ORIGINAL RESEARCH

Co-filing and De Jure Co-referential Thought in the Mental Files Framework

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Abstract

In the mental files framework, mental files contain pieces of information. Then, how can we explain the fact that multiple pieces of information are stored in a single mental file? This fact can be called 'co-filing'. Recanati recommends an account of co-filing as a way to avoid the circularity that can occur when one attempts to explain co-filing in terms of the fact that pieces of information are taken to be about the same object. I argue that his account is far from being satisfactory and that co-filing needs to be regarded as a primitive fact. In other words, co-filing is not what needs to be explained within the mental files framework. The right question to be dealt with is what we can explain based on co-filing.

1 Introduction

While many philosophers attempt to fulfill various explanatory purposes by introducing the notion of mental files, some account for how we *think of a particular object as being the same* in terms of mental files (Perry 1980, 2012; Lawlor 2001; Recanati 1993, 2010, 2012; Schroeter 2007, 2008, 2013). In what follows, I will call this kind of thought '*co-referential thought*'. Despite the differences with respect to the details of their accounts, all of them agree that mental files play a crucial role in binding propositional attitudes supposed to be about the same object.[1] For instance,

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[1] Lawlor (2001) and Recanati (2012) maintain that mental files are (singular) concepts in the sense of thought-constituents. However, Schroeter (2007, 2008) argues that concepts are anti-individualistic mental entities whose individuation depends on the external environment, while mental files are individuated internally/individualistically. Because the main focus of this paper is on Recanati's (2012) view, I assume that mental files are concepts in the sense of thought-constituents. Even Schroeter can accept this assumption to the extent that a thought is a mental structure one of whose component is a representational vehicle such as a mental file that binds different thoughts supposed to be about the same thing. What she denies is that this element is an anti-individualistic concept.

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a fact that a subject essays a singular thought by ascribing different properties to a single entity is explained in terms of the fact that she deploys a single mental file as the vehicle of her thought about it and that the pieces of information about the properties are stored in the same file.

According to Recanati (2012), co-referential thought can be divided into two subtypes. One involves an *identity judgment* in which distinct mental files are deployed as constituents of the thought expressed by the judgment. This kind of co-referential thought includes a belief that can be expressed by an utterance like 'Hesperus is Phosphorus' or an identity judgment that can be expressed, for instance, by 'That bird perching on the pine tree is the bird I saw yesterday'. Also, by holding that distinct mental files serve as different modes of presentation, we can explain the cognitive significance conveyed by an identity judgment. The reason that an identity judgment containing singular terms improves our knowledge despite the fact that the propositional content of the judgment concerns the trivial truth about the identity of a thing with itself is that the two mental files that occur as constituents in the expressed thought implement different modes-of-presentation roles.

The other subtype of co-referential thought concerns the cases in which the identity of the object of a singular thought is presupposed without involving any judgments of identity because there is a single mental file that is repeatedly deployed as a thought-vehicle. For instance, if I think, 'That is F, and that is G now' while perceiving a single object over a certain period of time, then my thought is not based on the conscious judgment that the two occurrences of 'that' are about the same thing. In other words, the thought that I entertain does not involve the thought that can be expressed by saying, 'That G I see now is the same as that F I saw a moment ago'. Simply, I have used the same mental file twice in the thought without thinking about that fact. Furthermore, when I have an immediate recognition based on the perception of an object with which I was acquainted in the past and think, for instance, 'I see that bird again', my thought about the bird does not rely on the identity judgment that the bird I see now is the bird I saw before. The thought is simply based on the *presumption of identity*.[2] An important characteristic of this type of co-referential thought is that it is explained by the fact that a thinker deploys a single mental file repeatedly.[3]

Our co-referential thoughts, of course, are fallible. Especially, we can fall into an error by taking distinct objects to be the same. For instance, even though one makes a judgment of identity that $a = b$, one can doubt that the judgment is false so that a and b are in fact distinct. The thought that is entertained in this kind of doubt is easily accommodated within the type of co-referential thought that involves an identity judgment because distinct mental files (i.e., a file about a and a file about b) are

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[2] Identity presumption can be construed as a notational variant for Campbell's notion of trading on identity (Campbell 1987). According to Campbell, the sameness of sense is a matter of whether there is a single episode of object-tracking.

[3] For the distinction between identity judgment and identity presumption, see Recanati (2012, pp. 43–53). Also, see Recanati (2016, pp. xiv–xvi) for his argument that an unactualized possibility that one could cast doubt on the presumed identity in one's thought does not affect the fact that one actually deployed a single mental file.

deployed as constituents of the thought expressed by the judgment. A co-referential thought that involves a judgment of identity consists of the distinct mental files that are connected to each other. As Recanati argues, the link between the mental files enables a thinker to use the information stored in one mental file when entertaining a thought in which another mental file occurs as a constituent (Recanati 2012, p. 43, p. 193 *et passim*. He calls this type of link '*horizontal link*'. The details of the account will be discussed in due course). Therefore, when we doubt or realize the fallacy of an identity judgment, the two mental files that occurred in the previous identity judgment are deployed again while the link between them is severed. That is, our thought about the possibility of error can be explained in terms of the fact that different ways of thinking, i.e., distinct mental files may not be about the same thing. In contrast, when a subject entertains a co-referential thought based on the presumption of identity, it is difficult to think the fallacy of the identity. Because a single mental file is deployed as a vehicle of thought, it *seems obvious* to the thinker that there is a single object of thought. Although it is still possible that she can think of the skeptical possibilities that philosophers have discussed in the field of Epistemology, it can be acknowledged that the co-referential thought based on the identity presumption provides the thinker with the appearance of identity that is much stronger than the appearance that is involved in the co-referential thought based on an identity judgment. Hereafter, I abbreviate this subtype of the co-referential thought that relies on the presumption of identity as '*de jure co-referential thought*' (Recanati 2012; Schroeter 2007, 2008, 2012, 2013[4]).

As we have seen, a de jure co-referential thought is explained in terms of the fact that different pieces of information are contained in a single mental file deployed as a thought-vehicle. The reason I can think that the same thing is F and also G without consciously judging that the thing that is F is identical with the thing that is G is that the pieces of information about the properties of being F and of being G are stored in the same mental file that is the vehicle of the singular thought that I entertain. Also, I can immediately recognize an individual object without a judgment of identity because the same mental file that I deploy in the recognitional thought contains both the information that derive from my current perception and the information that I acquired through the past acquaintance. Henceforth, I call the type of fact that multiple pieces of information are stored in a single mental file '*co-filing*' [I borrowed the term from Goodsell (2013)].

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[4] The notion of *de jure* co-reference is also discussed by Fine (2007) and Pinillos (2011). However, their understandings of the notion do not depend on the notion of mental files. Rather, Pinillos argues that de jure co-reference of singular terms cannot be explained in terms of 'the third object view' including a mental file account. Especially, his objection is based on the argument that a mental file account leads to the unacceptable consequence that de jure co-reference does not allow transitivity of co-referential relation. For responses to this argument, see Recanati (2012, pp. 104–112) and Goodsell (2014). Fine also criticizes the mental files framework based on which de jure co-reference is explained. The main point of the objection is that we can have thoughts that are co-referential even when they have no difference in qualitative aspects (See the Bruce case in Fine (2007, pp. 36–37). However, I do not think that this argument works. See Sosa (2010, pp. 331–334). Also, see Rattan (2009, p. 5).

There is one point that needs to be clear before examining the notion of co-filing. I use the term 'fact' in a loose sense. A fact and its descriptions must be differentiated. The same fact can be stated in different ways. When a theoretical approach to a given phenomenon is controversial, it is generally allowed to describe a fact that is regarded as a basic datum in a loose way. A relevant example can be found in our ordinary use of a natural language. We ordinarily say as a fact that the Sun rises every morning even though it in fact does not rise: it is a mere appearance of rising due to the rotation of the Earth. Furthermore, facts can be stated loosely by using a conventionalized metaphor. For instance, we say that someone kicked the bucket to state the fact that he or she died even though there was no literal action of kicking the bucket. However, at a level of description, there is a fact that the person kicked the bucket. Metaphorical description can also be found even in a scientific explanation when some controversial aspects need to be stated loosely or when there is no need to satisfy some higher epistemic standard. For instance, one's theoretical explanation of a biological function from the viewpoint of natural selection can include a statement such as 'this function was selected for to increase the survival rate of the species' if all know that any teleological implication must be ruled out. Although co-filing is posited as a fact that pieces of information are gathered into a single mental file, it should be noted that there are different levels of description of the same fact. As we shall see in Sect. 2, Recanati talks of co-filing as a 'fact' whereas co-filing as gathering pieces of information into a single file must not be literally understood according to his mental files framework. However, co-filing is still a fact. For Recanati, what is required for a theory of mental files is to provide a more theoretically proper description of it. Although the typical description of co-filing could turn out to be metaphoric, this does not entail that its status as a fact must be denied. The inexactness of a pre-theoretic description is possible only when it already represents an existing fact.[5]

One might raise a worry that there may be no matter of fact underlying the description of co-filing, just as there is no fact about phlogiston. However, this analogy does not hold. Recanati and other mental file theorists maintain that one of the main functions of a mental file is to gather the pieces of information supposed to be about the same object, and that this function of information-gathering is crucial because a mental file depends on the object-tracking mechanism that draws on the information stored in it (e.g. Jeshion 2010, pp. 131–132; Schroeter 2008, p. 117, 2012, pp. 181–183, 2013, p. 284; Recanati 2012, p. 42[6]; Goodman 2016, p. 242).

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[5] I am grateful to an anonymous reviewer for their comment that my treatment of co-filing as a fact can appear misleading, given that Recanati (2012, 2016) holds that mental files are not literally containers of information. Co-filing is not a pseudo-phenomenon like phlogiston-releasing during combustion that must disappear after we acquire a proper theoretical explanation. It is a fact that awaits a better description in the development of a theory that explains de jure co-referential thought and other relevant phenomena. This is the case even if Recanati's view is correct. However, I shall argue in due course that his account has problems and that co-filing must be posited as a primitive fact within the framework of mental files.

[6] 'Files are a matter of information clustering. … The role of the file is precisely to treat all the information as if it concerned one and the same object, from which it derives.'

For Recanati, a mental file is by its nature a singular representational vehicle that is supposed to refer mentally to a single object. This mental reference is possible based on the relation through which the pieces of information about the referent is gathered into the file (Recanati calls this type of relation '*ER relation*' as an abbreviation for 'Epistemically Rewarding relation'. Recanati 2012, p. 20, p. 35 *et passim*). As he emphasizes, the mental reference is not satisfactional, but relational. An object is determined to be the referent of a mental file by virtue of there being an ER relation or a set of ER relations in which the file stands to it. This is the case even when large part of the information gathered through the relation(s) is incorrect. (Recanati 2012, p. 19 *et passim*) Therefore, the notion of co-filing is ineliminable in the theoretical account of the central function of a mental file.

The question that can be raised at this juncture is what accounts for co-filing. How are different pieces of information gathered into the same mental file? It is unsatisfactory to simply hold that a de jure co-referential thought happens when the thinker deploys a single mental file into which pieces of information about the putative object of thought have been gathered. As long as there is no explanation of how co-filing occurs, our explanation of *de jure* co-referential thought in terms of co-filing would include the explanandum itself, for instance, by saying 'co-filing occurs when there is a *de jure* co-referential thought'.[7] Pertaining to this problem, I examine Recanati's discussion of the explanatory circularity into which he argues an attempt to answer this question can fall. I criticize his view according to which the circularity can be avoided by explaining co-filing in terms of the notion of internal co-reference of information and argue that the notion is problematic as it stands. Then I argue that co-filing must be regarded as a primitive fact in a theory of mental files so that the worry of the circular explanation is dissolved.

2 Co-filing and Internal Co-reference of Information

According to Recanati, there are two kinds of facts relevant to our task: one is co-filing. The other is the fact that pieces of information are *taken* to be about the same thing, regardless of whether they are actually about a single entity. Following Recanati, I abbreviate the latter kind of fact '*internal co-reference (of information)*'.[8]

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[7] Lawlor (2010, p. 491): 'Nor will it do to say that for thoughts to represent their objects as the same is for the thoughts to somehow involve the same file of information; invoking a file isn't a way of giving an account as much as a metaphor that presumes the very notion to be explained.'

[8] Recanati (2012, p. 91): '… two pieces of information … can be internally co-referential just in case they are *taken to be* or *represented as*, co-referential in the simpler, external sense'. (The author's emphasis) and p. 95, Table 1: 'Between pieces of information *i* and *j*, … *i* and *j* are taken to concern the same object'. We should note that the notion of internal co-reference of information is not the same as that of internal co-reference of singular terms. As I will argue, while taking two singular terms to be about the same object occurs at the personal level of the thinker who linguistically understands them, taking two pieces of information to be about the same thing should be regarded as what happens at the subpersonal level because our thought is not ordinarily directed toward pieces of information. For instance, Schroeter's bootstrapping account of de jure co-reference in terms of a subject's taking two singular terms to be about the same entity falls under the case in which the de jure co-reference with respect to linguistic meaning or samesaying is explained in terms of the internal co-reference of singular terms, not the internal co-reference of information (Schroeter 2012).

If we account for how co-filing occurs by appeal to internal co-reference, and at the same time if we hold that internal co-reference occurs because of co-filing, then we have a circular explanation (hereafter, I will call this type of circularity '*the filing circularity*'). Therefore, the question is how we can provide a non-circular account of how co-filing and internal co-reference happen. Given that the explanation of co-filing and that of internal co-reference must not be interdependent, it is a matter of determining which of the two is more fundamental in a theory of mental files. Recanati's answer is that internal co-reference explains co-filing, not vice versa.

Before examining Recanati's account of why co-filing must be explained in terms of internal co-reference, we should note that internal co-reference is not identical with de jure co-referential thought. The latter is a thought that contains as a constituent a single mental file that stores pieces of information. But the former must not be understood as happening at the level of thought. If it consists in having a thought, then the notion of internal co-reference becomes problematic. If it happens if and only if a subject thinks different pieces of information to be about the same object, then this means that the subject must deploy distinct mental files as modes of presentation to distinguish between those pieces of information in thinking about them. However, if this is so, then internal co-reference does not explain co-filing because the latter happens when the subject deploys a single mental file as a vehicle of thought. More importantly, it is extremely rare that we are conscious of or think about pieces of information themselves. Our thought is directed toward things in the world through the deployment of mental files as thought-vehicles, and the pieces of information stored in mental files are used as the input to the cognitive system to yield our thoughts about objects and properties as the output.[9] Thus, internal co-reference needs to be understood as what happens at the *subpersonal* level underlying our conscious thoughts: that pieces of information are taken to be about the same thing is not that *the thinker* as a higher-level cognitive system takes them to concern the same entity. It is the lower-level informational system that binds them. However, we shall see that Recanati's understanding of the notion of internal co-reference is not restricted to the subpersonal binding of information, and that his view on the notion of internal co-reference is problematic.

Recanati responds to the filing circularity as follows: explaining internal co-reference in terms of co-filing leads to the filing circularity. Rather, co-filing must be explained in terms of internal co-reference.

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[9] See Evans (1982, p. 158, p. 227). If we accept that the content of information is non-conceptual so that it cannot be the direct object of a conscious thought, then we can have conscious access only to the conceptualized informational content. Recanati and Murez (2016) hold that the information contained in a mental file is consciously available because the file functions as a concept, i.e., a thought-constituent. (However, this position might be controversial while it seems to be widely accepted among philosophers. See Machery 2009, p. 26, for instance.)

Goodsell also points out that we do not ordinarily think about information so that internal co-reference is indirectly captured by the observation of the manifestations of relevant dispositions (Goodsell 2013, pp. 184–185). But she still takes it that taking pieces of information to be about the same thing or different things involves mental files as modes of presenting these pieces of information. This is what I deny by holding that internal co-reference is a process that happens at the subpersonal level.

One cannot, without circularity, account for internal co-reference (the *fact* that two pieces of information are taken to concern the same object) in terms of the occurrence of that information within a single file. If anything, it is the other way round: Two pieces of information go into the same file if they are taken to concern the same object. Now when are two pieces of information taken to concern the same object? Well, there are two possibilities. Either the cognitive system binds these pieces of information together directly because they are gained through the same ER relation; or a judgment of identity occurs which enables information originally in one file to end up with in another and *join information* originally there. *In both cases, two pieces of information are taken to concern the same object and end up in the same file*. The mental file framework sheds light on both cases, even though no attempt is made –or should be made –to 'reduce' the relation of internal co-reference between pieces of information to their occurring within the same file. (Recanati 2012, p. 101. The emphases are mine.)

As we can see in the quoted passage, Recanati divides internal co-reference that induces co-filing into two types: (1) On the basis of identity presumption, the pieces of information that derive from the same ER relation, i.e., the currently given relation through which the information-gathering activity is exercised, are gathered into a single mental file. (2) By a judgment of identity, a mental file gathers pieces of information from another file through the link between the two mental files. In the course of examining each case, I shall explain how my view differs from Recanati's account. Especially, I shall argue that an identity judgment does not involve internal co-reference.

The second type of internal co-reference that results in co-filing is, according to Recanati, the transition of information from one mental file to another by an identity judgment. As we have seen, he holds that a judgment of identity involves the horizontal linking between two mental files that are supposed to co-refer and that there is a free-flow of information between them through the link.

Let us think of the case in which Lois realizes that Superman is Clark. On Recanati's account, her identity judgment gives rise to the transition of information between her SUPERMAN-file and her CLARK-file. The shift of information occurs through the inferences that Lois makes on the basis of the identity judgment. For instance, the piece of information about Supermen/Clark's being F that has been stored in the SUPERMAN-file is now contained in the CLARK-file too by virtue of Lois' inference that includes her judgment of identity as one of the premises.

(i)   Superman is F.
(ii) Superman is Clark.
(iii) Therefore, Clark is F.

However, I do not agree that this kind of inference amounts to the transition of information between mental files, i.e., pooling together all the pieces of information stored in them. Before providing my reasons for the disagreement, it is required to justify the presupposition based on which one can agree or disagree with Recanati's

claim: an identity judgment does not automatically result in the merging of the two mental files whose referents are judged to the same. Following Lawlor (2001) and Recanati (2012), I accept that an identity judgment does not ordinarily involve file-merging. Recanati correctly points out the cognitive significance involved in an identity judgment is due to the fact that distinct modes of presentation supposed to be about the same object are deployed in thought. Because mental files serve as modes of presentation, converting them into a single one leads to the explanatorily undesirable consequence that the thinker who entertains the identity judgment comes to represent the object in question only in a single way (Recanati 2012, pp. 44–46, n. 4. Also, see Lawlor 2001, p. 57, p. 90, p. 93 *et passim*). Therefore, even if one is strongly convinced of her judgment of identity, merging two mental files is not what automatically occurs. In other words, if one is to solve Frege's Puzzle involved in an identity judgment in terms of the distinctness of modes of presentation identical with mental files, file-merging is not an option.

One important point to be noted at this juncture is that merging two mental files is not a necessary condition for pooling the informational contents of them, according to Recanati's theory. Recanati claims that mental files are simple mental symbols and they themselves play mode-of-presentation roles independently of the information stored in them. It is their syntactic properties that carry cognitive significance (Recanati 2012, pp. 39–41, n. 12; 2016, p.vii, p. ix. This view does not essentially differ from Fodor's account. See Fodor 2008, p. 61, pp. 73–75). Therefore, Recanati argues, distinct mental files, i.e. mental symbols with different formal properties can function as different modes of presentation even when they store exactly the same information. Thus, the horizontal linking between two mental files does not necessitate the merging of them into a single mental file. In short, file-merging entails information-merging, whereas the converse entailment does not hold. Recanati's claim is that an identity judgment results in information-merging without file-merging.

There are two additional arguments that, ordinarily, file-merging does not occur in an identity judgment, regardless of whether Recanati's definition of mental files as mental symbols is correct. These arguments draw on the same argumentative strategy: based on reasons to deny information-merging, we can conclude that the mental files deployed in an identity judgment are not merged into a single file. The intended argumentative structure is a simple *modus tollens*:

(1)   [From the entailment of information-merging from file-merging] If file-merging occurs in an identity judgment, then information-merging occurs.
(2)   No information-merging occurs in an identity judgment.
(3)   Therefore, there arises no file-merging in an identity judgment.

Thus, with these arguments, I can go for killing two birds with one stone: (1) Contrary to Recanati's view, I argue that there is no free-flow of information in an identity judgment. (2) I provide further reasons bolstering the presupposition on which my disagreement is based: file-merging does not occur in an identity judgment.

First, it is required that recovery from error be easy. Ordinarily, there arises no difficulty in thinking again about the two distinct objects that were taken to

be identical, after one realizes that the identification was erroneous. For *reductio*, suppose that an identity judgment leads to file-merging and that information-merging occurs as a result. Withdrawing the identity judgment makes it hard to separate the mixed information. This in turn makes it difficult to recover the mental files that were deployed in the past. For instance, after accepting the identity between Superman and Clark, Lois realizes that it was a mistake to judge that they are the same. (For the purpose of argument, suppose that Superman is not Clark, contrary to the well-known story.) Then it must be *easy* for her to recover and differentiate her previous thoughts that are either about Superman or about Clark (Lawlor 2001, p. 56ff). To illustrate, Lois can easily think, 'I thought that Clark could fly. But it is Superman, not Clark, who can fly.' For the thought about non-identity and the easy recovery from misidentification to be possible, the thinker needs to manage the pieces of information about the properties (such as the property of being able to fly) that are typically ascribed to Superman separately from those about the properties typically associated with Clark. That is, the thinker should not mix the pieces of information by allowing the free-flow of information between the putative co-referring mental files.

One might object by arguing that the requirement of easy recovery does not necessitate the separate maintenance of information under an identity judgment. Even though it may not be easy, it seems still possible to recover the previous mental files from the merged file without dividing the mixed information successfully. Because storing misinformation does not affect the identity of a mental file, one can argue that it is not clear why some mistakes made in the recovery of information should be taken to be risky at all. Even if Lois still believes that Clark can fly after realizing her misidentification in the aforementioned example, the re-introduced CLARK-file seems to be about Clark, not about Superman. Also, take stock of the following example. I mistake twins for a single person. This leads me to initiate a single mental file. After realizing my mistake, there occurs a fission of the file. However, because I still have no idea how to distinguish one from the other, it is plausible that the two files do not differ at all with respect to their informational content. This seems to show that the file-fission as recovery from error is easy in that it does not depend on a fallible task of re-grouping mixed information.[10]

I do not deny that file-splitting can be easy in some cases and that it is still doable even when it is difficult. However, what is required is not simply re-initiating mental files, but enabling them to refer to the objects to which they referred before the false identity judgment. As I have pointed out, the reference-determination of a mental file depends on the external relation of information-gathering. The pieces of information that derive from co-filing serve not only the object-tracking mechanism but also the differentiation of ER relations that determine which object is referred to by the mental file that stores these pieces of information. As Recanati acknowledges, the referent of a mental file is the dominant causal source of the information stored in the file (Recanati 2012, p. 20, pp. 74–75, p. 140 *et passim*). ER relations

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[10] I am grateful to an anonymous reviewer for raising this objection and making a helpful suggestion. I tweaked his or her main point and example. However, I think there is no essential difference.

are causal connections that determine the referent of a mental file to be the source of the information that the file stores.[11,12] Therefore, the successful recovery from the file-merging resulted from an erroneous identity judgment requires the recovery of distinct mental references that were previously established by separate sets of ER relations. Re-grouping pieces of information is nothing but a notational variant of this process. Although it can be easy to re-introduce mental files as mere mental names, tags, or symbols, it is far from being easy to re-cluster the mixed pieces of information in the way that the ER relations on which these mental names were based are properly re-grouped to result in the distinct mental references that were previously established. ER relations are external informational links to which the thinker ordinarily has no transparent epistemic access. Furthermore, it is plausible that the merged-file does not contain a sort of meta-information about the distinct sets of information that were previously maintained in the past mental files.

A similar argument is applicable to the aforementioned example of the twins. I am not denying that my realization of the confusion leads to the formation of distinct mental representations for the twins. However, unless they can function as singular mental representations that refer to different individuals, they cannot count as a genuine mental file in the sense of a singular concept the deployment of which enables me to have a singular thought about each twin. Entertaining such a thought requires the singular reference of the representational vehicle, which relies on the external informational links, i.e., ER relations. My failure to differentiate the twins in this case indicates that the cognitive system cannot re-group the ER relations that belong to the merged file into the two sets of relations each of which respectively determines each twin as a referent. Thus, the thought that I can entertain due to the realization of the error is nothing but a general thought whose content is quantificational, not a singular one. For instance, I can only think, 'There are twins that I

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[11] Recanati (2012) classifies mental files into two types, i.e., contextually unstable files called 'basic files' and stable files called 'encyclopedic entries'. However, his theory, which he calls 'the Indexical Model', renders them all fundamentally dependent on the external ER relations in the determination of reference.

[12] It must be noted that my argument is mainly concerned with the recovery of the distinct mental files from a *false* identity judgment. The point is that it becomes difficult to recover the distinct singular references that were previously established if the identity judgment leads to information-merging. However, a complication comes in if one's previous judgment of identity is correct and one thinks merely the possibility of error. In this case, all the pieces of information merged into a single group have been derived from the ER relations that determine the same referent. Even if most of these pieces of information are incorrect, they are still the ones that have been gathered based on the ER relations whose causal source is the same referent. A piece of information can be misinformation because it is misrepresentational about its causal source. (Let us set aside the cases of the mental files with no referent, for convenience.) Thus, how the grouped information is divided into two bunches does not make any difference with respect to which object is determined to be the common referent of the re-initiated two mental files. The real problem in this case is that, even though the re-introduced mental files are co-referential, what is required to entertain the doubt or supposition of misidentification is one's capability to think them in some different ways. By using Recanati's (2012) view, one can argue that the different modes of presentation that are required in this case only depend on the difference with respect to the syntactic properties of the re-introduced mental files as mental symbols. (There is a qualification: According to Recanati (2016), this type of file-splitting occurs only when the doubt or supposition is actually entertained in thought. See Recanati 2016, pp. xv–xvi).

thought to be one and the same person.' I cannot think a singular thought, say, 'I thought A and B to be the same person' as long as there is no way to distinguish the singular reference to A from the singular reference to B based on the properly differentiated sets of ER relations.

To summarize, the requirement of easy recovery from error means that splitting the single mental file merged by an identity judgment must involve the recovery of the distinct mental references. What determines the referent of a mental file is an ER relation or a set of ER relations through which pieces of information are gathered into the file. Therefore, to regain the previously entertained singular thoughts about distinct objects is to classify properly the pieces of information that the merged file contains into two groups. Although re-introducing distinct mental files construed as mere mental names could be easy, this is far from being sufficient to rehabilitate the previously established singular mental references. In conclusion, the most efficient way to accommodate the recovery of distinct singular references from a false identity judgment is not to merge the pieces of information stored in the distinct mental files that occurred as thought-constituents of the judgment.

One objection that can be raised against my argument is that recovering the previously established singular references by re-grouping ER relations is easy at least in the case of an identity judgment in which distinct proper names are used (e.g., 'Hesperus is Phosphorus.'). Even after file-merging occurs, the pieces of information about the referent's being called by different names (i.e., 'Hesperus' and 'Phosphorus') are sustained. This makes it easy to recover the previously established singular references because the information is consciously available and enables the thinker to participate in the name-using practices associated with the names. For instance, let us suppose that Hesperus is not identical with Phosphorus and the thinker realizes this. Even if the thinker has no idea about or misremembers what properties she ascribed to Hesperus and Phosphorus separately in the past, she can recover distinct mental references based on different uses of 'Hesperus' and 'Phosphorus'. Because there are distinct practices of using these names in the language community, one can exploit these name-using practices merely by using different proper names.[13] A clue of this idea might be found in Recanati's tentative account of how non-conceptual files can be converted into conceptual files. He argues that acquiring the acquaintance of a name provides the thinker with a new ER relation (Recanati 2012, pp. 102–103). Therefore, as long as one can remember the names used in her identity judgment, recovering the separate mental references is an easy task, even if she misremembers or forgets many things about the two objects of thought.[14]

Apparently, this objection has some plausibilty. However, the piece of information about being called by a particular name by itself establishes an independent ER

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[13] For an account of the reference-determination of a proper name that relies on a name-using practice/convention, see Evans (1982, ch. 11; 1993, ch. 8).

[14] A similar idea can be found in Perry's claim that splitting a formerly merged file can be 'a cooperative, social process' although the context in which this claim is made has some distance from the current dialectic (Perry 2012, p. 215). However, accepting this idea does not refute my argument. In fact, Perry also argues that different names are associated with different mental files even when it is known that they refer to the same entity. (Ibid., p. 217).

relation, i.e., the name-using practice associated with the name that is sufficient to determine a referent.[15] Given that a mode of presentation is sufficient to determine a referent, even though a mental file that is based only on such an ER relation is initiated, there is no problem with its function as an independent mode of presentation. With this in mind, we must remind Recanati's argument that different proper names used in an identity judgment indicate that distinct modes of presentation are deployed in the thought expressed by the judgment. Therefore, the type of identity judgment appealed to by the objection amounts to the case in which a file-merging is not allowed in order for the judgment to carry the right kind of cognitive significance. Thus, the possibility of an easy splitting does not arise at all in the first place.

The foregoing response accords with Recanati's (1993) theory of proper names, which he calls 'the Indexical Model'. He argues that a proper name functions like an indexical in the sense that it has a sort of Kaplanian character about the referent's being called by a certain name. For instance, 'Gareth Evans' has the character indicating that there is an entity called 'Gareth Evans'. Combined with the context of utterance, this character determines which name-using practice/convention is invoked by a particular use of the name. For instance, one refers to the philosopher Gareth Evans because her utterance of 'Gareth Evans' is contextually related to the practice connected to him (Recanati 1993, pp. 135–146, p. 157 *et passim*). Given the generally accepted view that mental files are individuated by their cognitive functions, it can be argued that the characters of distinct proper names constitute the cognitive functions indicating that the distinct mental files are associated with these names. Furthermore, according to Recanati's account of proper names, the piece of information about being called by a certain proper name that is invoked by using that name can play a role of an anchor or a peg that furthers information-clustering in the contextually stable manner. Especially, this character-like information enables conversational participants who may have very different pieces of information about the same particular object to talk about that thing: by using the same proper name in a given context of utterance, they can communicate successfully about the same object by participating in the same name-using practice, which serves as the common ER relation. In this way, they share the same linguistic mode of presentation that makes the communication successful (Recanati 1993, pp. 183–187).

Of course, like other mental file theorists, Recanati holds that a mental file remains the same even under the wholesale replacement of the pieces of information stored in it. Therefore, in principle, the information about being called by a certain name can also be erased or replaced without changing the identity of the mental file that previously stored that information. However, what I am arguing here is not incompatible with this well-accepted position. For instance, I do not deny the possibility that the information of being called 'Hesperus' is deleted in one's mental file without affecting the identity of the file. However, to the extent that the objection

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[15] Of course, this is an overstatement because there are homophonic names, which require disambiguation. However, what matters here is not a detailed account of the mechanism of reference-determination of homophonic names, but the fact that using different proper names ordinarily involves different modes of presentation.

makes sense only if it appeals to the easiness of recovery in using/remembering the relevant proper names, the information about being called 'Hesperus' must function as at least a momentary anchor of information-clustering that is sufficient to re-introduce or re-initiate a single mental file in the process of recovering the previous mental file. The same applies to the information about being called 'Phosphorus'.

To summarize, the aforementioned account of how mental files associated with proper names can be easily recovered from an erroneous identity judgment shows that the easiness of recovery is due to the fact that the individuation of the mental file associated with a proper name depends on the practice of name-using, which is an ER relation that determines reference. The role of a mode of presentation played by such a file is based on this type of external network for information-gathering. Thus, a thinker, as a member of the language community, does not merge the mental files of this type when making an identity judgment. This fact explains why the recovery in this case is much easier than the recovery from the errors that happen in other types of identity judgments. Therefore, the appeal to the easiness in the objection leads to a sort of self-refutation. According to the objection, there is no good reason to deny the file-merging in the case of an identity judgment involving proper names because the recovery from error is easy even when all the information is mixed. However, the easiness of recovery is explained in terms of the very fact that distinct mental files have been maintained based on the distinct external ER relations, i.e., different name-using practices. In principle, these ER relations respectively individuate distinct mental files that depend on them in information-gathering. Therefore, the objection is not viable as it stands.

The second reason to deny the occurrence of information-merging in an identity judgment pertains to the need to avoid misleading implications in linguistic communication. Let us take stock of the case of Lois in the Superman story again. Even after she realizes the identity of Clark with Superman, it is a much more effective strategy not to mix the pieces of information separately stored in her SUPERMAN-file and in her CLARK-file if she is to communicate successfully with those who do not know the identity while she tries to hide it. I am not directly arguing that it is necessary for Lois to maintain the two mental files (i.e., the SUPERMAN-file and the CLARK-file) for the purpose of successful communication. According to Recanati's account, Lois does not have to maintain distinct mental files to represent how those who do not believe in the identity think about Superman and Clark differently.[16] Suppose that her identity judgment merges the SUPERMAN-file and the CLARK-file into a single mental file, say, SUPERMAN/CLARK-file. She thinks that her friend Zoe believes that Superman is much stronger than Clark. In this case, according to Recanati, Lois can deploy two *vicarious files* that serve as proxies for Zoe's two mental files that are used to represent Superman and Clark respectively. Recanati holds that one's vicarious files implement the meta-representational

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[16] Of course, as I have pointed out, Recanati argues that the separate maintenance of mental files is required because of the existence of distinct modes of presentation. However, the point here is that the meta-representational function to think how others think when they do not know the identity in question does not by itself provide sufficient reason to deny file-merging.

function by virtue of being indexed to the agent whose thoughts are represented in one's attitude ascription (Recanati calls the ordinary mental files without indexes that one uses to think of objects in the world '*regular files*'. Recanati 2012, p. 183). For instance, the vicarious files deployed in Lois' thought about Zoe's belief can be named as 'SUPERMAN$_{Zoe}$-file' and 'CLARK$_{Zoe}$-file' in the sense that they represent the distinct regular files deployed in Zoe's own belief (Recanati 2012, pp. 181–205).[17] Also, these vicarious files are vertically linked to Lois' SUPERMAN/CLARK-file. Unlike horizontal linking, vertical linking does not allow the free-flow of information between the regular file (i.e., the SUPERMAN/CLARK-file) and the vicarious files (i.e., the SUPERMAN$_{Zoe}$-file and the CLARK$_{Zoe}$-file) (Recanati 2012, p. 184, n. 4 and p. 193). Setting aside my disagreement about several details in Recanati's account of vicarious files, what matters for the purpose of argument is as follows. Making and understanding proper utterances related to the meta-representation of how the others under the ignorance of identity think require the separation of the relevant pieces of information. Think of the utterances as follows.

(1)   Clark published an exclusive report about Superman on the Daily Planet.
(2)   Superman published an exclusive report about Clark on the Daily Planet.

Even if one accepts the strict Millianism that proper names only have referents as their semantic contents, which entails that (1) and (2) have the same propositional content, it is pragmatically infelicitous to utter (2) while uttering (1) is not. (2) has an improper implication that Superman as a superhero wrote an article about Clark as a journalist. To avoid such misleading implication, one needs to maintain the pieces of information about being called 'Clark', being a journalist, being unable to fly,[18] etc. separately from those about being called 'Superman', being a superhero, being able to fly, etc. Using a particular singular term felicitously in a given utterance requires the utterer to associate appropriate predicative information with the term. Mixing or merging the relevant pieces of information into a single group makes this task highly difficult. (2) is an example of the failure of such information-handling whereas (1) belongs to the cases of felicity. Here is another set of utterances that illustrates my point, which occurs ordinarily in the context of introducing a particular object to the hearer who has no prior knowledge of it.

(3)   Superman is a hero who can fly and has an extraordinary physical strength.

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[17] I am grateful to an anonymous reviewer for pointing out that I need to consider Recanati's account of vicarious files as a possible objection.

[18] Again, it is generally accepted that mental files can contain *misinformation*. Sometimes, especially, in the cases of the mental files associated with fictional names, pieces of misinformation play an important role in the varieties of cognitive processes such as linguistic understanding, inference, etc. Information-merging could make it hard to prevent the information about being called by the name 'Clark Kent' from being associated with the information about being able to fly, a hero, etc. in the cognitive process of meta-representation. Especially, mixing the pieces of information that have contradictory contents (e.g., one's being able to fly vs. one's being unable to fly) seems to cause a trouble.

(4)	Clark Kent is a hero who can fly and has an extraordinary physical strength.[19]

 The pragmatic felicity depends on the speaker's proper meta-representation of how others represent the referent of a singular term in use. If there were only a single group of information about being called 'Superman', being called 'Clark Kent', being a hero, being able to fly, having a superpower, etc., then it would be difficult to find out which name must be used to introduce properly Superman/Clark as a superhero whose identity with Clark is not known to the public. One thing worth noting is that my conclusion applies not only to the cases of attitude ascription utterances, but also to the types of utterances that do not at least obviously involve referential opacity.

For vicarious files to implement their meta-representational function, it is not sufficient to have different syntactic properties that numerically differentiate them from one another. What matters is to represent what another person represents and how she does it. In the aforementioned case of Lois's thought about Zoe's belief, it does not make sense that, only by virtue of the fact that Lois' vicarious files are indexed to Zoe's files, they can represent how Zoe's regular files represent Superman and Clark differently. Ordinarily, Lois' cognitive system can have indirect access to the differentiation of Zoe's regular files only by exploiting the relevant pieces of information thought to be stored and used separately in these files.[20] The reason Lois thinks that Zoe believes that Superman is stronger than Clark, not that Clark is stronger than Superman, is that the pieces of information about Superman/Clark's amazing physical strength, being called 'Superman', etc. is maintained separately from the pieces of information about being called 'Clark', being a journalist, etc. A different piece of information can trigger the deployment of a different vicarious file in one's meta-representational thought. Which vicarious file is deployed and whether the deployment is proper rely on which piece of information is shared between the vicarious file and the regular file that the vicarious file represents.[21]

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[19] Also see Recanati (2012, pp. 202–203) for a similar example: 'Clark Kent went into the phone booth and Superman came out' versus 'Superman went into the phone booth and Clark Kent came out'. Recanati accounts for the felt difference between the two utterances in terms of the association of different vicarious files indexed to the 'unenlightened' to the identity of Superman with Clark. The difference is also explained 'on Gricean grounds', which appeals to the maxim of manner. Part of my account in the main text does not differ from Recanati's except my claim that this explanation also implies the requirement of separate information-grouping for the pragmatic felicity in making and understanding utterances.

[20] It seems that Recanati in fact accepts this point. See Recanati (2012, p. 193): 'But indexed files are used to stand for some other subject's *body of information* about some object, …' (My emphasis) Also, there are empirical data that support my claim that it is important for one to note that different pieces of information are available to the belief-agent to which a meta-representational thought/belief-representation is ascribed. See Perner et al. (2015) and Humer et al. (2018). According to their accounts of the empirical data about how a child can pass the test pertaining to a second-order belief (e.g., 'Does Heinz think that he knows that there is an eraser in this box?'), passing the test requires to understand that the information available from the agent's conceptual perspective, which is represented by a vicarious file, is different from the information available from the belief-ascriber's conceptual perspective, which is represented by her regular file.

[21] To provide a detailed account, I need to discuss the extent to which information-sharing is required for the felicity in a given utterance. However, this requires a long digression from the current topic. I hope to deal with the issue on another occasion. (Shortly, I think that the required information-sharing for a suc-

In conclusion, contrary to Recanati's position, a judgment of identity does not result in the free-flow of information between the two mental files through the horizontal linking. The conclusion like (iii) in the aforementioned inference does not reflect the transition of information, but simply result in the thought that Clark is F. Of course, an identity judgment can cause co-filing when it results in the merging of two mental files into a single mental file, although it is not an ordinary case, as I have argued. However, the horizontal linking between them does not result in the shift of information, but only in the possibility of having various thoughts as the conclusions that can be made by the inferences based on a judgment of identity. Therefore, *pace* Recanati, identity judgments do not constitute a type of the internal co-reference that causes co-filing.

When responding to Goodsell's criticism, Recanati arrives at the same conclusion as mine that co-filing does not result from an identity judgment because identity judgments do not involve the transition of information between the mental files linked to one another (Goodsell 2013; Recanati 2013, pp. 225–256). To understand his argumentation, we first need to grasp his notion of *de jure* co-reference of information. Fine (2007) provides a test: if no one who understands given singular terms can sensibly raise a question about whether they are co-referential, then they are *de jure* co-referential.[22] Recanati reformulates this test within the mental files framework: one cannot sensibly raise a question about co-reference when there is a single mental file associated with the singular terms in use. This means that the pieces of information relevant to the subject's thought about the common referent of the singular terms are stored in the same mental file. Based on this conclusion, he extends the notion of *de jure* co-reference of singular terms to information: the internal co-reference of information due to an identity presumption is stronger than the internal co-reference of information by an identity judgment (Recanati 2012, pp. 94–95). That is, only the former is *de jure* co-reference of information.

Recanati claims that the pieces of information that are gathered into a mental file through a currently given ER relation are nucleus while those which derive through the horizontal link to other mental files by identity judgments are periphery. Thus, on his view, only the pieces of information that are nucleus can be *de jure* co-referential because gathering them depends on the identity presumption. However, not all the pieces of information that are co-filed, i.e., stored in a single mental file are

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Footnote 21 (continued)

cessful meta-representation occurs between the speaker and the hearer, rather than between the speaker and the agent to which a propositional attitude is ascribed by the speaker. Also, see Recanati (1993, p. 305, p. 389; 2012, p. 186) for his distinction between exercised mode and ascribed mode of presentation.)

[22] Fine (2007, p. 40). This is not an exact presentation of Fine's test. By the test, he distinguishes representing something *as the same* and representing it *as being the same*, which respectively correspond to the presumed identity and to the judged identity in Recanati's account. Fine does not use the term, '*de jure* co-reference' either. But, for the purpose of argument, following Recanati, we can reformulate what Fine actually says. This type of test for *de jure* co-reference that appeals to the epistemic property (i.e., the insensibility to raise a question about co-reference) is also accepted by Schroeter (2012) and Goodsell (2014). Also, the test corresponds to the third criterion (the knowledge of conditional co-reference) suggested by Pinillos (2011).

de jure co-referential because co-filing happens either due to identity presumptions or due to identity judgments, according to Recanati (2012). Goodsell (2013) claims that this consequence causes a trouble for Recanati's theory by arguing that all the pieces of information that are gathered as the result of co-filing must be *de jure* co-referential as long as they end up being stored in a single mental file. Goodsell notes that mental files serve as modes of presentation in Recanati's account. One crucial role played by a mode of presentation, she argues, is to explain how a subject can take conflicting attitudes toward the same entity without irrationality by appeal to the difference with respect to cognitive significance. For instance, one can believe that Hesperus is a planet while Phosphorus is not a planet but a star despite their identity because she deploys distinct mental files, i.e., the HESPERUS-file and the PHOSPHORUS-file as different modes of presenting the same entity, i.e., Venus in thinking about it. If this kind of account applies to the subject's attitudes toward information, we arrive at the conclusion that we have to deploy different mental files as modes of presentation to take pieces of information to be about different entities, whether they are actually about different things or about a single object. However, the co-filing of the pieces of information makes it impossible to take them to concern different things because they are stored in a single mental file working as a single mode of presentation. Of course, since we ordinarily do not think about information while using it, our attitudes toward it is observed by the manifestations of dispositions.[23] But an important point Goodsell makes is that co-filing always yields *de jure* co-reference of information in so far as mental files are taken to serve as modes of presenting pieces of information. This conclusion is incompatible with the consequence of Recanati's theory that not all co-filings fall under the cases of *de jure* co-reference because the pieces of information bound by the co-filing resulted from an identity judgment are periphery in the sense that they are not *de jure* co-referential (Goodsell 2013, pp. 184–185).

Recanati concedes that Goodsell's criticism can cause a 'potential problem' for his theory of mental files (Recanati 2013, p. 226).[24] As a response to it, he withdraws his claim that there is a free-flow of information between the mental files that are horizontally linked to one another through an identity judgment. This is exactly the same as my conclusion, although he accepts this revision only for the reason that he needs to avoid the problem that Goodsell raises.

> Linking enables information in one file to 'mix' with information in the other file in reasoning; but no transfer of information between files has to occur, strictly speaking. Linking does no more or no less than an identity judgment does. (Ibid.)

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[23] I have already argued that I do not agree with the way in which Goodsell understands the notion of internal co-reference because I hold that internal co-reference must be regarded as a subpersonal binding of pieces of information that does not involve the deployment of any mental files as modes of presentation. But the details do not matter for the purpose of argument here.

[24] I am not sure what he means by 'potential', given that if a problem forces him to revise his original view then it deserves the title of 'a real problem'.

I welcome this revision. However, the problem is that he does not give any good reasons for his claim that the transition of information no longer occurs when there is an identity judgment, except his acknowledgement that it enables him to evade the 'potential' problem. In contrast, I have provided the reasons for the separate maintenance of information between co-referring mental files even when their co-reference is known or believed. Also, it is incorrect to apply the notion of internal co-reference to the case of identity judgments because an identity judgment expresses the thought that is directed toward the world, not toward pieces of information. Taking pieces of information to be about the same thing must not be understood as a subject's conscious attitudes such as thinking of them to be about a single entity. Therefore, if there is such a phenomenon as internal co-reference of information, it must be a subpersonal binding of pieces of information based on an identity presumption.

3 Co-filing versus Internal Co-reference

We have seen that Recanati takes internal co-reference of information to constitute a more fundamental fact than co-filing by maintaining that the latter is explained in terms of the former. The question that should be raised at this point is why the reversed order of explanation is not allowed. Unfortunately, Recanati gives no answer to this question. However, it seems that there are at least two reasons that we can infer from what he says in Recanati (2012).

First, the priority of internal co-reference over co-filing may be due to Recanati's position that mental files are simple entities that are separate from aggregates of information. As I have pointed out, he holds that mental files are mental symbols and they do not literally contain pieces of information. Just as linguistic names have as their semantic contents the entities in the world without containing them, he argues, mental files regarded as mental names have informational content while they remain as simple entities. Therefore, we can infer from his claim the conclusion that the characterization of mental files as stores of information must be understood as a metaphor. Then we also need to regard as a metaphor the statement that pieces of information are stored in a single mental file. That is, co-filing is a metaphor. If a theory of mental files must provide an account of what kind of fact this metaphor stands for, it is the internal co-reference of information that provides this theoretical explanation of the co-filing metaphor. In short, it can be argued that the priority of internal co-reference over co-filing follows from the claim that the latter is a metaphor to be explained in terms of the former. However, it does not necessarily follow from regarding co-filing as a metaphor that it must be internal co-reference that explains co-filing. It is still possible that there is a theoretically describable fact other than internal co-reference that accounts for co-filing and that this fact also explains internal co-reference in that the former causes the latter. For instance, there might be a subpersonal process that binds pieces of information used in the object-tracking mechanism, and this process causes the cognitive system to take these pieces of information to be about the same object, which is tantamount to internal co-reference. Also, the same process has the causal consequence that the

bound information is the informational content of a singular mental term that can be deployed as a thought-constituent. This amounts to co-filing.

In fact, the aforementioned example of an account of the common process underlying internal co-reference of information and co-filing can be accepted as a possible revision of Recanati's incomplete suggestion of how non-conceptual proto-files can be converted into mental files regarded as concepts (Recanati 2012, pp. 93–103).[25] Such a revisionary account needs to be taken into account because Recanati's suggestion combined with his other theoretical claims clashes with his withdrawal from the claim that an identity judgment results in information-merging.

Based on his interpretation of Evans' (1982) Generality Constraint as the criterion for a mental entity to be a concept, Recanati distinguishes non-conceptual proto-files and mental files defined as concepts. Like mental files, proto-files are repositories of information.[26] However, the information-clustering process in the latter occurs at the subpersonal level.[27] A proto-file can only cluster the information that derives from the ER relation based on which the subpersonal/non-conceptual object-tracking capacity is currently exerted. A single episode of object-tracking can happen at various modalities. For instance, one can see a red ball while touching it. In this case, different perceptual modalities correspond to different ER relations, which entail distinct proto-files to be deployed. Recanati maintains that the information-clustering activity occurring in each proto-file is confined to a specific ER relation, and that the transition of information from one proto-file to another is possible by virtue of their being *proto-linked* to each other. In other words, proto-linking enables a bunch of information gathered and used to track an object to expand beyond a specific modality of informational link without depending on any judgment of identity about the relevant pieces of information. (In the aforementioned example, one does not consciously think, say, that this ball that is red is this ball that is soft and wet.) (Recanati 2012, pp. 83–84, p. 98, pp. 100–101) According to Recanati, the transition of information can occur both between proto-files and between mental files through a linking. What is important in his distinction between proto-files and mental files is that proto-linking is a process of pooling the information exercised by the subpersonal object-tracking mechanism. In contrast, horizontal linking between mental files are based on an identity judgment that occurs at the personal level. Recanati appeals to this difference to answer the circularity problem that concerns the information-clustering that occurs in a single mental file based on a given ER relation without depending on an identity judgment. He argues that there is a conversion process, which he calls '*expansion*', by which the bunch of information extended by

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[25] I thank an anonymous reviewer for the comment that my earlier draft lacks a discussion of Recanati's account of the hierarchy of files including proto-files, proto-linking, expansion, etc.

[26] However, storing information in a proto-file should not be regarded as a mere metaphor. Proto-files are memories of information that is used in the subpersonal process of object-tracking. It is highly unnatural to hold that more basic entities and facts about them are also taken to be metaphoric.

[27] Recanati (2012, p. 98): '… the idea that various pieces of information cluster into a single file when they are 'taken to concern the same object' can be … a matter of subpersonal binding of information. Thus in the case of proto-files at least it is the cognitive system, not the subject, that takes the pieces of information to concern the same object and cluster them within a file.'

proto-linking between proto-files is finally converted into a mental file. The important point is that all the processes of clustering information into a single bunch has been based on the purely non-conceptual/subpersonal processes. Recanati argues that this explains without circularity how the internal co-reference of information occurs within a single mental file because what results in the internal co-reference is the subpersonal process (Recanati 2012, p. 101). However, he does not make it sufficiently clear how his appeal to the subpersonal processes and capacities does not fall into the circularity. The original question is how to explain the co-filing that occurs in a mental file without appeal to the fact that the co-filed pieces of information are taken to be about the same object (Recanati 2012, p. 99: 'The answer (*inter alia*) appeals to the fact that information in the file is taken to concern the same object, and that is circular.'). I think the best interpretation of Recanati's solution is as follows. For pieces of information to be taken to be about the same object in this case is an identity judgment, not an internal co-reference of information. The latter is explained in terms of the subpersonal process, which Recanati regards as occurring at the non-conceptual level underlying the expansion that generates the mental file in question. As we have seen in the passage quoted in Sect. 2 (Recanati 2012, p. 101), Recanati uses the phrase like 'for pieces of information to be taken to be about the same object' ambiguously between (1) their being clustered into a single bunch by the proto-linking that occurs at the subeprsonal level and (2) their being judged to be about the same thing at the personal level. (Also, see Recanati 2012, p. 95, p. 98, p. 99 *et passim*.) In short, co-filing is a higher-level occurrence that is explained in terms of the lower-level occurrence of internal co-reference. By at least being disposed to think about *o* that it is F and G, the thinker has a personal-level access to the fact of co-filing, i.e., the fact that the predicative information about being F and that about being G are stored in a single mental file. Thus, the claim that mental files are concepts can be construed as implying that the information-entries of a mental file can be consciously accessible, at least in principle.[28] For instance, if Lois can think that Clark is a coward and a journalist, this indicates that, within her CLARK-file, she can access the two pieces of information that are respectively about being a coward and about being a journalist. That is, co-filing has a sort of conscious accessibility. In contrast, the co-filing is the result of the subpersonal process of information-clustering, which does not allow conscious availability.[29]

However, the aforementioned account faces questions that concern the interface between the vertically distinguished levels of facts. The most crucial one is how expansion is possible: pieces of information are clustered into a single bunch by the subpersonal processes of proto-linking between proto-files. However, as Recanati points outs, this bunch or the extended file is still a non-conceptual proto-file. (Recanati 2012, p. 102) Then, how does this fact of information-binding at the

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[28] See Recanati (2012, p. 39): 'The file's deployment in thought gives access to the file's content …' Here, Recanati distinguishes a mental file itself and its informational and referential content.

[29] Conscious availability is considered by many philosophers to be the criterion for the distinction between personal and subpersonal mental states, although the distinction as it stands is based on some misunderstanding of Daniel Dennett's original account of what is personal or subpersonal. (See Drayson 2012, pp. 12–14) But the details are not my concern here.

subpersonal level make it the case that the relevant pieces of information are stored within a single mental file that occurs as a constituent of thought at the personal level? Recanati confesses that he has only a guess. As I have shortly mentioned, he provides an incomplete suggestion that an expansion is completed if the acquaintance of the name of the object referred to by the mental file is acquired. This suggestion is based on his construal of the Generality Constraint: a representational vehicle can be a concept only if it allows the inflow of the information that derives from the ER relations other than the currently given ER relation that has generated the cluster of information by proto-linking (Ibid., pp. 102–103). However, this suggestion seems to imply that internal co-reference cannot be a sufficient condition for an expansion to happen. As long as co-filing is understood as a fact that can obtain within a mental file, the explanation of how co-filing is possible requires more than internal co-reference if the latter does not reside at the personal level. We might be able to construe the additional condition of acquiring the acquaintance of a name as the cause of the acquisition of a mental singular term attached to the information clustered within a proto-file at the subpersonal level. Then the question that naturally follows is why adding the acquaintance of a name as a new ER relation makes it the case that a proto-file becomes a concept.

Both proto-linking and horizontal linking enable the transmission of the information stored in one file to another although the former is a subpersonal process while the latter happens at the personal level according to Recanati (2012). Before the revision of his position that we have seen in Recanati (2013), one important contrast made between these two types of linking is that proto-linking enables the conversion of one proto-file to another by incorporating the information contained in the former into the latter, while horizontal linking results in the free-flow of information between mental files without a file-conversion/merging.[30] This difference is crucial because it makes it possible for Recanati to explain how a mental file as a concept can be distinguished from proto-files with respect to his construal of the Generality Constraint: a mental file is a concept because it can gather into itself the information derived through the ER relations other than the ER relation(s) based on[31] which it implements the function to gather information (Recanati 2012, pp. 64–67, p. 102).[32] In his Indexical Model, whether they are basic or encyclopedic, mental files are all individuated by a specific ER relation or a specific group of ER relations. However, as long as they are concepts, Recanati argues that they can also gather the

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[30] Recanait uses the term 'incremental conversion' to refer to this kind of file-conversion process, by which a new file is generated and the information stored in an old file is transferred to the new one. He argues that expansion is a variety of incremental conversion. (Recanati 2012, p. 101. Also, see p. 87 for his account of the notion of incremental conversion.)

[31] When he says that a mental file or a proto-file is based on an ER relation or ER relations, he means that the file is individuated by the ER relation(s), which enable(s) its function of information-clustering.

[32] Ibid, p. 64: ''proto-files', as I am going to call them, can *only* host information gained in virtue of the ER relation to the referent' (The author's emphasis), p. 65: '… the Generality Constraint says that a [conceptual] file should be hospitable to any predicative information in the subject's possession. Clearly, that is a constraint which proto-files do not satisfy.' (The word inserted within the square brackets are mine), p. 102: 'But conceptual files … They satisfy the Generality Constraint and can accommodate *any* information about the referent, however it is gained.' (The author's emphasis.)

information from other ER relations. The acquaintance of a name that refers to the referent of a mental file is the acquisition of an access to such non-individuating ER relations through linguistic communication. However, the acquaintance of the name is also an ER relation that ends up being incorporated into the set of ER relations that individuate the mental file associated with the name. Suppose that one acquires such an ER relation by knowing that the referent of her mental file is called 'NN'. If she hears from another, 'NN is F, and it is also G' or 'NN is F, and NN is also G'. Then the pieces of information about being F and G are stored in the same file due to the sameness of the ER relation, i.e., the acquaintance of 'NN'. This is nothing but the co-filing based on the presumption of identity because the criterion of *de jure* co-reference is satisfied. Considering Recanati's solution to the circularity problem involved in the case of co-filing without an identity judgment, the co-filing resulted from hearing such an utterance in which the name associated with a mental file is used has nothing to do with the satisfaction of the Generality Constraint. The fact that information-clustering depends on the presumption of identity indicates that the ER relation that enables it is already part of the ER relations that individuate the mental file in question. Therefore, the possibility of incorporating information by an identity judgment in which the name is used is necessary for the mental file associated with it to qualify as a concept. For instance, suppose that the possessor of a mental file associated with 'NN' has not encountered the referent of 'NN' so far. When seeing a man, she hears another's utterance 'That man is NN'. Then it must be possible to cluster information about the man through the perceptual ER relation to him by accepting the identity judgment. If she hears 'NN is in fact Donald Trump in disguise', then her NN-file, say, must be able to incorporate the information stored in her DONALD-TRUMP-file through a horizontal linking. In short, what makes a mental file a concept is the possibility of clustering the information from an ER relation alien to the already established ER relations that individuate the file. At least according to Recanati's (2012) account, the free-flow of information enabled by an identity judgment is crucial in this respect because it makes it possible for him to explain how an expansion can occur based on his interpretation of the Generality Constraint and his suggestion about the acquiring the acquaintance of a name. However, as we have seen, Recanati (2013) withdraws his claim that an identity judgment allows the free-flow or the merging of information. Furthermore, I have provided several reasons to deny information-merging. This means that his account is in a dire need of revision.

Given that a revision is required, one possible revision is to accept what I have considered previously. Proto-linking between proto-files is the subpersonal-level process that results in the extension of the repository of information through the conversion of one proto-file to another. Combined with the satisfaction of some additional condition, this provides the basis on which an expansion, i.e., a conversion of a proto-file into a mental file as a concept occurs. One result of the expansion is the co-filing of at least some pieces of the information clustered by the proto-linking. Co-filing explains *de jure* co-referential thought. The notion of internal co-reference of information in Recanati's theory is divided into the sub-notions that represent two aspects of the whole process of expansion. One is the clustering of information via proto-linking. In other words, the subpersonal mechanism of object-tracking

incorporates and uses a set of pieces of information without any conscious judgment of identity. The other aspect concerns the personal-level judgment of identity by which the thinker takes some pieces of information to be about the same object. However, it is important to note that such a judgment is an inferential consequence of internal co-reference, not a cause of internal co-reference, contrary to Recanati's solution to the circularity problem (Recanati 2012, p. 101).

I do not intend to defend this alternative position as the best revision. What matters for the current discussion is that Recanati's account of the explanatory relation between internal co-reference and co-filing cannot be accepted as it stands because it faces the problem that I have pointed out with respect to the other claims that he makes in his theory. In short, without a crucial revision, Recanati's account does not justify his claim that internal co-reference explains co-filing.

One might argue that Recanati can accept a strict Fodorian view. Fodor (2008) distinguish a concept defined as a mental symbol from a mental file that he takes to be a memory storing the information related to the concept. More importantly, when criticizing a group of the competing theories he calls 'pragmatism', he argues that a theory of concept has nothing to do with providing an account of thought processes such as inferences, object-tracking capacities, etc. Our theoretical job, he argues, is nothing but to explain how a thought is compositional in terms of its syntactic structure composed of mental symbols, i.e., concepts (Fodor 2008, p. 10ff, pp. 40–48). If Recanati accepts this position, then the metaphor of co-filing in his revised theory does not stand for any theoretically significant fact about a concept, which Recanati calls 'a mental file' contrary to Fodor's terminology, because there is no matter of theoretical fact such as information-clustering, object-tracking, and any type of information-exploitation in a proper theory of concepts. However, Recanati cannot accept this alternative because, in his Indexical Model about mental files, they are defined in terms of their functional role of gathering information through a given ER relation or relations supposed to be about the same object of thought (Recanati 2012, p. 37, p. 39, n. 10, pp. 41–42, p. 60, p. 64 *et passim*). In fact, a mental file cannot be a mere mental symbol one of whose content is a bunch of information stored in memory unless Recanati abandons many central claims of his whole project of developing a theory of mental files. A mere fact of having certain informational content is not sufficient to explain the information-handling function of a mental file that is essential to its definition and individuation. Therefore, as I have shortly argued in Sect. 1, the metaphor of co-filing must indicate some theoretically significant fact within the framework of mental files.

Another possible explanation of the priority of internal co-reference over co-filing may be inferred from Recanati's criticism of the Campbellian account that purports to explain co-filing in terms of a subject's acquisition of a disposition to think in a certain way. On this account, for instance, the co-filing of the piece of information about the property of being F and that about the property of being G into a single mental file is taken to be the thinker's acquisition of the disposition to think about the referent of the mental file that it is F and G.[33] However, Recanati argues

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[33] Lawlor's (2001) account of mental files seems to be congenial to this Campbellian account because Lawlor argues that talk of mental files are shorthand of talk about information-handling dispositions plus the higher-order disposition to correct these information-handling dispositions when facing the recalci-

that the disposition is acquired only as a result of co-filing. That is, the explanation of why the thinker has the disposition to think that the same object is F and G is that she deploys in her thought a single mental file that contains the piece of information about the property of being F and that about the property of being G. Thus, Recanati holds that the Campbellian disposition is merely a 'symptom' of co-filing based on which we can indirectly infer that co-filing occurs (Recanati 2012, p. 96).

I agree with Recanati's criticism of the Campbellian account. As long as the Campbellian disposition is a disposition to *think* co-referentially, it must be explained in terms of a fact of co-filing because thinking in a certain way is a matter of the facts about how mental files are used as constituents of thought. However, Recanati's criticism fails to provide a decisive argument that co-filing is explained in terms of internal co-reference. To drive my point home, we need a more detailed explanation of how his response to the circularity problem motivates him to deny the Campbellian account. As we have seen, Recanati explains co-filing in terms of proto-linking, which is the subpersonal-level process of information-clustering. This is suggested as the solution to the circularity problem that pertains to the question of how we can explain co-filing without appeal to the personal-level process such as a thought that takes pieces of information to be about the same object. In addition, he considers a different type of circularity problem that is concerned with an identity judgment. How does such a judgment occur? If one answers by saying that it happens because the two mental files occurring as thought-constituents are horizontally linked, then we have a circular explanation as long as it is an identity judgment that causes horizontal linking (Recanati 2012, pp. 98–99. Look at the problem that he calls 'Objection 2'). This second-type problem of circularity is still a problem about co-filing on the condition that Recanati's (2012) claim that an identity judgment leads to information-merging holds. At least in his parlance, that pieces of information are merged into a single group is that pieces of information are taken to be about the same object. As we have seen in the passage quoted in Sect. 2, Recanati argues that pieces of information are taken to be about the same thing, not only when they are bound by the subpersonal process based on the presumption of identity, but also when an identity judgment is made (Recanati 2012, p. 101). His solution to the second problem of circularity is simple: because of an identity judgment, pieces of information are taken to be about the same thing.[34] Recanati clearly states that it is the internal co-reference of information resulted from an identity judgment that causes the relevant pieces of information to end up being within a single mental file. That is, the same bunch of merged information is stored in each of the two mental

Footnote 33 (continued)

trant evidence that indicates an error (Lawlor 2001, p. 22, n. 16, p. 107). According to her account, a group of facts about these dispositions and about how they have been maintained explains one's co-referential thought. Also, Schroeter holds that talk of mental files is a way of talking about the dispositions related to *de jure* co-reference (Schroeter 2013, p. 286. Also, see Schroeter 2007, pp. 600–601; 2008, pp. 115–116).

[34] It must be noted that Recanati's usage of the phrase like 'for pieces of information to be taken to be about the same object' is ambiguous, as I have already pointed out.

files involved in the judgment.[35] Now, we can see an additional reason why Recanati denies the Campbellian account. According to Recanati's solution to the second-type circularity problem, an identity judgment explains internal co-reference. The latter explains co-filing, which in turn explains the Campbellian disposition to think *de jure* co-referentially. Thus, it is internal co-reference that accounts for co-filing in the sense that the former causes the latter. In short, Recanati's account of how to respond the second problem of circularity entails that co-filing is explained by internal co-reference, not the converse.

However, independently of the reasons not to accept information-merging in an identity judgment, there is a serious problem facing Recanati's solution. The real question that engenders the circularity of the second-type is what explains an identity judgment. He only says that an identity judgment is a distal cause of co-filing because it causes internal co-reference that is a proximal cause of co-filing. But this is far from being sufficient to answer the question because there is no explanation of how or why the identity judgment occurs in the first place. Moreover, Recanati's solution also lacks the account of why we must think that an identity judgment causes or explains internal co-reference. Is it the case that internal co-reference is caused by horizontal linking, which is in turn caused by an identity judgment? Even if this is so, we need to explain the causal relation of an identity judgment to horizontal linking. If they are nothing but the notational variants standing for the same fact, then we have no explanation of why this fact happens. The problem does not vanish even if we accept Recanati's (2013) revision that an identity judgment does not yield information-merging. His theory is still in need of an explanation of what results in an identity judgment without appeal to the interdependence between identity judgment and horizontal linking. Also, he cannot draw on the subpersonal process of information-binding because an identity judgment is a thought that occurs at the personal level. Providing a satisfactory account is not the concern of this paper. What matters here is this: Recanati's denial of the Campbellian account is based on his solution to the second-type circularity problem, and it is this solution that provides him with one reason to hold that internal co-reference explains co-filing. However, this solution fails.

In conclusion, we cannot find in Recanati's account any good reason to accept the explanatory priority of internal co-reference over co-filing. At this juncture, by taking into account all that I have argued so far, one might pursue a simple explanation that internal co-reference of information is nothing but the subpersonal process of information-binding, which explains co-filing, i.e., storing pieces of information in a single mental file. That is, the lower-level fact of subpersonal information-binding explains the higher-level fact of co-filing, which is a fact at the personal level. Therefore, the problem of circular explanation is solved. Also, it can be argued that the second-type circularity problem has nothing to do with the question of how to

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[35] Recanati (2012, p. 101): '… a judgment of identity occurs which enables information originally in one file to end up in another and join information originally there. … two pieces of information are taken to concern the same object and in the same file.'

explain co-filing because an identity judgment does not result in information-merging, which is necessary for the occurrence of co-filing.

However, this explanatory strategy faces a problem. To the extent that we accept Recanati's account of the hierarchy of mental files, the subpersonal binding of information is a process of file-extension by which a new proto-file is generated by virtue of transferring through proto-linking the information stored in an old proto-file. Expansion, which is the process that results in the generation or the initiation of a mental file defined as a concept, requires the satisfaction of some condition additional to the subpersonal information-binding. Also, I have argued that Recanati's account of expansion is in need of revision. Therefore, unless we have an alternative theory of mental files at least as a satisfactory revision of Recanati's theory, we cannot simply accept the suggested account because it is too simple. Because co-filing is a fact about a mental file as a concept that resides at the personal level, we need an additional account of how this type of higher-level fact can be explained by the subpersonal-level fact of information-binding.

Against this objection, one might accept Clarke's (2018) view on mental files that they are subpersonal mental entities.[36] The suggested conception of mental files as subpersonal entities entails the denial of Recanati's hierarchy of files: there is no distinction between non-conceptual proto-files and conceptual mental files because mental files are nothing but proto-files. The question is what good reason we have for this alternative position. Clarke argues that mental files are mental entities whose explanatory role is concerned with what he calls '*coordination*'. According to Clarke, coordination is the relation between thoughts that are combined by the presumption of identity, which indicates the sameness of reference. That is, this type of inferential relation does not depend on any judgment of identity (Clarke 2018, p. 352). Also, he holds that coordination is 'a way of organizing and processing information'. (Ibid.) Therefore, his notion of coordination does not seems to differ essentially from the notion of *de jure* co-referential thought introduced in this paper.[37] Furthermore, he accepts other mental file theorists' common strategy to explain at least partially how we think something as the same in terms of the fact that a single mental file is deployed in one's inferences, while he argues that this fact alone does not provide reason to make such inferences rational (Clarke 2018, pp. 355–356 *et*

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[36] I am grateful to anonymous reviewer for the comment that it would be helpful to examine Clarke's (2018) account.

[37] Exactly, although he acknowledges a close similarity of his notion of coordination to that of *de jure* co-reference introduced in Lawlor (2001) and Schroeter (2012) (Clarke (2018, p. 361, n. 18): 'The difference between this and coordination proper is minimal'), he argues that coordination is weaker than *de jure* co-reference because the former does not involve any epistemic and semantic conditions contrary to the latter. That is, when combined with such conditions, coordination contributes to the occurrence of *de jure* co-referential thought. But coordination itself does not constitute such a type of thought. Coordination resides at the lower-level information-binding underlying it (Clarke 2018, pp. 360–361). I have some objections to Clarke's interpretation of Lawlor's and Schroeter's notion of *de jure* co-reference in thought especially because of his failure to capture the difference between *de jure* co-reference (in apparent/transparent logical form) and *de facto* co-reference (in actual/non-transparent logical form) with respect to the logical form of inference. However, dealing with this issue lies beyond the scope of this paper. Also, for the current discussion, there is no problem in taking coordination and de jure co-reference to be identical.

passim). However, he argues that the existing accounts face some problem mainly because they are based on the incorrect notion of mental files. Especially, he raises an objection to the generally accepted view that mental files are concepts by casting doubt on the explanatory role of concepts in accounting for coordination (Clarke 2018, p. 354). Also, Clarke criticizes the existing accounts of coordination suggested by Lawlor (2001), Recanati (2012) and Schroeter (2012). The central reason for the criticism is that their explanations are all psychologically unrealistic (Clarke 2018, pp. 361–363).[38] From the subpersonal conception of mental files, there arises an important question: how does the subpersonal fact of mental files explain coordination defined in terms of the inferential relationship between thoughts at the personal level? Clarke seems to take this question as one that concerns the rationality of such a type of thoughts. The disposition to think co-referentially in a certain way, which we have seen as the Campbellian disposition and Clarke calls 'the paradigmatic inferential disposition', is rational. The task at hand is to explain how a mental file that belongs to the subpersonal psychology can be related to the reason in order for such an inference to be rational. His account can be summarized as follows: the subpersonal-level fact of information-clustering itself does not provide any reason to rationalize the coordinated inferences/thoughts. Based on Casullo's (2007) interpretation of Entitlement Epistemology, Clarke argues that the rationality is provided by default in the normal process of exerting the paradigmatic inferential disposition. Some of the entries of a mental file, which he calls 'base entries', have the property of being bound together with other file-entries, which he calls 'target entries', in the way that they are supposed to refer to the same object (Clarke 2018, p. 358). Clarke calls this kind of property 'a coordination function'.[39] This function is normative in the sense that it is possible that some of the entries bound by it are not about the same thing. In other words, the coordination function is governed by the normative requirement of co-reference. The coordination function provides the indication of co-reference, which is manifested by the exertion of the paradigmatic inferential disposition. What is important in his account is that the fact that file entries, i.e., pieces of information are connected to one another in the way of indicating co-reference does not by itself provide the reason to make the thinker's co-referential thought rational. For the subpersonal information-binding that occurs

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[38] I think that Clarke's criticism does not work when these three philosophers' accounts are properly interpreted. Especially, as Clarke acknowledges, his account is 'very close to' Lawlor's (2001). The difference that he points out is concerned with whether the thinker's being warranted in thinking co-referentially or in her exertion of the paradigmatic inferential disposition in thought involves the internalist requirement of the possibility of conscious access to the reason that makes it rational (Lawlor 2001, pp. 101–114; Clarke 2018, p. 363). However, I think that Clarke misconstrues Lawlor's internalist requirement as being too strong to be psychologically realistic. In fact, her conditions for warrant does not essentially differ from Clarke's. I leave a detailed discussion on this issue for another occasion.

[39] Ibid., p. 357: 'A coordination function in general is a property of a file entry that relates it to others in terms of the identity of the thing about which they carry information.' Because the coordination function is normative according to Clarke, all the pieces of information bound by this function are *supposed to* be about the same thing. That is, it is possible that some of them are derived from a different object due to *malfunction*. The normativity of the function of a mental file is also claimed by Recanati (2012, p. 42, p. 63).

within a mental file defined as a subpersonal entity to provide such reason, there must be the personal-level fact that the thinker has the sensitivity to the reliability of such lower-level happenings.[40] Clarke argues that this sensitivity is essentially about the satisfaction of the requirement that the related information be connected to the thinker's motivational states such as aims, purposes, and the intention to monitor the information at least when something goes wrong. Furthermore, the sensitivity does not involve a conscious belief that the thinker herself is justified in having a co-referential thought. When the sensitivity condition is combined with the other two requirements, we have the sufficient condition for the entitlement that renders one's paradigmatic inferential disposition rational in the sense that the thinker has proper reason: (1) the presence of a default that the normative requirement of co-reference is satisfied by the coordination function. (2) The possibility and the absence of any defeaters showing that the default position is false. As long as the thinker does not face a defeater, she is regarded as exerting the sensitivity to these requirements without any need to be consciously aware of them (Clarke 2018, pp. 353–360).

Therefore, according to Clarke, co-filing itself is not sufficient to explain how the Campbellian disposition is rational. Additional conditions must be satisfied to obtain the entitlement required to provide reason. In his account, co-filing itself resides at the subpersonal level because mental files are subpersonal entities. For the purpose of explaining coordination, Clarke explicitly holds that mental files must be treated as explanatorily primitive (Clarke 2018, p. 355[41]). By taking them to be primitive in his theory, Clarkes intends to explain the coordinated thoughts in terms of the function of a mental file without basing his explanation on the features of such thoughts. Clarke argues that one important motivation to accept the subpersonal conception of mental files is to avoid the circular explanation of coordination: if a mental file is a bunch of thoughts, then the fact that a bunch of thoughts are inferentially related to one another, i.e., the fact that they are coordinated is explained by the fact that a single mental file contains these thought, i.e., the fact of co-filing. Why does co-filing occur? If you say, 'Because these thoughts are coordinated', then this leads to a circular explanation. The suggested distinction between coordinated thoughts at the personal level and mental files at the subpersonal level is Clarke's solution to the problem of circularity (Clarke 2018, p. 355). Mental files do not contain thoughts or propositional attitudes. Thoughts are coordinated because of the deployment of a single mental file. For instance, you think that something is F and G because a single mental file is deployed and the predicative information about being F and that about being G are bound within the same file.

Does Clarke's account entail that co-filing is also explanatorily primitive? The answer must be 'Yes', although Clarke does not maintain explicitly that such is the case. Co-filing can be regarded as the result of the fulfilment of coordination

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[40] Clarke (2018, p. 356, p. 357, pp. 359–360) *et passim*. It must be noted that, by using a phrase like 'a thinker', Clarke ascribes the required sensitivity to a thinker residing at the personal level.

[41] '… mental files. They can be thought of as subpersonal entities whose nature is treated as primitive for the purpose of an explanation of coordination, hence not as constructions out of coordinated beliefs. Doing this means adopting the subpersonal conception.'

function in Clarke's account. As we have seen, the coordination function is nothing but the property of a file-entry. Thus, to provide a satisfactory explanation of how co-filing occurs, it is required to account for what such a property is and how it is instantiated within a particular mental file. However, we cannot argue without circularity that co-filing is explained by the coordination function. (An example of such a circular or tautological explanation: File-entries are bound within a single file, i.e., co-filing occurs if the coordination function is fulfilled. This function is the property of a file-entry that results in co-filing. Therefore, file-entries are bound because of their file-entry-binding property/function.) But Clarke's concern is not with providing such an account. Mental files are merely stipulated as functional entities in his theory, and it is their function that explains coordination. (Ibid.) The entry-binding resulted from the coordination function can also be regarded as being stipulated. That is, how file-entries, i.e., pieces of information are stored in a single mental file is not required to be explained at least in a theory of mental files.

Because I claim that co-filing must be regarded as a primitive fact within a theory of mental files to explain *de jure* co-referential thought, I have great sympathy with Clarke's account. Also, I accept the entailment of the subpersonal conception of mental files: information-binding relies on a subpersonal-level process. However, I do not accept Clarke's claim that mental files are subpersonal mental entities. I prefer the notion of mental files as concepts, i.e., thought-constituents, which cannot be taken to be subpersonal entities. We must distinguish the claim that co-filing at least partially depends on the subpersonal-information-binding process and the claim that co-filing is a fact residing at the subpersonal level. Clarke accepts both claims because the subpersonal conception of mental files alone entails that it is a subpersonal-level process that makes pieces of information be contained in a single mental file. However, while I hold that co-filing depends on the subpersonal process of information-binding, I still maintain that co-filing is a personal-level fact because it occurs within a mental file, which I take to be a concept. Defining mental files as subpersonal entities has a risk of losing many explanatory advantages that a theory of mental files as a theory of concepts can have in regard to, for instance, co-referential thought, singular thought, meta-representation, belief-continuation, fictional singular representation, etc.[42] However, I do not defend here my claim that mental files have to be regarded as concepts. Instead, I shall argue that there is no simple account of how subpersonal files can be converted into concepts, in addition to what I have argued in Sect. 2 about the difficulty in Recanati's conjecture of how expansion occurs.

Clarke argues that his account of mental files construed as subpersonal entities is deflationary and that he can make 'a conciliatory point' that his account is compatible with the representational theory of mind according to which a thought is a

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[42] Especially, the question of how Frege's Puzzle can be solved (or dissolved) is crucial in assessing Clarke's subpersonal conception of mental files and his account of coordination function. Although I have disagreement with his claim that his account provides the solution without any commitment to the vehicle and the content of a thought about identity/co-reference (Clarke 2018, p. 364), justifying my disagreement requires a long digression, which I leave for another occasion.

structure of mental representations. He provides short conjectures about the two explanatory possibilities as follows. (a) A mental file, which is a subpersonal entity, is combined with a mental representation, which serves as a thought-constituent. The latter functions as a tag or a label attached to the former. (b) A mental file is realized by mental representations. For instance, there is a belief-box containing a structure of representations, i.e., Mentalese sentences composed of mental symbols. This box realizes a mental file that is the subject type of these sentences. The predicates occurring in them are file-entries [Clarke 2018, pp. 364–365. Also, see Jeshion 2010, p. 131, p. 135 for a possible account of (a)].

However, there are reasons to be skeptical about these conjectures because the gap between subpersonal files and conceptual representations cannot be easily filled simply by the addition of a mental tag or by the introduction of the aforementioned type of realization. Regarding (b), there arises a problem of circular explanation. To the extent that a mental file is taken to be subpersonal, it must be what explains a higher-level entity, event, or state. Representations in a belief-box are mental sentences composed of mental symbols, i.e., concepts because these sentences are nothing but thoughts, i.e., structures of the mental syntax. If a mental file is the common grammatical subject of such sentences in the box, then it must also be a concept. It seems to be implausible that the subject is a mental file and it still must be a subpersonal entity while it is realized by the belief-box composed of the higher-level entities such as concepts. It is difficult to understand how a subpersonal mental file at the lower level is realized by the composition of the higher-level entities. Rather, a natural explanation is the converse. Also, if the predicative representations, i.e., file-entries are bound in the same belief-box because they share the same subject, i.e., a mental file, then the whole picture seems circular: a mental file is realized by the fact that its entries are bound in the same belief-box. They are stored in that box because they are realizing the same mental file.[43]

To make intelligible the conjecture (a), it must be clarified exactly what kind of subpersonal entity a mental file is. Of course, in Clarke's account of coordination function, mental files are explanatorily primitive. However, without such a clarification, we cannot understand how the mental file as a subpersonal entity with a mental tag can be a representational component of a thought. As I have argued when criticizing the Fodorian simple account, if a concept is nothing but a simple mental symbol then the whole project of developing a theory of mental files is endangered because there is no room for the file-functions of information-handling: only a mental tag, not a subpersonal-level file, plays the role of a concept. While there is no clue about what kind of entity a subpersonal file can be in Clarke's account, some mental file theorists, who attempt to explain singular thoughts in terms of mental files, appeal to object-files posited in the psychological theories of multiple-visual-object-tracking mechanism (e.g., Kahneman et al. 1992; Pylyshyn 2001) because they accept the empirical hypothesis that mental files as concepts are ontogenetically and

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[43] Clarke might argue that my criticism holds only when the Language of Thought hypothesis is accepted. This response is correct. However, without providing an alternative hypothesis that explains the box-metaphor, Clarke cannot argue simply that the criticism does not work.

functionally rooted in the function of singular reference implemented by the object-tracking mechanism.[44] According to the visual index theory, the tracking of multiple visual objects involves FINSTs, which abbreviate 'fingers of instantiation'. A FINST functions like a pre-attentive/non-conceptual demonstrative that refers directly to a visual object without depending on any information about its qualitative properties or categories. Rather, it provides the referential basis for an attentive/conceptual thought about the object, i.e., a conscious representation of it as something that has some properties. Especially, the introduction of a FINST opens or initiates an object-file that is roughly a temporary memory that stores some information about the object that is being tracked. While the object-tracking is fundamentally based on spatiotemporal continuity, this information is not contained in the object-file. Setting aside the details, what matters for the mental file theorists is that object-files can be regarded as providing the basis of non-descriptive singular mental reference, which is one of the main functions of a mental file deployed in a singular thought. In short, the theory of object-files can be used to explain how a mental file has the function of non-descriptive singular reference: by adding a mental singular term to an object-file that already refers to the referent, a mental file is initiated and functions as the representational vehicle of a singular thought about it. Especially, the addition of a mental term can occur even when there is no actual process of object-tracking. By arguing that the function of a mental file is normative, the mental file theorists maintain that one's cognitive system can introduce a mental singular term as if the object-tracking mechanism were actually working.[45]

However, we cannot accept the simple account suggested by (a) as it stands if subpersonal mental files are object-files. There are crucial gaps between concepts and object-files that cannot be filled without a detailed account that explains much more than the simple attachment of a mental term to an object-file. First, contrary to concepts, object-files do not allow the room for misperception (Pylyshyn 2001, p. 128, n. 1, p. 147; Also, see Recanati and Murez 2016, p. 269). What one thinks about a perceptual object can be incorrect because the thought has a representational content about its categories or properties. Object-files serve as units of visual-tracking, and they do not contain such representational content that can be governed by any correctness condition.[46]

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[44] Jeshion 2010, p. 134): 'Mental files' essential singularity is parasitic on both object files' essential singularity and our use of mental names, demonstratives, and indexicals.'; Recanati (2013, pp. 210–211): 'I am making an empirical hypothesis: that the object tracking system which exists in perception is used throughout cognition—even in high-level cognition, e.g. in thought about abstract objects. The units of the system—the files—acquire new functions when they are recruited in this way to do extra jobs in thought. … *the files are what they are in virtue of belonging to the object tracking system …*' (The author's emphasis). Also, see Dickie (2010, pp. 216–222), Murez et al. (2015, pp. 5–6) and Geirsson (2018, pp. 617–621).

[45] Although Jeshion (2010) and Recanati (2010, 2012, 2013) are committing themselves to such a position, they do not provide any concrete account of how and under what condition a mental singular term is introduced in the as-if mode. Therefore, this can be a problem for the mental file theorists. I leave the details for another opportunity.

[46] One might argue that the information stored in an object-file can be regarded as non-conceptual representations, which can be conceptualized when one starts to think about the referent of the file. However, this may not be the case. The information may have nothing to do with the properties of the referent of

Second, to play the role of a mode of presentation, a concept is deployed to *represent* the object of thought *as* a such-and-such thing. Modes of presentation ('MOPs', henceforth) satisfy the Frege's Constraint (Recanati 1993, p. 75; 2016, pp. 11–13; Recanati and Murez 2016, pp. 269–270). One important implication of this constraint is that the thinker knows the sameness or difference of MOPs based on the conscious access to what she *represents* the object of thought *as* being. This element of *representing-as* is absent in object-files. Object-files explain why a spatiotemporal continuity provides the appearance of the movement of the same object. For instance, suppose that a red ball moves behind an occluder and a blue cup appears on the right timing. Then it appears to the perceiver that the same object has been moving all along.[47] However, a normal adult perceiver can judge that, despite the felt appearance, there are two physical objects because he can base his thought on the difference of categories and qualitative properties. This shows that object-files, which are used in object-tracking, lack the representation of a perceptual object as having some properties, while concepts, i.e., MOPs have the representing-as features.

Third, in the psychological literature, object-files are often regarded as a notational variant of Visual Working Memory (hereafter, 'VWM') (Hollingworth and Rasmussen 2010, p. 545; Murez et al. 2015, pp. 9–10). Although there could be the pieces of information stored in and used by an object-file in the visual-tracking of an object, they are not stored in the long-term memory. Also, an object-file does not seem to contain any piece of information originating from the long-term memory. However, a concept or a conceptual representation deployed in thought often involves the retrieval of the information stored in the long-term memory. Machery (2009) argues that concepts are regarded by psychologists as the bodies of information stored in the long-term memory that are used by default in the processes underlying higher cognitive activities such as categorizations, inductive inferences, linguistic understandings (Machery 2009, p. 9, p. 12, pp. 15–16 et passim; 2010, pp. 195–196). Prinz (2002) argues that concepts are structured detection mechanisms, and that they work as detectors by retrieving part of the information stored in the long-term memory network and using it in working memory (Prinz 2002, p. 124, p. 149). Also, by accepting Evans' (1982) idea of Dynamic Fregean Thought, Recanati (2016) tries to build an account of how different stages of mental files contribute to the object-tracking capacity exercised cross-contextually. Even if concepts, i.e., mental files are mere mental symbols, as Recanati (2012, 2016) argues, the cross-contextual object-tracking must involve the evolution of a body of information that has been used as the detection resource (He calls this body 'a pile' in Recanati

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Footnote 46 (continued)

the object-file. Furthermore, at least according to Geirsson's interpretation of Pylyshyn's visual index theory, a FINST and an object-file are not representations at all. (Geirsson (2018, pp. 619–620) Especially, see p. 620: '…there is no evidence that we think of an object through a FINST object file, since the object file may contain no information beyond what is built into the causal processes of perception. In particular, it contains no nonconceptual content in the philosophically relevant sense.')

[47] This is an example of the Tunnel Effect. See Recanati and Murez (2016, pp. 265–266).

2012, p. 82. The notion of a pile is re-introduced as that of a dynamic file in Recanati 2016, pp. xii–xiii, p. 82). Mental files deployed in different contexts involve different ways to use the same information that persists across contexts, and each way is appropriate with respect to a given context. For instance, as Evans suggests, the information expressed by 'Today is fine' on day d must be expressed 'Yesterday was fine' on $d+1$ by representing d as yesterday in relation to the context of thought/utterance (Evans 1981, 1982, pp. 192–196). This idea implies that there must be the same information stored in and retrieved from the long-term memory, while it is used differently in different contexts. Therefore, although these philosophers propose different definitions of concepts, they all agree that concepts are representations that involve the use of the informational resource in the long-term memory.

Finally, provided that an object-file stores the pieces of information about the properties of the object that are used by the object-tracking mechanism, at least some of them are not available for the formation of a thought because they cannot be entries of the mental file deployed as the representational vehicle of the thought. Suppose that I have been perceptually tracking a mosquito for a while. There must be lots of pieces of information about the location of the mosquito at each moment that my visual tracking system has used. But this kind of information about spatio-temporal properties is not available for my thought. I cannot answer to the question where the mosquito was a moment ago, although I have successfully tracked it via my visual-tracking system that has used the information. Surely, the information system at the subpersonal level provides informational input to the upper level cognitive system that enables a thought composed of concepts, i.e., mental files. But the information system does not feed the higher conceptual system with all the information that it processes. The intake of the informational input involves the conceptualization that filters out many pieces of information, although they have been bound and used by the informational system (Dretske 1981; Evans 1982). Therefore, an object-file and a mental file do not share the same informational content even when they are about the same perceptual object and the former is in a sense converted into the latter by a process like expansion.

Therefore, taking into account the aforementioned crucial differences between object-files as subpersonal files and mental files as concepts, the simple account like (a) is in dire need of explaining how a subpersonal file tagged with a mental singular term can be converted into a concept. Without such an explanation, we cannot accept (a) as it stands. There is one more problem. As I have argued, some mental file theorists appeal to object-files because of their interest in the function of non-descriptive singular reference of a mental file (Jeshion 2010, p. 130, pp. 132–135 and Murez et al. 2015, pp. 5–6. Also, see Pylyshyn 2001, p. 138, p. 154 *et passim*). However, as we have seen when discussing Recanati's account, the role of a mental file is not restricted to its referential function. (Also, see Jeshion (2010, pp. 131–132) for the other two functions of a mental file.) Therefore, we also need an account of how a subpersonal file like an object-file can provide the basis of the other functions and what additional conditions must be satisfied.

4 Conclusion

Co-filing cannot be simply identified with the subpersonal process of information-binding, although I admit that this kind of process is necessary for co-filing to obtain. If we could identify mental files with subpersonal repositories of information, not with concepts as thought-constituents, then we would have the simplest solution to the filing circularity: co-filing is a fact that pieces of information are stored in a subpersonal file by the object-tracking mechanism working at the subpersonal level. However, we have seen that there are reasons to deny this simple account. Recanati's notion of internal co-reference of information is ambiguous. On the one hand, if it stands for the subpersonal information-binding/merging, then it is not sufficient to explain co-filing as long as a mental file is a concept. On the other hand, if internal co-reference is a conscious thought about the co-reference of pieces of information, then this notion has nothing to do with explaining co-filing because the internal co-reference in this sense is an identity judgment that I have argued has no consequence of information-clustering into a single mental file. The central question of this paper is what explains co-filing. I have argued that the existing accounts and possible revisions of them are all unsatisfactory. My final conclusion is this: we must regard co-filing as a primitive fact in the mental files framework. In other words, it cannot be an explanandum. Rather, it must be an explanans. Therefore, the filing circularity is a pseudo-problem at least at the level of philosophical explanation.

Of course, there might be a supplement account that bridges the gap between subpersonal files and conceptual mental files. However, such an explanation requires a thorough examination of the currently available empirical evidence. Also, as long as we cannot rule out the possibility of discovering recalcitrant evidence, our philosophical concern with the notion of mental files and their explanatory roles must be distinguished from the notion of mental files posited in empirical sciences, regardless of whether the latter is an object-file or some other type of subpersonal entity.[48] This does not mean that I deny the possibility that a philosophical account of a mental file or a concept can be bolstered or undermined by discovering new empirical evidence. My point is that a philosopher's appeal to empirical data or an existing empirical theory must not constitute an essential part of her account. Although one's philosophical account should not have a logical consequence that is in conflict with the existing empirical data, such an account present at an abstract level has some

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[48] My discussion about subpersonal files in psychology is only a partial story because there are psychologists who proposes a theory of mental files that do not reside at the subpersonal level. To explain the empirical data about belief-representations, Perner and his colleagues (Perner et al. 2015; Humer et al. 2018) posit mental files that allow reflective processes. (Especially, see Humer et al. 2018, p. 128: '… our approach pertains to a reflective process whose products can be used in justifying people's actions and answering questions by an experimenter'. Although they use the term 'object files' (e.g., Ibid., p. 127), what they mean by this term is not the object-files posited by other psychologists for their account of the multiple-visual-object-tracking. Also, the file-folders or mental files for discourse referents posited by linguists (e.g., Karttunen 1976; Heim 1983; Kamp 1990; Kamp and Reyle 1993) cannot simply be regarded as subpersonal entities. (It is noteworthy that Huemer and his colleagues incorporate at least partially the features of the file-folder for a discourse referent into their notion of mental files. See Humer et al. (2018, p. 124.) Also, see Recanati (2012, pp. 171–177).

autonomy independently of the question as to which empirical theory is actually correct. Regardless of my disagreement with Fodor's theory of concepts, his arguments about the two issues pertaining to concepts illustrate my point. (i) When he tries to address Frege's Puzzle by appeal to the purely formal/syntactic properties of concepts understood as mental symbols, Fodor simply holds that these properties are primitive in his account while there are a bunch of physicalistically specifiable properties that ultimately explains the sameness and difference between syntactic properties (Fodor 2008, pp. 50–100. Especially, see Ibid., pp. 78–80. Also, see Fodor 1994, p. 107). (ii) In his radical nativist argument that learning a concept is impossible, Fodor acknowledges that we can learn stereotypes by hypothetical inductive inferences from experience while arguing that there is a sort of a jump from the stage of learning a stereotype, which does not compose, to the stage of acquiring a concept, which composes and applies to non-stereotypical instances. What does explain that transition? His answer is simply, 'I don't know' because he takes it to be a brute fact. He argues that it is a job of neuroscientists to find the mechanism underlying that final step in the process of acquiring a concept (Fodor 2008, pp. 129–168. Especially, see Ibid., p. 161). These two arguments do not depend essentially on any empirical data or empirical theories for their justifications. Therefore, proper objections to his arguments are also expected to be ones that purport to show that there are alternative accounts with better explanatory capacities. For instance, against (i), Lee argues that we can accept an alternative account of concepts/mental files that explains cognitive significance and thought processes without appealing to the difference of syntactic properties, and that the suggested account is simpler and has a broader scope of explanation [Lee (2018), p. 3504, pp. 3515–3516 *et passim*]. Against (ii), Margolis and Laurence (2011) criticizes the premise that if we can learn a concept then it is possible only through a hypothesis-test that involves the very concept to be learned, which Fodor aruges results in a vicious circularity. They argue that we can come up with the cases of concept-learning in which the confirmation of a hypothesis does not arise at the final stage of concept-acquisition. They also argue that there are types of concept-learning that do not depend on a hypothesis-test at all. What matters for our purpose here is that these objections do not rely on the discovery of new empirical evidence. Rather, the validity and soundness of these counterarguments are respectively based on the philosophical question of whether symbolic difference is necessary in the causal account of thought processes and that of whether a hypothesis-test is indispensable according to our notion of concept-learning.

In the same vein, we can argue that there is a theoretical need to posit co-filing as a primitive fact at the current-level of philosophical explanation to account for other phenomena such as *de jure* co-referential thoughts. Explaining co-filing is a task of the empirical sciences whose explananda are present at the lower-level relative to a theory of mental files. Of course, one can argue against the claim that co-filing is a primitive fact. However, basing such an objection on one's interpretation of some empirical evidence misses the mark. Rather, the objection must involve an argument that positing co-filing as primitive has less explanatory powers than an alternative position. One point that I have made in this paper is that appealing to the filing circularity is not a good option to raise such an objection. Rather, we focus on other

explanatory issues surrounding the notion of mental files. As I have mentioned, the continuation of a singular belief, Frege's Puzzle, meta-representation, empty singular representation, etc. are such topics. In short, what we must deal with is neither the filing circularity nor co-filing, but the question of what we can explain with the brute fact of co-filing.

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