly denies that motor imagery is an instance of mirroring, Goldman (2009b) is willing to acknowledge that some cases of motor imagery are instances of mirroring and others instances of E-imagining.

has been hypothesized to be the output of a process whereby the motor system is taken off-line and one imagines producing a movement. Finally, one's decision system has been hypothesized to be used off-line for the purpose of predicting another's decision, instead of taking a decision on the basis of which to act. Similarly, we assume that one can imagine being in standard pain, using one's own pain system off-line. Interestingly, recent neuroscientific evidence shows that the process of imagining being in pain involves similar activity in the brain as the experience of standard pain (Jackson et al., 2006; Ogino et al., 2007). The assumption is that the vicarious experience of another's emotion in general is the output of the process of imagining another's emotion by running off-line one's emotional system: for example, one experiences vicarious fear by running off-line one's own fear system.

3. Vicarious experiences

After dealing with the shortcomings of two major contenders, we now turn to our own preferred account of empathy, according to which interpersonal similarity is necessary and can be achieved thanks to a process of non-propositional imagination (or imagery). This imagination-based account avoids the problems that we have highlighted for the mirroring account. For example, part of the difficulties for the motoric mirroring model is that it involves exclusively motor processes. By contrast, the imagination model is not so restricted to actions. When imagining being in pain, one can imagine any component of what is involved in experiencing pain — whether it is the facial expression of pain, the bodily reaction or the affective unpleasantness.

Although we take interpersonal similarity to be necessary for vicarious experiences in general and for empathy in particular, we nonetheless agree with advocates of the direct-perception model of empathy that interpersonal similarity between a

mindreader's psychological state and her target's affective state is not a necessary, nor even an enabling, condition for non-empathetically mindreading another's affective state. We can now spell out the four conditions which we take to be necessary for one individual X to *empathize* with her target Y's psychological state:

1. *Affectivity condition*: X is in some affective state or other $s*$;

2. *Interpersonal similarity condition*: X's affective state $s*$ stands in some suitable similarity relation to Y's affective state s;

3. *Causal path condition*: X is caused to be in state $s*$ by Y's being in state s;

4. *Ascription condition*: X's being in $s*$ makes X aware that her being in $s*$ is caused by Y's being in s.

We shall now highlight the crucial role played by the interpersonal similarity condition, while refining what we mean by "suitable similarity relation."

3.1. The scope and limits of interpersonal similarity

Acceptance of the condition of interpersonal similarity (ii) on empathy enables us to draw, as one should, the distinction between empathy and non-empathetic mindreading. It also enables us to distinguish empathy from sympathy. Sympathy is a kind of *sui generis* social affective attitude: no matter what another's affective experience is (e.g. pain, jealousy, anger), to sympathize with her is to feel *sorry* for her. In contrast, we assume that only if the empathizer's affective state stands in some relevant similarity relation to her target's affective state can the former be said to empathize with the latter.

However, one may note that sometimes sympathy seems to meet the interpersonal similarity condition as well. Suppose Y *sympathizes* with X, who feels sorry because her husband is deeply sick. If Y sympathizes with X, then Y feels sorry for X. If so, then on the

face of it, X and Y experience the same emotion: they both feel sorry. Should that count as a clear-cut case of empathy (Zahavi 2011; Michael, 2014; Deonna, 2007)? Not necessarily. Both feel sorry, but the intentional object of their respective sorrow is entirely different. One feels sorry because her husband is deeply sick, and the other feels sorry about her friend's sorrow. The precise extent of interpersonal similarity is still to be determined, but it can safely be assumed that it is having the same intentional object that matters. We claim that the difference in intentional content between X and Y's feelings is inconsistent with the interpersonal similarity condition. As a result, we claim that Y fails to empathize with X. Instead, it is a mere coincidence if Y's sui generis feeling sorry about X overlaps with X's feeling sorry to have missed his friend. And Y's feeling sorry is better construed as an example of sympathy for X rather than of empathy with X. Moreover it is worth noting that in many cases, the intentional object of a vicarious emotion is likely to be less determinate than that of the emotion that caused it. For instance, X is afraid of a specific bully at school whereas Y, who empathizes with X, is vicariously afraid of bullies. The intentional object of the vicarious experience of fear may even be so indeterminate that it could be phrased as 'whomever X is afraid of'. As a result, imposing interpersonal similarity on empathy turns out not to make excessive cognitive demands on empathy as it does not require complete background knowledge about the person that one empathizes with.

On our account, the interpersonal similarity condition is a necessary condition on empathy. But this is not to say that it is sufficient. Suppose that individuals X and Y are both afraid as a result of hearing a dog's loud barking. In this case, X and Y share their fear as a result of a common cause (the dog's loud barking). But neither needs empathize with the other. So interpersonal similarity is not a sufficient condition on empathy. In fact, our condition (iii) is precisely meant to distinguish the vicarious experience of an emotion, which is caused by another's standard (or non vicarious) emotion and also resembles it, from

cases in which the interpersonal similarity condition is met just by coincidence, e.g. in virtue of some common cause and is therefore not caused by another's standard emotion.

A last condition is required if empathy is not to be confused with emotional contagion. Indeed both empathetic and contagious responses to another's affective state satisfy our first three conditions, and thus constitute vicarious states. The crucial question that arises is: why do some, but not all, vicarious affective states contribute to affective mindreading? Empathetic vicarious states do, but contagious vicarious states do not. In order to distinguish empathetic from contagious responses, a further condition must be added, which only empathy can meet and which we call the *ascription* condition (iv): namely, the empathizer must be aware of the target's affective state. In a nutshell, empathetic experiences contribute to affective mindreading because they are vicarious responses that are *other*-directed. By contrast, contagious states are *self*-centered. In the next section, we shall explore the differences between contagious pain and empathetic pain, and more generally, between contagious experiences and empathetic experiences. It will turn out that whereas self-centered responses to another's pain focus on one's own specific bodily feelings, other-directed responses focus instead on the affective dimension of the unpleasantness of pain.

3.2. The duality of vicarious pain

Of particular importance for the understanding of vicarious pain is the widely recognized dual nature of painful subjective experiences: physical pain has both a sensory component (the intensity of pain and its bodily location) and an affective (or evaluative) component (the unpleasantness of pain). Since it lacks somatotopic organization, the unpleasantness of pain, represented by the affective component, seems dissociable from the

bodily location of pain.[7] When one experiences standard pain as a result of some bodily injury, both components are active. But in vicarious pain, what components are active?

The neuroscientific evidence indicates that an experience of vicarious pain can be *primarily* – but by no means exclusively – generated by the selective activation of one or other of the two components of physical pain: the sensory-discriminative or the affective component. For instance, using one experimental paradigm, Avenanti et al. (2005) found that seeing a needle deeply penetrate another's hand causes in the observer the same sensorimotor response (i.e. muscle-specific freeze) as in the person whose hand is being penetrated. By contrast, using a different experimental paradigm, Singer et al. (2004) found that experiencing pain and observing another's pain selectively activate the same affective component of the pain neural matrix with no activation of the sensorimotor component. When participants were explicitly asked to pay more attention to the intensity of pain or to its bodily location, both the affective and the sensory components of pain were activated (e.g. secondary somatosensory cortex, cf. Cheng et al. 2008; Lamm et al. 2007a). However, none of these studies found a somatotopic organization of the brain responses (and no activity in primary somatosensory cortex). In other words, vicarious pain was not encoded in a particular part of the participants' body. Thus, it seems as if there are two types of vicarious pain. Whereas the former is body-part specific, the latter is indifferent to the bodily location of the pain. Whereas the former is automatic (Avenanti et al., 2006), the latter can be inhibited and is subject to top-down modulation by a wide range of factors (for review, see Engen and Singer, 2013).

Thus, as we read it, the neuroscientific evidence shows three things. First, it shows that the brain activity underlying vicarious pain partially overlaps with the brain activity underlying physical pain. On the widespread assumption that overlap of brain activity is part

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[7] In fact, the sensorimotor and the affective components of pain are dissociated in pain asymbolic patients who no longer seem to mind the pain.

of a sufficient condition for shared experience (either between two individuals at the same time or within a single individual at two different times), this supports the claim that one can share to some extent another's experience of physical pain. But secondly, since partial overlap is not identity, it also shows that vicarious pain should not be confused with physical pain. Finally, it shows that there are two kinds of vicarious experiences of pain: unlike vicarious sensory pain, vicarious affective pain is not localized in a particular bodily part. How should this empirical dissociation be interpreted in the light of the conceptual distinction between contagious and empathetic responses?

As we have argued, what matters to the distinction between contagious and empathetic responses to another's pain is the ascription condition (iv). We assume that a vicarious experience of pain cannot be both other-directed and self-centered. Let us first consider sensory vicarious pain. As we mentioned earlier, Avenanti et al. (2005) reported that seeing another's hand being subjected to painful stimulation causes motor inhibition in the participants' corresponding own hand. Interestingly, this response seems to be primarily self-centered, as shown by the following findings.

First, the effect was not increased when participants explicitly adopted the target's perspective. In a follow-up study, Avenanti et al. (2006) found indeed no difference when participants were asked respectively to focus on the qualities of the painful event or to mentally simulate the target's pain. One would have expected the opposite result if the motor response was other-directed. Secondly, they did not find any correlation between the strength of the response and the participants' score on empathy questionnaires. Finally, a recent study using the same experimental paradigm recorded motor inhibition only when the hand in which the needle penetrated was presented from a first-person visuo-spatial perspective, but not when it was presented from a third-person perspective (Garbarini et al. 2015).

Thus, following Avenanti and colleagues (2009) and Garbarini and colleagues (2015), we propose to interpret vicarious sensory pain in terms of self-centered *contagious* pain. When seeing another's hand subjected to painful stimulation, while knowing nothing about whose hand it is, one maps the other's bodily part subjected to painful stimulation onto one's own bodily counterpart, and one anticipates the sensorimotor consequences of pain at this bodily location. As a result, one's experience of vicarious pain is both anticipatory and entirely self-centered: it is an instance of contagious pain, not empathetic pain.

By contrast, one vicariously experiences the unpleasantness of another's pain by activating the affective component of one's own pain system. This does not require pain to be represented at a definite bodily location. Unlike vicarious sensory pain, vicarious affective pain is other-directed, as confirmed by several empirical findings (Singer et al., 2004; 2006). The most conclusive example is the following study. Participants were told that some patients reacted with pain when they received a soft touch, but not when they were pinpricked. It was found that participants displayed activity in the affective component of pain only when they saw the patients being touched by a Q-tip (Lamm et al., 2010). Following these findings, we propose to interpret affective vicarious pain in terms of other-directed empathetic pain.

In a nutshell, contagious pain and empathetic pain are two distinct vicarious experiences of pain. Whereas the former is self-centered, the latter is other-directed. We suggest that the direction of intentionality (i.e. self-centered vs. other-directed) is determined by whether it is primarily the sensory or the affective component of pain that is vicariously activated. These differences between the two types of vicarious experiences help us understand why affective vicarious experiences alone can meet the ascription condition. In either standard pain or contagious pain, the unpleasantness of actual or hypothetical pain is correlated with the localization of pain in some definite bodily part. By contrast, in vicarious affective pain,

there is an asymmetry between the strong activity of the affective component (which generates a strong psychological disarray) and the weak activity of the sensory component of the pain system (which generates a weak global bodily feeling). The lack of bodily location makes empathetic pain a highly specific type of pain. One can mis-localize standard pain (e.g. referred pain), but one can never experience standard pain without ascribing it to a rough bodily location.

The experience of the unpleasantness of standard pain motivates a selective range of bodily movements, whose function is to prevent or alleviate actual or potential pain (e.g., remove your hand from the hot stove), and which is driven by the bodily location of pain conveyed by the sensory component of pain. However, in empathetic pain, the sensory component of pain is not active at all or very weakly so. Consequently, the feeling of empathetic pain has no definite bodily location and no definite sensorimotor expectation can be generated. Lacking definite sensorimotor expectations about the consequences of pain at a definite bodily location, one feels instead a global bodily feeling of the unpleasantness of generic pain. As a result, one becomes aware that one's own psychological disarray is being caused by another's standard pain. This, we surmise, is why experiences of empathetic pain alone meet the *ascription* condition.

4. Beyond empathy for pain

Michael and Fardo (2014) have recently raised three related objections against the above account of empathetic pain. First, the question arises whether the complexity of our account of the ascription condition (necessary for empathetic pain) is really justified. Secondly, we heavily rely on neuroscientific findings, but the interpretation of the findings is controversial. Thirdly, our account of empathetic pain does not seem to generalize to other types of vicarious emotions.

4.1. The ascription condition

We argue that empathetic experiences of pain are other-directed in virtue of an inferential process whereby one monitors the activity of the affective component of one's own pain system. By contrast, Michael and Fardo (2014) endorse what looks like the simpler suggestion that vicarious experiences of pain are bound to be other-directed from the start, in virtue of their perceptual origins. They assume that it is sufficient for the ascription condition to be met that a vicarious experience of pain results from the perception of other people in pain. Their suggestion, however, fails to account for the difference between contagious and empathetic vicarious states. If they agree that only the latter, not the former, can contribute to affective mindreading, as they seem willing to, then the reason must lie *not* in what they have in common, but instead in what makes them different from one another. All vicarious experiences of pain share the same kinds of inputs: awareness of cues indicating another's standard pain. So the distinctive other-directedness of empathetic pain cannot directly stem from the inputs to both kinds of vicarious experiences of pain. It must be generated at a later stage in the process whereby one becomes primarily aware of the activity of the affective component of one's own pain system, at the expense of the sensorimotor component.

4.2. The pain matrix revisited

Michael (2014) and Michael and Fardo (2014) further argue that recent work by Iannetti and colleagues showing that activation of the pain matrix is not restricted to responses to nociceptive stimuli casts doubt on our account of empathetic pain. We disagree. On the one hand, Iannetti et al. (2013) have argued that overlap of brain activity between physical pain and social pain (caused by social exclusion) cannot show that social pain "hurts." On the

other hand, Legrain et al. (2011) report that the pain matrix can be activated in response not merely to nociceptive stimuli but also to salient visual, auditory, or tactile stimuli in the space immediately surrounding the body. If so, then arguably the pain matrix should be relabeled the *alarm* matrix, which can be activated by all sorts of threats lying close to the body or on the body. For example, awareness that another person is in pain can also trigger the alarm.

Arguably these findings shed light on the nature of physical pain itself: pain *is* an *alarm* system. If so, then the affective component of pain is the evaluative component of this alarm system: by offering a negative evaluation of an actual or potential threat to one's bodily integrity, it motivates an appropriate response (Cutter and Tye, 2011 and Bain, 2013).[8] The affective component is associated with the dedicated sensory component of pain when the disturbance falls *within* the limits of the body. If the disturbance lies immediately *outside* the body and may harm it, then the affective component can also be associated with other sensory representations – visual or auditory.

On this account, empathetic pain (i.e. vicarious affective pain) is generated by the evaluative activity of the affective component of one's pain system because the affective component of the pain system works mostly as an alarm system that evaluates, and motivates responses to, threats. In standard pain, the affective component of one's pain system is triggered by the detection of threats to one's own body. But it can also be activated by the detection of stimuli that are threats not to one's own body, but to another's body instead (Vignemont, forthcoming). Empathetic pain thus meets the interpersonal similarity condition. Far from disproving our account of empathetic pain, the findings by Iannetti and colleagues showing that an individual's pain matrix can be activated in the absence of nociceptive stimuli are consistent with our account.

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[8] As Bain (2013) puts it, "a subject's being in unpleasant pain consists in his (i) undergoing an experience (the pain) that represents a disturbance of a certain sort, and (ii) that same experience additionally representing the disturbance as bad for him in the bodily sense."

4.3. From empathy for pain to empathy for emotions

The next question to be addressed is the scope and limits of our account, which seems restricted to empathetic pain. Pain, however, is far from being a prototypical emotion. The crucial question is whether it makes sense to draw a distinction between two kinds of vicarious responses in the case of other emotions (e.g. fear and disgust). Does it make sense to distinguish contagious fear (or contagious disgust) from empathetic fear (or empathetic disgust), where the former is supposed to be fundamentally self-centered and the latter is supposed to be fundamentally other-directed? In other words, the question is: what is it about the content of contagious fear (or contagious disgust) that makes it self-centered? What is it about the content of empathetic fear (or empathetic disgust) that makes it other-directed?

Most emotions may not have exactly the same dual nature as pain. Still, on some accounts at least, they can be characterized in terms of two distinct dimensions, namely, their *evaluative* dimension and their *bodily* dimension. Most conceptions of emotions have actually oscillated between over-intellectualizing them and over-embodying them. On the one hand, some theories have focused on the intentionality of the emotions (e.g., fear *of* something), thereby accounting for emotions in purely cognitive terms (Solomon, 1993). On the other hand, other theories have focused on the phenomenology of the emotions (e.g., I *feel* frightened), thereby accounting for some (if not all) emotions in terms of experiencing bodily changes (e.g., James, 1884, Damasio, 1999; Prinz, 2004). Some recent proposals, however, suggest an intermediate approach, according to which emotions are both bodily and evaluative attitudes:

> we understand why emotions are evaluations once we admit that they relate to values by virtue of being experiences *of one's body being ready or poised to act*

in some specific manner towards a given object or situation (Deonna and Teroni, 2014).

Emotions have two fundamental dimensions: on the one hand, as their phenomenology shows, they are anchored to basic bodily feelings. On the other hand, they have a basic evaluative function: to experience an emotion is to evaluate or appraise some event, fact, property or object in a distinctive way, which is in turn revealed by some specific associated action-readiness.[9] We shall argue that each of the two basic components of standard emotions can be mapped onto each of the two kinds of vicarious emotions.

Let us first consider contagious experiences. For example, I am in the middle of a crowd and someone starts panicking. The panic automatically spreads to everybody, including me. What do I experience? It seems relatively uncontroversial that I experience contagious fear. I feel afraid: I feel my heart beating faster and also the urge to run as much as everybody else around. My contagious fear is primarily driven by the bodily feelings associated with fear, not by the evaluative affective component of fear. I may become aware of the immediate source of my vicarious fear from different cues. But if so, then this information is not conveyed by the activity of the evaluative affective component of fear. My vicarious fear is thus strongly embodied. This is why most instances of emotional contagion are described in embodied rather than in affective terms: one talks of contagious *crying* or contagious *laughter* rather than contagious distress or contagious happiness. Similarly, experiences of vicarious sensory pain are vicarious experiences of strongly embodied aspects of pain: they are primarily self-centered and represent distinctive bodily parts.

By contrast, suppose I perceive cues of a child's fear of a lion behind bars in a zoo. I may not be afraid of the lion myself. Nonetheless, even if I am not, I can still vicariously feel the

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[9] The evaluative attitude can be about an external non-bodily object or event (a lion, for example), but it can also be about the subject's own body (i.e. reflexive emotions). Even in this latter case, the distinction between the two dimensions holds: the body is both a source of feelings and an intentional object.

child's fear of the lion. Clearly, my vicarious fear of the lion is quite different from my undirected contagious fear caused by crowd panic. What primarily drives empathetic fear is the affective evaluative component of fear, not the bodily feelings associated with fear. My contagious fear need not represent any intentional object. My empathetic fear, on the other hand, must be directed and be about something, e.g. the lion. More specifically, my vicarious fear of the lion consists in an evaluative representation of the lion as dangerous.

But how does my empathetic fear of the lion differ from the child's standard fear? How can it meet the ascription condition? We assume that an agent's standard emotion involves both an evaluative appraisal and a bodily feeling, both anchored to the agent's own bodily perspective. Now the evaluative component of an agent's standard emotional experience involves a distinctive set of parameters. On the one hand, danger is always appraised relative to some agent: what is dangerous *for* a young child is not necessarily dangerous *for* a healthy adult. On the other hand, the evaluative component of an agent's fear involves *standards* of appraisal of the danger of a threatening stimulus, relative to the agent's own cognitive resources and values. For example, the evaluative component of the child's experience of fear involves an appraisal of the danger of the lion behind bars in the zoo, at a location near the child's body, relative to the child's own values and cognitive resources.

An experience of either standard fear or contagious fear is primarily self-centered: it is likely to directly cause one to run away from the source of the fearful experience in order to protect oneself. But what underlies the experience of empathetic vicarious fear is primarily the activity of the evaluative component of one's own fear system (at the expense of the bodily feeling of fear). In empathetic vicarious fear, there may be a discrepancy between danger as appraised by one's own standards and one's awareness of the cues of another's fear. If so, given that by one's own standards of appraisal of danger, one should *not* experience fear at all, one must shift one's own standards in order to make sense of the cues

of another's fear. In the case of pain, empathetic pain is generated by running off-line the affective component of one's pain system (Vignemont and Jacob, 2012). In the case of empathetic fear, one appraises danger according to someone else's standards of evaluation by running off-line one's fear system. This is what it takes to respond empathetically to another's cues of fear: one uses standards of appraisal of danger that belong to someone else so that one can run off-line the evaluative component of one's fear system. If one does not share those standards, then one must shift one's own standards in order to match the other's standards. Consequently, experiences of empathetic fear whereby one runs off-line the evaluative component of one's fear system are fundamentally other-directed. Hence, what make a vicarious experience other-directed, and thus empathetic, are (i) the fact that it necessarily consists of an evaluative attitude, and (ii) the fact that the evaluation is performed on the basis of another individual's standards. For example, I am able to appraise the presence of the lion behind bars as dangerous for myself and the child, *according to the child's cognitive resources and values*. Thus, if and when I experience empathetic vicarious fear, I am not tempted to run away from the lion at all, but instead to move towards the child and to comfort her by trying to change her standards of appraisal of danger, by e.g. pointing to the protective bars.[10]

To recapitulate, we made two basic points. On the one hand, empathetic emotional experiences differ from contagious experiences because they are evaluative attitudes that face outward. On the other hand, they differ from standard emotions because in empathetic emotional experiences, one shifts one's standards of evaluation relevant to a given emotion to match another's standards of evaluation. In virtue of these specificities, empathetic experiences meet both the interpersonal similarity and the ascription condition. So our account of empathy in terms of interpersonal similarity allows us both to distinguish it from

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[10] The standard experience of disgust also involves an evaluative component. One can also experience vicarious empathetic disgust by running off-line the evaluative component of one's disgust system in order to match another's standards of appraisal of dangerous food.

other related social attitudes not only in the case of pain, but also in the case of other emotions.

Given the necessity of interpersonal similarity for empathy, the following question now arises: what does it take to undergo vicarious experiences? It would be puzzling how one individual's standard experience of *s* could give rise to another individual's vicarious experience of the same state unless there was a mechanism enabling one individual to map her standard experience of affective state *s* at t onto a vicarious experience of the same state at t+1. But what is this mechanism? In line with our application of the imagination-based model to the case of vicarious emotions such as fear, we assume both that one's experience of fear is the canonical output of one's fear system and that one's vicarious experience of fear is the output of one's fear system taken off-line.

Concluding remarks

No doubt, a certain amount of stipulation is unavoidable in the way one uses quasi-technical terms such as 'empathy'. This is why at the outset, we took it as a condition of adequacy on an account of empathy that it ought to recognize the distinction between it and four related, though distinct, psychological phenomena (standard emotion, affective contagion, sympathy and emotion ascription). On the one hand, we take it as corroborating evidence for the non-propositional imagination model of empathy that, unlike two major contending accounts — the mirroring account and the direct-perception model —, it can meet the above condition of adequacy. On the other hand, while our twofold account of vicarious experiences was primarily designed to explain empathetic pain, it turns out to be applicable to a wide range of vicarious emotional experiences.

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