



No need for mineness: Depersonalization/Derealization Disorder and mental state types

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Abstract

Depersonalization/Derealization Disorder (DPD) is a psychopathological condition in which subjects suffer from a massive alienation from themselves and the world around them. In recent years, several philosophers have proposed accounts that explain DPD in terms of an alteration in global features of normal consciousness, such as ‘mineness’. This article criticizes such accounts and develops an alternative approach, based on the observation that many mental states relate to the subject because of the kind of state they belong to. I argue that most symptoms of DPD can be understood as impairments in such forms of self-relation.

Keywords Depersonalization · Derealization · Self-consciousness · Psychopathology

It was a feeling of being fundamentally wrong in your own body. [...] The feeling was of having left myself completely, constantly trying to grasp on to reality [...] The best image I could come up with was that I was a little man sat in the back of my head, with the controls, and you can see the inside of your skull and you’re looking out of these two eye sockets [...]. (Swains, 2015)

This is how a person suffering from Depersonalization/Derealization Disorder (DPD) describes her experiences. DPD is a chronic condition of massive alienation from oneself (depersonalization) and the world (derealization) that is at least as frequent as schizophrenia—it affects between 1 and 2% of the population (Hunter et al., 2004). After intense study of the condition in the late 19th and early 20th century, also by philosophers (e.g., Ribot, 1888; Oesterreich, 1910; Schilder, 1914), it was more and more neglected and is now relatively little known and under-researched (and hence remains often undetected).

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Only very recently has DPD become a topic in philosophy again, as several authors developed over the last few years new high-level explanations of DPD in terms of impairments in a sense of ‘mineness’ and in other *global* features of normal consciousness (Billon 2016, 2017, [forthcoming](#); Guillot, 2017; Gerrans, 2017, 2019; Ciaunica et al., 2021a-c, 2022a-c). In this paper, I propose an alternative account of DPD that focuses on *local* impairments. In health, many mental states relate to the subject, in virtue of the type of state they are. I argue that most symptoms of DPD can be understood in terms of impairments in various forms of such ‘type-specific self-relation’.

The paper is organized as follows. After an overview over the symptoms of DPD in Sect. 1, Sect. 2 points to difficulties in current philosophical treatments of DPD. In Sects. 3 to 11, I develop and defend my alternative account. Section 12 concludes by formulating open questions.

1 Symptoms of DPD

To adequately discuss DPD, we first need to get clearer about its complex symptomatology. The following overview summarizes the symptoms that are assessed in the standard assessment tool for DPD, the Cambridge Depersonalization Scale (Sierra & Berrios, 2000), grouping them according to the dimension of mental life that is affected. (Numbers in square brackets refer to items on the Cambridge Depersonalization Scale, section numbers refer to the sections below in which the various symptoms are discussed. 5.b, 11.b-c and 13.a-d are added on the basis of Sierra, 2009, pp. 34, 31–32 and 36–38, respectively. For detailed reviews of the symptomatology of DPD, cf. Dugas & Moutier, 1911; Schilder, 1914; Mayer-Gross, 1935; Shorvon, 1946; Simeon & Abugiel, 2006; Sierra, 2009; Ciaunica et al., 2022b.)

1. Patients lack felt emotions (*emotional numbing*) [4/9/18]. (Sect. 9)
2. Patients lack felt pains and pleasures (*algedonic numbing*) [5/7/22/25]. (Sect. 9)
3. Patients experience their actions as *automatic and mechanical*, they feel like mere bystanders [6/10/24/28]. (Sect. 6)
4. Patients complain about *abnormal phenomenology of thought*: (a) they feel as if their thoughts had “a life of their own” (Sierra & Berrios, 2000, p. 163), i.e. they lack normal experience of mental agency (cf. Mayer-Gross, 1935, pp. 108–109; Shorvon 1946, p. 780; Schilder, 1914, pp. 50–51) [26] (Sect. 6); (b) they feel that their head is empty of thoughts [10] (cf. end of this section).
5. Patients have *disturbed phenomenology of memory*: (a) patients experience episodic memories as if they were not involved in them [16]; (b) patients retrieve episodic memories from an external viewpoint (*‘observer view’*), not from their own viewpoint (*‘field view’*). (Sect. 7)
6. Patients report absent, colorless or lifeless *imagery* [21]. (Sect. 8)
7. Patients feel that they have become alien to themselves, that they are not themselves anymore, that they do not have a self anymore, or that their self is unreal (*Detachment from self*) [1]. (Sect. 3.1)

8. Patients have disturbed *bodily experience*: (a) patients feel that they disown (parts of) their body [3]; (b) patients feel their body does not exist anymore or is unreal, and that it is not them who is having tactile experiences [20]; (c) patients feel they are ‘not there’ in their body (*‘disembodiment’*) [23]; (d) patients feel that their body is very light, that they are floating in the air/walking on a cloud [8]; (e) patients see their body from the outside (*out-of-body-experience*) [15]; (f) patients have an abnormal body image, with distorted perception of the size of limbs or the whole body (*macro-/microsomatognosia*) [12]. ((a)-(c) Sect. 5; (d)-(f) Sect. 4)
9. Patients experience the world around them as unreal; this involves often the feeling that there is an isolating material (veil, fog, etc.) between them and the world (*Unreality of surroundings*) [11/13]. (Sect. 3.1)
10. Patients report disturbances in the phenomenology of visual and auditory perception: (a) objects look abnormally distant (*teleopsia*) [19]; (b) objects look abnormally small (*microscopia*) [19]; (c) objects look abnormally flat (*loss of stereoscopic vision*) [2]; (d) sounds, esp. voices, seem abnormally distant or close [11]. (Sect. 4)
11. The *experience of time* is disintegrated: patients feel that (a) events in the recent past are very far away in time [14]; (b) time passes unusually quickly or slowly; (c) they have lost their grasp of time and of the difference between past, present and future. (Sect. 10)
12. Patients experience inappropriate *feelings of (un)familiarity*: they feel that (a) they see known objects, persons and places for the first time (*jamais-vu*); (b) they have already seen unknown objects, persons and places (*déjà-vu*) [17]. (Sect. 12)
13. Patients display some impairments in *cognitive functioning*, namely (a) deficits in short-term memory (in visual tasks with overloaded visual scenes and in verbal tasks with whole sentences); (b) attention deficits; (c) imagery deficits; (d) heightened self-observation. (cf. end of this section; Sect. 8)

Some patients with DPD report many of these symptoms, others only one or few (without there being one core symptom or symptom cluster; cf. Sierra et al., 2005; Simeon et al., 2008). Symptoms 1–7 are normally classified under the depersonalization dimension of DPD, symptoms 8–12 under the derealization dimension. These two dimensions often co-occur, but depersonalization can occur without derealization, and some authors report also cases of derealization without depersonalization (Sierra, 2009, p. 39). Several items in this list stand in need of discussion:

Ad 7: Detachment from self has received little attention in the more recent psychological literature: it is not listed among the symptoms in Sierra & David (2001) and Sierra (2009), and in the Cambridge Depersonalization Scale, it is combined with a description that fits more Unreality of surroundings: “Out of the blue, I feel strange, as if I were not real *or as if I were cut off from the world*” (Sierra & Berrios, 2000, p. 160, emphasis added). By contrast, Detachment from self was often treated as the most central symptom of the depersonalization-aspect of DPD in the earlier literature (e.g. Taine 1876, p. 289; Schilder, 1914, p. 54; Shorvon 1946, p. 784; cf. Sierra, 2009, p. 26). It is well-documented in case descriptions both from the earlier and the more recent literature: for example, a patient of Raymond’s and Janet’s “felt

that she became another person, or better, that she lost her person, that she was no longer something. It seems to her that it is not her who sees, that it is not her who hears, that it is not her who eats” (Raymond & Janet, 1903, p. 41, author’s translation; cf. Shorvon, 1946, p. 784; Simeon & Abugel, 2006, p. 8).

Ad 10: Although there are very detailed and realistic descriptions of the perceived distortions (e.g. Taine 1876, p. 292; Krishaber, 1873, p. 152), it is common to understand such reports as metaphors for a feeling of being isolated from the world (e.g. Dugas & Moutier, 1911, pp. 22–24; Sierra, 2009, pp. 24–25, p. 38; Billon, 2017, p. 201). But there is no independent reason not to take these reports literally, and there are many other cases of psychogenic perceptual distortions (Oyebode, 2015, pp. 91–94), including visual distortions in other dissociative experiences besides DPD (Lipsanen et al., 1999). Indeed, Guralnik and colleagues (2007, p. 107) report that some patients with DPD first search help with ophthalmologists before they consult psychiatrists (cf. also Michal et al., 2006).

Ad 13a-d: Functional disturbances may to some extent be consequences of the other symptoms (for example, disturbed feelings of familiarity could cause memory deficits: Guralnik et al., 2000, p. 107; heightened self-observation may result from anomalous sense of agency and bodily experience, Sierra, 2009, pp. 31–32). But it has also been suggested that some of these deficits, as well as thought emptiness, may be not due to DPD itself, but to absorption, a further dissociative disorder that affects some patients with DPD (Sierra, 2009, p. 37). There is clearly a need for further empirical research here. I therefore will bracket functional impairments (besides imagery deficits) and thought emptiness from my discussion.

2 Current philosophical accounts

The currently best-developed philosophical accounts of DPD all explain DPD in terms of impairments in *global* features of experience. By this, I refer to features that are thought to characterize each and every conscious state in health, *just in virtue of its being conscious*. For Alexandre Billon (2016, 2017, *forthcoming*), the relevant features are mineness, ‘present character’ and ‘actual character’; for Philip Gerrans, omnipresent affective feelings (Gerrans 2017, 2019); and for Anna Ciaunica and colleagues, pre-reflective self-consciousness and its transparency (Ciaunica et al., 2021a-c, 2022a-b). In the following, I briefly summarize how these approaches explain DPD in terms of impairments in those global features of experience. Afterwards, I point to several problems that these accounts face precisely because they appeal to such global features.

Billon argues that alteration of a ‘present character’ that normally makes us experience our mental states as “being actual (as occurring in the actual world rather than a merely possible or imaginary world)” (Billon, 2016, p. 377) leads to Unreality of surroundings, while alteration of an ‘actual character’ that normally makes us experience our mental states as occurring *now* leads to distortions in the phenomenology of time (Billon, 2016, p. 378). An absent or reduced sense of ‘mineness’, which normally makes us experience our mental states as being *ours*, explains Detachment from self, and indirectly brings about also emotional numbing, thought emptiness,

and abnormal bodily, mnemonic and imagistic experience and sense of agency (Billon [forthcoming](#)).

Philip Gerrans similarly sees DPD as impairment of mineness, but he explains mineness in terms of a “flow of affect” (Gerrans, 2017, p. 166), consisting in affective feelings that normally pervade our perceptions, memories, thoughts etc. (Gerrans, 2017, p. 166), and phenomenally mark personal relevance for the subject (Gerrans, 2017, p. 158). The absence of such affective responses directly explains emotional numbing, and indirectly several further symptoms. The subject is no longer able to relate her experiences to her self (Gerrans, 2017, 2019); when the usual affective feelings are lacking, our mind infers that the source of such feelings, the self, has disappeared (Gerrans, 2017, pp. 166–167; 2019, p. 403) and/or that the world which normally triggers affective responses has become unreal (Gerrans, 2017, p. 166; cf. 2019, p. 404); actions lack their expected “significance” (Gerrans, 2019, p. 412) and therefore appear automatic and disowned.

Finally, the account offered by Anna Ciaunica and colleagues (2021a-c, 2022a-b) combines a predictive processing approach with the view of phenomenologists like Zahavi and Gallagher, who have argued that experience always involves a form of pre-reflective self-consciousness that is characterized as ‘subjectivity’ or ‘first-personal givenness’ (Zahavi, 1999, ch. 2). As Zahavi writes, the first-personal givenness of experiences “immediately reveals them as one’s own”; in virtue of this first-personal givenness, the experience is “experienced as my experience” (Zahavi, 2005, p. 124).¹ Such pre-reflective consciousness also involves awareness of oneself as embodied agent (Gallagher, 2000). As Ciaunica et al. (2021a) argue, such pre-reflective self-consciousness is characterized by *transparency*: it typically seems to us that we are in immediate contact with the world around us. Only when we start to reflect do we become aware of our self as an object, and of the mental states (e.g. perceptions) that mediate between self and world. In DPD, Ciaunica and colleagues propose, a disturbance in the attenuation of self-related signals (Ciaunica et al., 2022a), including tactile experience (Ciaunica et al., 2021c), leads to impaired pre-reflective self-consciousness and transparency (cf. Fuchs, 2005), with the consequence that subjects get hyperreflective and feel detached from themselves and the world.

While these approaches all offer sophisticated philosophical explanations of DPD, it is worthwhile exploring the possibility of alternative accounts that do not share the aim of explaining DPD in terms of impairments in one or more *global* features of normal experience. For one thing, the accounts I have cited all rest on substantive views about the structure of (normal) experience, which have not gone unchallenged. For example, the view that all consciousness as such, at least in health, involves a sense of mineness and/or pre-reflective consciousness has come under attack from skeptics (e.g. Schear, 2009; Howell & Thompson, 2017); at the same time, the view that DPD is due to impaired pre-reflective self-consciousness is at odds with the view, held prominently by Zahavi, that consciousness *always*, in health *and* in disease, involves pre-reflective self-consciousness (cf. Zahavi, 2018, p. 713 f.). Billon ([forthcoming](#)) and Guillot (2017) are certainly right to argue that *if* the assumption of normally

¹ Cf. also Guillot (2017) and Zahavi (2018) on how such pre-reflective self-consciousness (in Guillot’s taxonomy: ‘me-ness’) differs from mineness in the sense relevant to Billon’s account.

ubiquitous mineness provides the best available explanation of DPD, this supports an inference to the best explanation in favor of that assumption; analogous points hold for flow of affect and pre-reflective self-consciousness. But to assess this inference, it is obviously important to explore to what extent accounts of DPD that do *not* rely on assumptions about such global features of normal experience can provide equally good or possibly even better explanations.

A further challenge for the existing accounts comes from the sheer variety of symptoms in DPD. Not all of these symptoms are straightforwardly understood in terms of the suggested global impairments. As a consequence, these accounts have to make assumptions about causal and/or functional connections apt to explain why impairments in mineness, present character, actual character, flow of affect or pre-reflective self-consciousness lead to the other symptoms. Many of *these* assumptions are controversial, too. Consider Billon's and Gerrans' accounts of how DPD affects the sense of agency—i.e., the “sense that I am the one who is causing or generating an action” (Gallagher, 2000, p. 15; cf. Pacherie, 2008). For Billon, reduced or absent sense of agency in DPD is due to impaired mineness for intentions—subjects do not experience their intentions as their own anymore and hence also feel alienated from their actions (Billon, [forthcoming](#))—while for Gerrans, it is a consequence of the “dissonance between absence of predicted feeling, cognition and action” (Gerrans, 2019, p. 412). But empirical models of the sense of agency have pointed to various other criteria or ‘cues’ on the basis of which the mechanisms responsible for the sense of agency can decide whether a given action is self- or other-produced—for example, a match between predicted and actual reafferences (e.g. Frith et al., 2000). In addition, Moore and Fletcher (2012) and Synofzik and colleagues (2013) have proposed integrative models on which the sense of agency is the outcome of a Bayesian integration of such cues. Such models predict that if one of the cues has low precision or is impaired, more weight is given to the other cues, with the result that the sense of agency can remain intact even in the absence of conscious intentions or affective feelings.

Or to give further examples:

- Billon explains disturbed episodic memory and first-personal imagery by assuming that such states have I-thoughts as contents, which are governed by the rule “An I-thought bears on its owner” (Billon, [forthcoming](#)). When I am not aware of memories and images as being mine, I therefore will not realize that these I-thoughts bear on *me*. Not only may one worry that this account over-intellectualizes episodic memories and first-personal imagery, there are also other, simpler accounts of I-thoughts available. For example, in analogy with Reichenbach's popular idea that the first-person pronoun refers to whoever utters it, it is natural to suppose that I-thoughts ‘bear’ on the subject who thinks them. In this case, it is easy for me to know that all I-thoughts I have bear on me, without any need for a phenomenal mark of my ownership over the state.
- In order to explain the impairment of self-awareness, sense of agency and sense of reality in DPD, Gerrans assumes that normal affective responses are crucial to the constitution of those factors in health. This predicts that an absence of affective feelings will generally lead to impaired self-awareness, sense of agency and

sense of reality. But this prediction is at odds with evidence suggesting that a breakdown of affective feelings can leave the other factors intact: in a study on Post-Traumatic Stress Disorder (PTSD) that used, among other tools, the Cambridge Depersonalization Scale, Frewen and colleagues found that a significant number of patients (ca. 25% out of a sample of 557 participants with probable PTSD diagnosis) had high scores on that scale for emotional numbing (and hence a severe impairment in affective feelings), but low scores for the other items, which suggests mostly intact self-awareness, sense of agency and sense of reality (Frewen et al., 2015).

Last but not least, approaches that appeal to global features of experience face difficulties in accounting for the high amount of variability in the symptomatology of DPD. Not only are there many different symptoms, these symptoms can also occur in very different combinations. If DPD is understood in terms of an impairment in one global feature, why does this impairment not always produce the same combination of symptoms? Why do patients often lack some of the symptoms that in the available accounts are thought to be direct consequences of the postulated global impairments; and why can the depersonalization and the derealization dimension of DPD occur independently of each other?

Billon tackles such problems by postulating *three* distinct global features of normal consciousness—mineness, actual character and present character (Billon, 2016, forthcoming). But this just adds to the substantive theoretical assumptions of the account. If a unified philosophical account of DPD in terms of *one* basic impairment in a global feature of consciousness is not feasible because of the high symptomatological variability of this condition, it becomes unclear why accounts of DPD should appeal at all to strong claims about the general structure of consciousness, rather than looking for more circumscribed explanantia.

The problems that I have rehearsed are not meant to be decisive objections that disprove the existing accounts. But given that they are all connected to the basic strategy of accounting for DPD in terms of impairments in *global* features of experience, I take them to be sufficient to motivate the search for an alternative account which does *not* follow this strategy, but rather aims to account for DPD in terms of more local impairments. In the remainder of this paper, I propose one form that such an account can take.

3 Alternative account: outline

3.1 'Type-specific self-relation'

As we saw in Sect. 2, existing philosophical accounts of DPD are based on views about the global structure of normal consciousness. By contrast, the alternative account that I develop in the remainder of this paper rests on points that have been made in debates about the structure of particular *types* of mental states, such as visual or auditory perceptions, episodic memories or bodily sensations. Quite independently of whether consciousness in general is characterized by mineness, present character,

actual character, flow of affect or pre-reflective self-consciousness, it has often been argued that, for example, vision and hearing confront us with objects and sounds as having locations and distances *relative to ourselves* (to the right/left/above/behind...; cf., e.g., Husserl, 1952, pp. 56, 158–159; Campbell, 1994, p. 119; Cassam, 1997, pp. 52–53; Zahavi, 1999, 92; Bayne, 2004, p. 222; Schwenkler, 2014). In debates on episodic memory, it is generally agreed upon that episodic memory involves what Endel Tulving has called ‘autonoetic consciousness’ (for review, cf. Zaman & Russell, 2022): episodic memories present scenes as having been experienced, at an earlier point of time, *by ourselves*; or, in Tulving’s words, the subject is, in episodic memory, “aware of the event as a veridical part of *his own* past existence” (Tulving, 1985, p. 3). The sense of agency marks actions as brought about *by ourselves* (cf., e.g., Gallagher, 2000; Pacherie, 2008). These are cases (and there are more, as we will see later on) in which some form of relation to the subject is, according to common accounts of these specific types of mental states, built into the structure of the relevant type of mental state phenomenon as ‘type-specific self-relation’ (TSSR).

Importantly, such forms of self-relation are distinct from sense of mineness, actual character, present character, flow of affect and pre-reflective self-consciousness. Observations about *type-specific* features of experience like the ones I have just cited are fully compatible both with the existence of *other* kinds of mental states—such as (some forms of) thought or imagery (cf. Sections 8 and 12)—which lack such self-relation, and with views that *deny* mineness, pre-reflective self-consciousness etc. as *global* features of consciousness (cf. Howell & Thompson, 2017²).

Moreover, also *if* global features like the above are postulated, the self-relation built into the structure of some types of mental states should not be conflated with them. This is particularly important when it comes to accounts based on mineness or pre-reflective self-consciousness. To elucidate the contrast, consider the case of my episodic memory of being on a beach last summer in vacation. Pre-reflective self-consciousness and mineness will in this case make me implicitly aware that it is me who *is experiencing this present memory*, or, respectively, that this present memory is *mine*. But this is not the same as the ‘autonoetic’ self-relation built into episodic memory, namely, the awareness that it is me who *has perceived the recalled episode* at some point in the *past*. *If* one postulates pre-reflective self-consciousness or mineness as global features of experience, a complete analysis of episodic memories should therefore involve a *twofold* reference to the subject: in experiencing an episodic memory M of an episode E, I am, on this view, both implicitly aware that.

- a. I am experiencing M (or, respectively, I own M), and that
- b. I have earlier perceived E.

On such an account, (a) holds in virtue of pre-reflective self-consciousness (or, respectively, mineness), while (b) holds in virtue of the self-relation that is specific for episodic memories, and built into the type-specific structure of such states. Indeed,

² Howell & Thompson (2017, pp. 120–123) collect some of these features under the heading of a “reductive” account of “phenomenal me-ness”, and mention in this connection also DPD. But they make no attempt at spelling out an account of DPD in terms of such features.

Zahavi argues that episodic memory introduces a “self-division” (Zahavi, 1999, p. 150), therefore occupying another “level[...] of egocentricity” (Zahavi, 1999, p. 151) than mere first-personal givenness. The present approach to DPD proposes to explain the symptoms of DPD in terms of impairments in such type-specific features as (b), while it does not assign any explanatory role to global features at the level of (a)—indeed, it remains non-committal about whether there are such features at all.³

Despite possible heterogeneity in such regards, the phenomena I have pointed to all present entities that are represented by mental states—e.g., the things that we see, the sounds that we hear, the bodily states that we feel, the scenes that we remember, enjoy or are afraid of—as standing in *determinate relations to ourselves*; e.g., spatial relations (in exteroception), causal relations (in the sense of agency), or temporal relations (in episodic memory). Hence, mental states that involve some form of TSSR have a common *functional trait*: TSSR-involving mental states provide us with an immediate and concrete grasp of how the world relates to us. They put us in experiential ‘touch’ with, simultaneously, ourselves and the world, and thus serve as phenomenal sources of our ordinary understanding of the self and of reality (cf. Section 11). TSSR can thus be seen as a *functionally* unified group of phenomena, despite being heterogeneous in terms of underlying mechanisms and (possibly) of representational structure.

3.2 DPD and type-specific impairments

In the last section, I have introduced the notion of ‘type-specific self-relation’ (TSSR) to collect a number of well-established phenomena where mental states present represented entities as standing in determinate relations to the subject. I have shown that these phenomena are distinct from global features like mineness and pre-reflective self-consciousness, and can be (and have been) acknowledged also by those who are skeptical about the latter features as global characteristics of experience.

On this basis, I can now formulate the key ideas of my proposal. The first idea is that most of the symptoms of DPD can be understood as impairments in particular forms of TSSR. For the sake of illustration, take again the case of episodic memories. As we saw, it is commonly acknowledged that (normal) episodic memories present episodes as having been experienced earlier *by the subject*—a form of TSSR that is specific for episodic memories. When this type-specific self-relation that is normally built into episodic memories is for some reason absent, the subject may still recall a stored scene and be aware that this scene belongs to the past, but at the phenomenal level, she will not experience the scene as one that *she* had already witnessed ear-

³ The cases of sense of agency and sense of body ownership might seem different, since Gallagher (2000) has influentially described these features as aspects of pre-reflective self-consciousness or ‘minimal self’. But arguably, there are two conceptually distinct levels in these cases, too: in normal experiences of my actions and of my bodily states, I am implicitly aware both (a’) that it is *me* who is having these experiences (‘minimal self’ according to Gallagher’s definition: “a consciousness of oneself as an immediate subject of experience”, Gallagher, 2000, p. 15), and (b’) that it is *me* who brings about the actions (sense of agency) and who owns the body (sense of body ownership) which are given in those experiences. The present approach explains disturbances in the sense of agency and sense of bodily ownership in DPD at level (b’), while it makes no claims regarding level (a’).

lier.⁴ This matches how many patients with DPD describe their episodic memories: “I can remember things, but it seems as if what I remember did not really happen to me” (Sierra, 2009, p. 33); “When I remember the scene with my friends, studying, I remember myself walking into the room [...] and [...] other things I did and felt [...]. But it feels like something I didn’t experience [...] (something I) was told about by someone else” (Gerrans, 2017, p. 159). Notice that in these formulations, what patients are complaining about is *not* that it does not seem to be them who is *experiencing the memory state*, as views that appeal to mineness or pre-reflective self-consciousness would lead us to expect. Rather, patients complain here that in the memory recall which *they* experience, it does not feel as if it was themselves who had *originally* witnessed the perceived scene in the past—i.e., what is lacking, according to these descriptions, is precisely the form of TSSR that is built into normal episodic memories (Tulving’s ‘autonoetic consciousness’).

Analogously, I propose that other symptoms of DPD, too, can be understood as impairments of particular forms of TSSR. Patients are aware of actions, past scenes, things in space etc., but they fail to experience them as being related to *themselves* in the normal ways: they fail to experience the actions as something *done by themselves*, and/or the objects in their surroundings as *standing in determinate spatial relations to themselves*, etc. On my proposal, these relations to the subject are all instances of TSSR that are built into the relevant types of mental states in health; in DPD, some or even all of them are impaired.

Importantly, since TSSR is not a *global* feature of consciousness but a group of *local* features with different underlying mechanisms, this account is fully consistent with the symptomatological variability of DPD that proved challenging for existing accounts, as I argued at the end of Sect. 2. At the same time, it *directly* accounts for the abnormal characteristics that specific types of mental states, such as perceptions, memories, experiences of actions etc., present in DPD (as we will see in more detail in subsequent sections). Therefore, the account does not need to make controversial assumptions in order to connect impairments in *global* features of consciousness to disturbances that affect *specific* dimensions of mental life, as was the case with the existing accounts.

Furthermore, the approach has the advantage of providing an explanation for why patients still can and do *think* and have explicit *knowledge* about themselves (cf. the symptom of heightened self-observation, as well as the constant and even obsessive use of the first-person pronoun in patients’ reports, emphasized by Raymond & Janet, 1898, p. 73; cf. also Ciaunica et al., 2022a). For since the various forms of TSSR are *domain-specific*, they relate to the subject independently of first-personal *concepts* (and hence *domain-general* representations) such as ‘I’. Impairments in TSSR can therefore leave intact first-personal concepts and the abilities for thought and knowledge that come with them.

But if DPD consists in so many impairments of local, type-specific forms of self-relation, why do its symptoms occur in *combinations* at all? And why can DPD be

⁴ Importantly, this is a point about the way the subject *experiences* the memory state. They may nevertheless *know* that it was them who had originally perceived the recalled scene. I will come back to this point shortly.

considered a *unified* condition? Here, the second idea of this approach comes into play. I suggested in Sect. 3.1 that the forms of self-relation that I group together under the heading of TSSR share a common functional trait: since they make us aware of determinate relations in which entities represented by our mental states stand to ourselves, they put *us* into concrete experiential touch with the *world*. At the same time, it is common to hold that DPD has evolved as a defense mechanism that serves to protect the subject from acute stress, for example in life-threatening situations (e.g. Sierra, 2009; Billon forthcoming).

Combining these two thoughts, I propose that DPD as defense mechanism consists of a number of *partial mechanisms* that all have evolved for the sake of self-protection and that all put the subject in one way or another *out* of experiential ‘touch’ with reality. They do so by ‘shutting down’ the various experiential sources that normally bring us in phenomenal contact with reality—i.e., by impairing the various forms of TSSR. These partial mechanisms are triggered by broadly the same kind of protection-demanding conditions, e.g. traumatic events. But since the mechanisms are separate, some of them may be effective in a given case, while others do not get activated or fail to have a (significant) effect, depending on the precise environmental, biological and psychological circumstances of the situation. One and the same partial mechanism of defense may affect two or more forms of TSSR at the same time (leading to the symptom clusters identified by Sierra et al., 2005 and Simeon et al., 2008). But there is no reason on this approach to postulate *one* basic impairment in DPD—rather, there are different impairments with a shared function, that of self-protection.

So on this account, the symptoms of DPD are held together not by a basic impairment in a global feature of consciousness, but rather by the common function (self-defense by putting subjects out of experiential touch with reality) shared by different defense mechanisms. As a consequence of this common function, these mechanisms are triggered by the same kind of situation, and they target different local elements of experience (namely, the different forms of TSSR) which all share the functional trait of putting subjects in experiential touch with reality.

Some authors have proposed neurobiological models of DPD that are in tension with this approach, since they postulate only one or two basic mechanisms responsible for DPD. Thus, Sierra and David have proposed two distinct but interconnected networks which are thought to be affected in DPD: a fronto-limbic network underlying emotional processing that includes the amygdala and anterior insula and is regulated by the prefrontal cortex; and a parietal network including the posterior insula, inferior parietal cortex and temporo-parietal junction that is relevant to experiences of embodiment and agency (Sierra, 2009; Sierra & David, 2011). Medford (2012) and Gerrans (2019) suggest an even more unified approach, on which impaired functioning of the anterior insula is basic to DPD.

These are elegant neurobiological explanations for emotional numbing and disembodiment in DPD, but the evidential basis on which these models have been developed is not yet sufficient to establish that these are the basic mechanisms at the root of DPD as a whole. That evidence consists mainly in a number of studies that have specifically targeted emotional numbing in DPD, using tasks where subjects had to process emotionally salient stimuli (e.g., Medford et al., 2006; Sierra & David, 2011; Medford et al., 2016; for review, cf. Salami et al., 2020). In addition, Sierra and

David also draw on a PET study of DPD patients which used a verbal memory task and found metabolic abnormalities in the parietal-occipital junction, thought to be linked to the creation of body-image (Simeon et al., 2000). But to my knowledge, there is no evidence yet of hypoactivity of the anterior insula in patients with DPD outside of experimental paradigms that specifically target emotional reactions. By contrast, Simeon and colleagues' above-cited PET study, which did *not* focus on emotionally salient stimuli, found neither an abnormality in the insula nor increased activity in the prefrontal cortex—instead, it identified disturbances in hierarchical areas of sensory cortex that are not accounted for by the models summarized above. Hence, it remains unclear whether the disturbances postulated by Sierra, David and Gerrans affect DPD patients also outside of situations in which they face emotionally salient stimuli. Also, some patients with DPD report little or no emotional numbing; in Sierra and Berrios' (2001) comparison of old and more recent cases with a prospective cohort, this holds for, respectively, 30,9%, 29,7% and 27,8% of examined patients. This suggests that in such cases, affective processing is largely or entirely intact, and some other mechanism must be responsible for the symptoms of these patients. But most importantly, there is a severe lack so far of neurobiological studies investigating other of the many symptoms of DPD besides emotional numbing (cf. Salami et al., 2020). Hence, while there is some evidence pointing to specific neuronal correlates for emotional numbing and disembodiment, more research is needed to identify the mechanisms underlying DPD in its whole variety—and hence also to decide whether there are one or two basic mechanisms behind all symptoms, or whether there are several separate mechanisms that are responsible for different (clusters of) symptoms, as the present approach predicts.

4 Visual and auditory experience

I now turn to the discussion of concrete forms of TSSR and corresponding symptoms. Once again, I do not claim to present new discoveries about the structure of relevant types of states here. Rather, I try to show how symptoms of DPD can be understood on the basis of relatively uncontroversial claims that have been made in various relevant bodies of literature.

I begin with the case of distortions in visual and auditory experience, which is of particular interest as it is left unaccounted for by existing philosophical explanations (cf. Section 1, ad 10). Conscious vision and hearing inform us about how things spatially relate to each other, but also about how they relate to us and our bodies (cf., e.g., Husserl, 1952, pp. 56, 158–159; Campbell, 1994, p. 119; Cassam, 1997, pp. 52–53; Zahavi, 1999, p. 92; Bayne, 2004, p. 222; Schwenkler, 2014): we see objects and hear sounds as being located in front of us, below us, to the left of us ..., or as moving towards and away from us. This presence of the subject in conscious vision and hearing is closely linked to the very organization of exteroceptive space: conscious vision and hearing are perspectively organized around an origin at which we, the embodied subjects of exteroception, are located.

Normal conscious vision and hearing can therefore be seen as involving a *visual* and an *auditory* form of TSSR, in virtue of which perceived objects and sounds are

presented as standing in determinate spatial relations to the subject and her body. I propose that some of the symptoms of DPD amount to impairments of such visual/auditory TSSR, where the presence of the subject in experience is either reduced or eliminated. In order to get a better understanding of what forms such an impairment can take, it will be useful to consider the full-body illusion, an experimental condition in which the processes of multisensory integration responsible for visual TSSR are misled (Blanke & Metzinger, 2009). In this illusion, subjects see, with VR goggles and from a third-personal viewpoint, a virtual body being stroked on its back, while they are themselves being stroked on their physical body (Ionta et al., 2011). Subjects experience the virtual body as their own, while their visuospatial perspective remains the same (they continue to see the virtual body from the outside). Some subjects also feel that they are themselves located at the position of the virtual body; others report that they feel located outside of it. To be able to account for the full-body illusion and its varieties, we need to distinguish three elements which normally coincide, but which come apart in the full-body illusion because multisensory integration is misled by the conflict between visual and tactile signals: (a) the geometrical *origin* of egocentric perceptual space; (b) the felt position of the subject's own *body*; and (c) the *subject's* position (her sense of 'where she is') (Blanke & Metzinger, 2009).

Given the distinction between these three elements (a)-(c), we can identify the following possibilities for a pathological impairment of visual and auditory TSSR; each corresponds to a symptom in DPD.

First, visual/auditory TSSR may be impaired insofar as the experience of spatial relations (distances, angles) between the subject and her surroundings is systematically disturbed, while the locations of subject, body, and geometrical origin remain correctly integrated. This is the case in some of the abnormalities in *spatial perception* that are reported in DPD, namely, *teleopsia*, *microscopia*, *loss of stereoscopic vision*, and *distortions in the perceived distance of sounds*. Distortions in the *body image* (*macro-/microsomatognosia*) may form a somatic counterpart to those perceptual distortions (cf. Blom, 2020, p. 54), for there is a mutual dependence between the perception of body size and the perceived sizes of objects around one (as is witnessed by the familiar fact that when returning to the places of one's childhood, everything looks surprisingly small). The *feeling of floating* (or of walking on clouds or cushions) can be seen as distortion of the *mechanical* relations between the subject and the surroundings (namely, the subject's body being pulled towards the ground) as they are presented in normal perception.

Second, in *out-of-body experiences* in DPD, the experienced position of the subject at the geometrical origin of perspectival space comes apart from the position of the body, as the subject sees her own body from a visual viewpoint that is spatially distinct from the body's position (Blanke et al., 2004). In this case, visual (and possibly auditory) TSSR is impaired because the integration of the above elements (a)-(c) (i.e. origin of egocentric space, the position of the subject's body, and the subject's position) is disrupted—the subject has withdrawn from her body.

Third, visual and auditory TSSR might also be disturbed insofar as the origin of egocentric exteroceptive space is correctly identified with the experienced position of the body, but the subject herself is either completely absent from the representation of visual and auditory space (i.e. not localized at all within the perceived scene),

or localized at a distance from the origin. Indeed, some reports by patients suggest a complete absence of the subject from conscious vision and hearing: “[i]t seems to her that it is not her who sees, that it is not her who hears” (Raymond & Janet, 1903, p. 41); others suggest a spatial distance between the origin of visual space and the location of the subject: “you can see the inside of your skull and you’re looking out of these two eye sockets” (Swains, 2015); “as soon as I relax I get an intense feeling of ‘ME’ being located in my brain just behind my eyes” (Roberts, 1960, p. 481; cf. Simeon & Abugel, 2006, p. 143).

5 Bodily ownership

Much recent empirical and philosophical work has addressed illusions and pathological conditions in which subjects have the impression that one of their limbs is not theirs, or that a limb of someone else is theirs. Conditions like the alien-hand-syndrome, where subjects feel that a hand of theirs does not belong to them (for review, see Scepkowski & Cronin-Golomb, 2003), and the rubber-hand illusion, where subjects mistake a rubber-hand for their own hand (for review, see Tsakiris, 2010), are standardly interpreted as disrupting or manipulating a ‘sense of (body) ownership’ that characterizes our normal bodily experience (e.g., de Vignemont, 2007; Tsakiris, 2010). It is very natural to interpret the experiences of patients with DPD who feel that their bodies or parts of them do not belong to them anymore in the same way.⁵ Most philosophical accounts agree that the sense of body ownership is an experience of (parts of) one’s body *as being one’s own* (e.g. de Vignemont, 2007; Gallagher, 2017). It amounts to a *bodily* form of TSSR, in virtue of which the subject is presented as standing in a relationship of ownership to her body. When such bodily TSSR is disturbed, subjects will be unable to feel (parts of) their bodies as belonging to *themselves*—as is the case in DPD. (Since a sense of the position of one’s body at the origin of perceptual space is crucial for the normal egocentric structure of perception, there is an important connection between visual/auditory and bodily TSSR. However, the existence of out-of-body experiences, discussed in the last section, suggests a possible dissociation—the perceived position of the subject at the origin of perceptual space may come apart from the perceived position of the body one experiences as one’s own. This is why I treat visual/auditory and bodily TSSR as different—even if closely related—forms of TSSR.)

Furthermore, *bodily sensations*, including proprioceptive, interoceptive, tactile and algedonic experiences, are usually seen as qualified by the sense of body ownership (cf. Martin, 1995, p. 273)—e.g., pains are felt to be located at some place of *one’s own body*. With impaired bodily TSSR, subjects may still have such sensations, and these sensations may contain information about spatial location inside or on the surface of a body, but the subjects will not any longer experience those sensations as relating to *their* bodies. Hence, they literally *will not feel their body anymore*, and hence, they will feel *disembodied* and/or have the impression that their body does not

⁵ In this point, I follow Billon (2017). But cf. footnote 3 on how the present view differs from a mineness-based view (such as Billon’s) when it comes to the sense of body ownership.

exist or is unreal (Sierra, 2009, p. 28); and it will seem to them as if it is not *them* who is touching surrounding objects (cf. Sierra & Berrios, 2000, item 20).

6 Phenomenology of bodily and mental agency

To some extent, abnormal phenomenology of bodily agency in DPD can be interpreted in terms of impaired bodily TSSR, too. The experience of the bodily movements by which we act is coarse-grained and non-focal as long as things go well (Pacherie, 2008), but it still constitutes an important element in the phenomenology of agency: deafferented subjects, whose brain receives reduced or no somesthetic input, report a massive disruption in the experience of acting (Cole & Paillard, 1995). So patients who do not feel their bodies will also lack normal first-personal experience of *what* they are doing with their bodies; instead, they can perceive their movements only exteroceptively, like mere bystanders (cf. Sierra, 2009, p. 28: “When I move I see the movements as I move, but I am not there with the movements”).

Moreover, the *sense of agency*, the experience of being the agent of a given action (for review, see Pacherie, 2008), seems itself to involve a distinct form of TSSR: it phenomenally marks events as actions that are intentionally caused and controlled by *me*. A well-known impairment of the sense of agency occurs in passivity experiences in schizophrenia: here, some actions get erroneously attributed to other agents or forces, probably because of disturbances in the way agency cues are monitored or integrated (Frith et al., 2000; Moore & Fletcher, 2012). But we may also hypothesize a distinct impairment, in which agency cues are correctly detected and integrated; but when the sense of agency is created at the level of conscious experience, the TSSR that is normally a phenomenal element of the sense of agency is lacking. This kind of impairment will not lead to an experience of being controlled by others as it is characteristic of schizophrenia, since the action does not get misattributed to someone else. Rather, the subject will in this case experience their actions as mere happenings that take place without there being an agent in charge of them. This matches the reports of patients with DPD about their actions taking place automatically and robot-like.

In addition, it has been argued that there is also a sense of agency for mental actions (e.g. Proust, 2009). We can apply the above distinction between two possible impairments in the sense of agency here, too: impairment in the processing of agency cues will in this case correspond to thought insertion in schizophrenia, while impairment in TSSR as element of the sense of agency will correspond to the disturbed phenomenology of *mental* agency that some patients with DPD complain about (cf. Section 1, 4.a).

Finally, it can be argued that there is a further dimension to the disturbed phenomenology of agency in DPD that is not captured in present accounts of the symptomatology. Besides disturbed phenomenology of *actions*, some patients also report a lack of *will*: “I have no will power, do not want to do anything” (Meyer-Gross, 1935, p. 105); “I am terribly aimless, without [...] ambitions” (Mayer-Gross, 1935, p. 108; cf. Dugas & Moutier, 1911, pp. 95–96). Such absence of conscious volitional states, too, can be understood in terms of an impaired form of TSSR. For arguably, *intentions* involve a subjective element that points to the person who has the intention.

For example, when intending to write an article, a person does not merely have *some* positive attitude towards articles being written; rather, the intention is fulfilled only if *the agent herself* writes the article (Searle, 1983, p. 91). There can be cases where this first-personal element is salient to the subject (“I don’t want *him* to pay for the meal, I want to do this myself”), but most of the time, our focus is on the intended action, not on the fact that we intend to perform it ourselves. In the case of conscious intentions, this first-personal element amounts to a further, volitional form of TSSR, in virtue of which the subject is implicitly aware of the intended action as one that should and will be done *by herself*. If such volitional TSSR is impaired, the subject will no longer be experientially aware of possible actions as things that she wants to do *herself*. As a result, the subject will no longer experience herself as having and exercising a will anymore, which matches the above reports.

Since TSSR is located at the level of conscious experience, the impairments of TSSR described in this section are compatible with intact abilities of body/action attribution and action control at subpersonal and automatic levels. In addition, patients may also form explicitly first-personal thoughts (involving reflective self-consciousness) about their actions. The present account is therefore consistent with the fact that patients do seem to possess robust capacities for bodily and mental agency (cf. Dugas & Moutier, 1911, pp. 84–85).

7 Episodic memory

We saw already in Sect. 3.2 how the disturbances in episodic memory characteristic of DPD—where subjects experience episodic memories as if it had not been themselves who had originally experienced the remembered scene in the past—can be understood as impairment in the form of TSSR that is specific for episodic memory: the awareness that one has oneself perceived the remembered scene earlier. It might be tempting to interpret the *dominance of observer-view memories* in DPD, too, as an impairment of TSSR—namely, as failure to reconstruct the egocentric scene. However, many healthy subjects, too, have observer-view memories, correlating, according to most studies (pace Sierra, 2009, p. 34), with emotionally neutral or less intense memories (Nigro & Neisser, 1983; Robinson & Swanson, 1993; Talarico et al. 2004). Hence, dominance of observer-view memories in DPD is more plausibly seen as a consequence of emotional numbing.

8 Mental imagery

In a questionnaire-based study of visual imagery in DPD, Lambert and colleagues (2001) found (a) that patients have generally poor visual imagery as compared to healthy controls, and (b) that their imagery is especially reduced when they are asked to imagine performing movements. Finding (b) can be understood as impairment in TSSR that is normally involved in action-related imagery: when imagining walking or reaching for something on tiptoe (which are items on the movement questionnaire used by Lambert et al., 2001), the subject figures within the imagined content,

namely as agent of those movements and as owner of the body that performs them. Impairments in TSSR of this kind—agentive and bodily TSSR in imagistic mode—will make it difficult if not impossible for the subject to produce an image of such actions. By contrast, finding (a) might be interpreted as a further consequence of emotional numbing (Lambert et al., 2001, p. 262), assuming that imagery per se is TSSR-free—a mere virtual presentation of shapes, colors etc. But alternatively, it could be argued that imagery as such does involve TSSR: because visualized objects or scenes are presented as standing in some (albeit rather vague) spatial relations to the subject (e.g. in front of her), and/or because visualized scenes present what it would be like *for the subject* to experience the scene (at least when the imagery is part of an act of imagination: cf. Vendler, 1979; Recanati, 2007). Further philosophical discussion on imagery and empirical research on how DPD can affect various kinds of imagery are needed to decide this point.

9 Emotional and algedonic experience

Many contemporary theorists (e.g. Goldie, 2000; Helm, 2001; Roberts, 2003; Döring 2007) agree that emotional experience makes us aware of *evaluative properties or facts*—in a stock example, my fear of a snake in front of me makes me aware of the snake’s dangerousness. Such awareness does not merely consist in some abstract grasp of the danger that snakes can present to humans in general; when fearing the snake, I am aware of the danger it presents *to me*. In other cases, the relation between the evaluative property and the subject is less direct: when I see from a safe distance how my friend is threatened by a snake, I am also afraid of the snake, but because I fear *for my friend*. What is common to both examples is that the emotion makes me aware of an evaluative property that matters to me because it consists in something’s (here: the snake) being (actually or potentially) good or bad for something *I care about* (Helm, 2001)—my own health in the first case, my friend’s in the second case. We can call this feature of the evaluative property its ‘relevance’ for the subject who has the emotion. Contrast the two snake-examples with a case in which I recognize that a big wave coming from the sea is about to destroy a heap of cobbles on the beach which I am completely indifferent about. Here, I become aware of an evaluative property of the wave that is *not* relevant to me, and indeed I would not normally feel anything like fear or concern for the heap (while I might feel such an emotion if the wave was threatening a beautiful sand castle that took me hours to build).

Such examples suggest that emotions often, if not always, make us aware of evaluative properties that have relevance *for us*. But do emotions constitute awareness of the evaluative properties *as* having relevance for us, thus involving a form of TSSR? I think that a positive answer is correct, for (at least) the following reason. It is generally recognized that emotions play an important *motivational* role—they have a potential for causing actions that are intelligible as responses to the emotion. That emotions make us aware of evaluative properties as such is not sufficient to explain this motivational role: when recognizing that something is actually or potentially good or bad for someone or something in general (e.g., bad for the heap of cobbles), why should *I* do something about this? If, instead, it is granted that emotions make

us aware of evaluative properties *as* having relevance for us, the motivational role is easily understood—I should act in response to the emotion because the emotion signals to me that something is good or bad *for something I care about* (cf. Döring, 2007, pp. 372–374).

So plausibly, conscious emotions make us aware of evaluative properties as having relevance *for us*. They make the subject aware of how given objects or scenes (e.g. the snake or the wave) matter *to her*, and therefore involve a form of TSSR. Emotional numbing in DPD is then straightforwardly understood as impairment of such emotional TSSR: on this view, patients lack the emotional experience of things as mattering *to them* that normally permeates their mental lives.

This view has also direct consequences for *algedonic* experience. For on a popular view, bodily pains have two components: a sensory one, in virtue of which such states make us aware of some state or event in (a particular part of) our body, and a further emotional and/or motivational dimension that assesses this state/event as good or bad for the subject (e.g., Cutter & Tye, 2011), and/or as calling for some action (e.g., Martinez, 2011). The distinction between both dimensions is motivated by cases like pain asymbolia and morphium treatment, where subjects have pain-related bodily sensations but do not experience them as painful. For some reason, pleasure has received much less philosophical attention than pain, but at least some authors have proposed parallel accounts for it (e.g., Cutter & Tye, 2011). If the non-sensory component of pains and pleasures is understood in *emotional* terms, the above argument about emotions applies to it, and pains/pleasures involve emotional TSSR, too (cf. also Helm, 2001). If, by contrast, the non-sensory dimension is seen in purely *motivational* terms, pains and pleasures signal to their subject that *she* should do something—which, too, involves a (motivational) form of TSSR. In both cases, algedonic numbing can be understood as impairment of (emotional or motivational) TSSR. (This is consistent with the fact that the *sensory* component of algedonic experience can apparently remain intact in DPD: some patients report that they notice *something* when they are, e.g., stung by a needle, but do not experience it as painful or pleasant; cf. Janet, 1908, p. 515.)

10 Phenomenology of time

Some types of conscious mental states seem to inform us about a temporal relation between the time at which we experience the state (the present), and the time at which the content of the state is represented as taking place or obtaining. For example, perceptions inform us about a temporal relation of synchronicity between the represented state of affairs and the time at which we experience the perception. Episodic memories present their contents as having been experienced by the subject at some point *before* the memory is being experienced. Other states, such as prior intentions, point to the future. Indeed, it has been argued that our conscious experience involves not only spatial, but also *temporal* ‘self-location’ (Metzinger, 2003, pp. 311–313)—or, in other words, that experience presents things as standing not only in spatial, but also in temporal relations to the subject (in their current state). If something like this is correct, the TSSR involved in states like perceptions and episodic memories also

has a temporal dimension. As a consequence, the abnormal phenomenology of time in DPD may be understood in terms of impaired TSSR across various kinds of mental states: experiences such as abnormally fast and slow flow of time and a lacking grasp of time and its dimensions might be seen as abnormal or absent experience of temporal relations between the contents of perception, memory etc., and the subject.

11 Detachment from self and Unreality of surroundings

Unlike the symptoms that we have discussed in the preceding sections, Detachment from self and Unreality of surroundings do not correspond to two specific kinds of mental states, but rather amount to more general disturbances in subjects' self- and world-experience. Nevertheless, these disturbances can be understood in terms of impaired forms of TSSR if it is assumed that in health, the various forms of TSSR that we have examined so far support our ordinary relationship both (a) to ourselves and (b) to the world around us.

As to (a), many of the forms of TSSR discussed in previous sections can be seen as corresponding to different aspects of our awareness of our self—or 'sense of self'—that have been identified in the literature: in virtue of the TSSR involved in vision, hearing and bodily experience, we have an awareness of ourselves as embodied subjects; in virtue of the TSSR involved in the sense of agency, we have an awareness of ourselves as agents. These are two aspects of the 'minimal sense of self' discussed by authors like Gallagher (2000) and Zahavi (Zahavi, 2005). In addition, the TSSR involved in episodic memory, emotion, volition and temporal experience provides us with awareness of ourselves as temporally extended subjects with personal interests and histories—i.e., 'narrative selves' (Gallagher, 2000).

But when it comes to how precisely these aspects of the sense of self are accounted for, the present approach differs at least in three important ways from influential phenomenological theories such as the one provided by Gallagher (2000). First, for Gallagher, the minimal sense of self (the sense of oneself as embodied agent and subject of experience) differs from the sense of narrative self insofar as the former coincides with a feature of experience, viz., with pre-reflective self-consciousness qua global feature of normal consciousness, while the latter is a construct that involves language, narratives and a "self-concept" (Gallagher, 2000, p. 19). The present approach, by contrast, puts the narrative *sense* of self in this respect on a par with the minimal sense of self: like the latter, it is located at the experiential level (e.g. in the experience of episodic memories and emotions), as opposed to the linguistic and conceptual level of what we *believe* to be true about ourselves. In DPD, such beliefs are not directly affected—patients still know 'who they are'. Instead, what gets lost is the way in which the self—both qua embodied agent and qua temporally extended subject with interests, concerns, a past and a future—normally is involved in our experience (namely, in virtue of the various forms of TSSR we have examined); and this is distinct from the narrative construct that Gallagher's 'sense of narrative self' consists in.

Second, for Gallagher, the most basic aspect of the minimal sense of self is a “consciousness of oneself as an immediate subject of experience” (Gallagher, 2000, p. 15). As we saw in Sect. 3.1, the present account postulates no such consciousness.

Third, I have argued that the various forms of TSSR are *local* (albeit very frequent and widespread), not *global* aspects of experience; hence, the sense of self that they amount to is not global either, unlike Gallagher’s ‘minimal sense of self’. Nevertheless, if some or many of our mental states no longer point to the self in the way they normally do in virtue of their kind-specific structure, it is fair to expect that this will lead to a massive change in the overall character of experience, which matches patients’ reports about having become alien to themselves or lost their selves.

In addition to a sense of self, the various forms of TSSR also involve an awareness of concrete relations (spatial, mechanical, temporal, causal, relations of ‘mattering’) between the subject and the world around her. By presenting an ongoing action as being brought about by myself—or an object as being placed in front of me; a felt bodily state as being located in my body; a scene as dangerous for me; an episode as having been witnessed by myself at an earlier time—my experience places those states, objects and events within the overall spatiotemporal and causal framework of what I experience as real, as being there *here and now* (e.g. Huemer, 2001, p. 77) (or as having been there, then and there, in the case of episodic memory). Such forms of TSSR are therefore also plausibly seen as making crucial contributions to the subject’s *sense of reality*, with the result that impairments in those forms of TSSR can lead, besides abnormal experiences regarding specific types of mental states, to a more general sense that the environment has become unreal (cf. Wong, 2017, pp. 325–326). (This account is consistent with the fact that Detachment from self and Unreality of surroundings can occur in isolation from each other: when some but not all forms of TSSR are impaired, forms that remain intact may suffice to maintain a sense of self, but not of reality, or vice versa.)

12 Conclusion: open questions

I conclude by pointing towards two issues that stand in need of further discussion (in addition to the questions regarding imagery that were left open in Sect. 8).

First, there is one remaining symptom of DPD that we have not addressed in previous sections—experiences of *déjà-vu* and *jamais-vu*. The feelings of familiarity and novelty that are involved in such experiences may seem to include a form of TSSR—it is natural to characterize their content in terms like ‘I have (not) seen this before’—so one could expect that an impairment in such TSSR leads to *absence* of such experiences in DPD. However, *déjà-vu* and *jamais-vu* are actually more *frequent* in DPD than in health. One tentative explanation is the following: emotional numbing could bereave familiar objects and places of their felt emotional significance, and hence make them appear strange and unfamiliar (while the subject has intact explicit knowledge to the contrary); and temporal disintegration could make it difficult for subjects to tell whether perceptual contents belong to the present or to the past, and hence give them the impression that they have already perceived an ongoing episode (while they have explicit knowledge that this is not the case). But more research on

the character of experiences of (un)familiarity in DPD is needed to decide whether this account is viable.

Finally, further open questions concern the structure of conscious *thoughts* that are neither intentional mental actions nor intentions—for example, affirmative thoughts (‘judgments’), intuitions, episodes of semantic memory recall, or acts of entertaining a proposition. It may seem tempting to analyze such states simply as presenting a proposition as being (possibly, probably, certainly...) true or false, without any involvement of TSSR. But in order to adequately capture the differences between various kinds of conscious thoughts like the above, it may turn out necessary to postulate *cognitive* forms of TSSR, in virtue of which the subject is implicitly aware of *her* attitude towards the content of the state—e.g. of *herself* being committed to the content of a judgment (cf. Kriegel, 2013, pp. 65–66). Possibly the only exception consists in states of ‘contemplation’, where one entertains a proposition without pursuing a doxastic aim (Kriegel, 2013, p. 112): there seems no strong reason to assume that such states involve a form of TSSR. But too little is known about the phenomenology of thought in DPD to assess whether there are disturbances that would correspond to impairments of such cognitive forms of TSSR. These, too, are issues that stand in need of further philosophical analysis and empirical research.⁶

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