Chapter 6
Extended Minds and Tools for Mind-Wandering

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Introduction

When I keep a diary for a while, I notice that my writing influences my experience outside the writing sessions. Keeping a diary means taking note of what happens during my days, recording and reflecting on whatever catches my attention. But these recordings take form in the *medium* of writing. Opening a space where I pay attention to daily events, where daily events are recorded in the form of written words, feeds back and changes how I experience the events on the following days. If I continue writing every day, eventually the quality of my observation changes. I notice more sentences forming in my mind. On the way to work, or while grocery shopping, or while cooking, or in the middle of a conversation, I catch myself in a state of mind that resembles writing. You could describe these experiences as "covert writing," as "writing in one's mind." You could describe them as a writer's approach to observing. You could also say my mind *wanders* toward writing, not only because of having cultivated a writing practice that is now available (as "somewhere" I routinely go and, therefore, can go with relatively little effort) but also because the writing is a medium in which my experience can be represented.

These observations are not unique to writing (Clark, 2008; Noë, 2015). We can discuss painting in a similar way. Learning to paint is not just about learning to move one's hand in a manner that is more controlled and refined. It is also about learning to *see* in a more controlled and refined manner, cultivating a painter's approach to experience. But the changes in seeing cannot occur without the effort to control one's hand. It is in the controlled activity of painting—or the activity of trying and failing to paint well—that we become more aware of what and how we see. The activity of painting opens up a space where we

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reflect on our visual experiences, representing our experiences in the medium of painting. Subsequently, when we encounter a scene, during a walk or while working or while looking at the face of a friend, our minds might *wander* toward how the scene would look as a painting, "painting covertly," or "painting in our mind." We might imagine the process of painting the scene. In other words, the practice of painting, similar to the practice of writing, makes it possible to mind-wander toward painting, to enter a state of mind that resembles the activities of painting.

We could extend these observations one further step, in order to emphasize another feature of the relationship between the mind and the media of representation. I have recently begun participating in social media (e.g., Twitter, YouTube). Similar to the influence of writing, which goes well beyond the writing sessions, I have noticed that my thoughts can now—without any planning on my part—take the particular forms that these media afford, even during the times I am physically disengaged from those media. A thought can occur to me in the form of a tweet, or in the form of an idea for a YouTube video. These media enframe and organize my experience. They also lay claim on my experience, generating the desire to package my thoughts into tweets or videos, to take my thoughts *elsewhere*. The digital media summon my private thoughts, urging them to become something else, to reach beyond here-and-now, to transform into something more public, more self-assured, more fixed, and more generalized.

We can derive at least two points from these observations. First, we cannot maintain a naïve distinction between, on one hand, an "autonomous" mind and, on the other hand, the tools and representational practices we use for understanding and expressing what we experience (Clark, 2008; Noë, 2015). The tools extend the mind and its representational ability. Once we acquire a skill like writing or painting, a way in which the perceptual world can be grasped and explored becomes available. These observations reveal certain characteristics of the mind, the mind's relation to media of representation, and the *space of mind-wandering* (MW) that opens up once we practice and acquire the techniques of a given medium, which in turn becomes "a tool" for MW. Second, it is not only the tools and techniques that are summoned and used by the mind. The media, the acquired techniques for engaging with the media, can also summon the mind, triggering MW without prior planning and intention. As such, tool use and technique do not necessarily come *after* a plan has formed in the mind.

Imagine a filmmaker (someone who has acquired the techniques of representing experience in the medium of film) having to wait somewhere without anything to do. Perhaps she is in the waiting room of a dentist's office. After a while, her mind drifts away from the ordinary way of seeing the waiting room and enter into an explorative mode of seeing that is shaped by her craft. Without planning in advance, she imagines recording a movie at that waiting room, or about waiting rooms in general, or about secretaries, or about people with dental problems. These are not tasks, but passing considerations. If the filmmaker in our example becomes sufficiently interested in one of these passing thoughts, she might turn it into a project,

but that is not necessary. A similar sentiment about how ideas come to mind without planning is described in a quote misattributed to Mozart:

> When I feel well and in a good humor, or when I am taking a drive or walking after a good meal, or in the night when I cannot sleep, thoughts crowd into my mind as easily as you would wish. Whence and how do they come? I do not know and I have nothing to do with it. Those which please me I keep in my head and hum them; at least others have told me that I do so (Dennett, 1996, p. 346).

Dennett goes on to say:

> Mozart is in good company. Rare is the novelist who *doesn't* claim characters who "take on a life of their own"; artists are rather fond of confessing that their paintings take over and paint themselves; and poets humbly submit that they are the servants or even slaves of the ideas that teem in their heads, not the bosses (Dennett, 1996, p. 347).

We might think the relationship between a person whose mind is wandering and the images and thoughts of MW is transparent to the person. An image comes to a painter's mind, we would think, because it is a possible painting—why else? More generally, we might think the possible "use" of images during MW is transparent to the person. This does not, however, need to be the case (Morley, 1998; Singer, 1981). That is to say, it is possible for MW to have a function that is not known to the person. In an evocative passage, describing Ivan Kramskoi's painting, "Contemplator," Dostoevsky, 1992, pp. 126–127) writes about the ambiguous relation between the passing thoughts of a daydreamer—portrayed in the paining—and what the daydreamer may or may not do. Dostoevsky uses "contemplation" to refer to the phenomena currently described as daydreaming or MW:

> [I]f he were asked what he had been thinking about while standing there, he would most likely not remember, but would most likely keep hidden away in himself the impression he had been under while contemplating. These impressions are dear to him, and he is most likely storing them up imperceptibly and even without realizing it—why and what for, of course, he does not know either; perhaps suddenly, having stored up his impressions over many years, he will drop everything and wander off to Jerusalem to save his soul, or perhaps he will suddenly burn down his native village, or perhaps he will do both.

In Dostoevsky's description, a person might go on daydreaming in a way that resembles collecting pieces of a puzzle. He might go on collecting such pieces for a long time, without knowing exactly why, and without knowing the big picture. He is collecting the images simply because those images "are dear to him." One day, he might suddenly see the big picture. As Dostoevsky's example suggest, the big picture might trigger action that is radically inconsistent with the person's history and what others expect from him. If we take this passage seriously, we will consider the possibility that MW can begin without a known superordinate intention, without being tied to a course of action, although we will not rule out the possibility of intentional or action-oriented MW. Whether or not MW is reflective and intentional might depend on how much of the "big picture" the person sees and whether or not he knows why the images "are dear to him." Accordingly, over time, if MW results in the accumulation of images that assemble into coherent whole, they might

suddenly compel the person into actions radically different from his existing social role (going on a pilgrimage, burning his native village, etc.).

In another example, Dostoevsky describes the transformation of MW through time, in the case of a fictional character, considering how the influence of MW on a person can change. To summarize the background, we read about a man who had committed a murder and escaped justice. To forget the murder, he occupied himself with work, philanthropic activities, a new romantic relationship, and so forth. For a time, his ephemeral MWs do not disturb him, until…

> … he fell to brooding at last, and his torment was more than he was able to bear. … [H]e began to picture a different dream—a dream he at first considered impossible and insane, but which stuck so fast to his heart that he was unable to shake it off. His dream was this: he would rise up, go out in front of people, and tell them all that he had killed a person. For about three years he lived with this dream, he kept picturing it in various forms. Finally he came to believe with his whole heart that, having told his crime, he would undoubtably heal his soul and find peace once and for all (ibid, p. 307).

The view offered in this illustration goes beyond viewing MW as a simple series of images and thoughts going through a person's mind. We recognize that the person's attitude toward those images, as well as the associated beliefs, can change. Although MW can be tied to goals (e.g., confessing to a murder, leaving one's native village), the person might go on entertaining these images without, at first, being aware of their significance. Similar to the practice of writing or painting, MW itself might continuously extend the domain of imagination. The person's relation to the content of MW, therefore, can range from unreflective and unaware (of the purposes signified in the images) to reflective and aware (Morley, 1998; Stawarczyk, 2018). From such a position, it would not make much sense to ask simplistic questions, such as "Is MW reflective?", "Is MW goal-driven?", and "Do people intentionally engage in MW?". The position that gives rise to such simplistic questions tends to be a position that has not yet examined the phenomena of MW in its richness and diversity (Gozli, 2019, 2020; Seli et al., 2018).

So far, we have followed the implications of certain practices, such as writing and painting, which lead to blurring the distinction between the mind and tools. In addition, we have considered that the mind's relation to its objects (e.g., "objects" of MW) could change, in a way that reveals new meanings and new goals (Tateo, 2020). I began with these threads, not only to separate my approach to MW from current experimental approaches but also to emphasize that the mind/tool deconstruction and the unreflective relation to goals both apply to experimental research. It is important to recognize that, analogous to how a painter's experience can be enframed by her acquired methods, researchers' methods can enframe their subject matter. Analogous to how a daydreamer is unaware of the significance of the images in her daydreams, researchers might be unaware of the goals associated (and excluded) with their methods. The methods of experimental psychology and cognitive neuroscience could be viewed as media of thought and communication. Experimental psychology of MW is itself enframed by the practices, assumptions, and techniques of researchers, which can conceal alternative ways of thinking about the topic. That is to say, the methods for the study of MW should themselves be

considered as tools for MW, and in terms of how they extend, shape, and limit our thinking about the topic of MW.

In the rest of this chapter, I will discuss two approaches to MW. The first approach, which is more popular in mainstream psychology, is a view that tacitly regards MW as a type of task-switching. That is not necessarily a conscious theoretical position, but rather the outcome of using methods that track MW with reference to task performance, as a deviation or switching away from it. According to this approach, our minds wander *away* from the task performance and that *wandering away* is an essential feature of MW. In contrast, the second approach regards MW, not as switching from a task to something else, but as a style of engagement. It so happens that this style of engagement is typically associated with disengaging from common tasks, particularly those used in educational and research settings, but the second approach does not regard disengagement to be an essential feature of MW. It is instructive to consider both approaches. I argue, nonetheless, that thinking about MW as a style of engagement *with* an activity, rather than as disengagement, leads to clearer theorizing.

Mind-Wandering as Task-Switching

Task performance is generally treated as a practical necessity for most experimental studies in psychology. On one hand, engaging with tasks renders participants susceptible to experimental manipulations. On the other hand, giving the same task to all participants in an experiment enables treating them all as members of the same category (Gozli, 2017, 2019; Wachtel, 1973). For example, in a visual search task, all participants are treated as people who are attempting to complete a search task. And given that they are completing the task, we can measure various aspects of their performance, such as the time it takes to complete the task, number of errors, and so forth, as a function of factors manipulated by the experimenters. Those measures are meaningful only under the assumption that participants are performing the task according to the given instructions, e.g., trying to search as rapidly as possible without compromising accuracy.

The role of experimental tasks as the engine of data production has resulted in the recognition that research participants might occasionally disengage from tasks (Callard et al., 2012; Gozli, 2019). This, in turn, has resulted in the emergence of research on MW, which begins by considering MW as deviation from task performance (Callard et al., 2012, 2013; see also Christoff et al., 2018). Using a task-switching metaphor, we could say that participants are switching from the task they are supposed to be performing, and covertly engage with another type of task (e.g., daydreaming). According to this approach, MW involves stepping away from the task or a failure to maintain control over task performance. Thus, the central role of the task persists in MW research. According to this approach, we can study and know about MW in so far as we observe its relation to task performance. In experimental situation, we must first identify the task, such that we know what it means to

be "on-task" and to identify some other states as "off-task." Outside of the experimental situation, when researchers rely on distant communication with large groups of research participants (e.g., using a smartphone app), the meaning of "on-task" may be more ambiguous and dependent on the participants' judgment.

For the sake of comparison, let us briefly return to our earlier examples of writing and painting. When we imagine a writer mind-wandering while waiting in line at the grocery store, or when we imagine a painter mind-wandering while walking in the park, we are not only interested in their disengagement from the tasks of waiting-in-line or leisurely walking. Both "tasks" allow for MW, as they are not particularly demanding (Morley, 1998). It is very likely, therefore, that these tasks will not be interrupted by MW. Indeed, our interest in these cases goes beyond whether or not the tasks are interrupted. We can turn to how the writer and the painter, while they are mind-wandering, relate differently to the same circumstances. If the writers' mind is summoned toward writing, how are the grocery store items, the staff, or the people in line represented in the writer's mind? How is the park viewed, imagined, and explored in by the painter? Knowing something about the persons, their skills and interests, our questions can go beyond *whether they are disengaged*, and address *how they are engaged*. We can ask about how they might be differently observing, imagining, or thinking the same situation (Tateo, 2020).

Why such interests are rare in current MW research? One reason is that researchers are interested in general attributes of MW, thus recruiting participants without inquiring about their abilities or habits that relate to MW, including their artistic and technical skills. Because these characteristics differ across people, and because they would complicate the design of a study, attention to them would present researchers with further difficulty. Moreover, the findings of such complicated studies, precisely because of the attention given to individual tendencies, would likely not turn into general claims about all people. The participants are, thus, treated in a uniformed manner, regardless of how or why they mind-wander. They are treated with regard to what they all share in common, namely, a task that is typically given to them by the researchers. From the perspective of the researcher interested in MW, what is then available as the target of investigation is participants' possible performance in, or disengagement from, the task and any subsequent cost of MW on task performance. What remains as the target of investigation reflects the outcome of a series of decisions made prior to collecting any data (Valsiner, 2017). Such decisions give rise to research questions that are, at the same time, ambitious (since they inquire about *universal* properties of MW) and unambitious (since they exclude interesting psychological phenomena that require attention to persons).

Some attention to the type of task usually used in experimental studies of MW would be instructive. As a matter of convenience, it is generally preferable to use tasks that both enable the study of MW *and* increase the likelihood of its occurrence. If the task is highly interesting, the likelihood of disengaging from the task would be low (Silvia, 2008), which would not be desirable for a study of MW. One such simple and repetitive task is the so-called sustained attention to response task (SART; Robertson et al., 1997). Participants in this task perform a key-press response whenever they see a "go" stimulus and withhold responding whenever

they see a "no-go" stimulus. The "go" stimulus is presented more frequently than the "no-go" stimulus. For instance, in a task in which stimuli are drawn from the set of single-digit Arabic numerals (1–9), participants might be asked to withhold responding whenever they see "3" and respond when they see any other digit. SART is, therefore, a two-choice task, in which selecting a correct choice requires remembering the task rule and attending to the current stimulus. As such, MW can be reflected in incorrectly responding to a no-go stimulus.

There is, of course, more than one way to respond incorrectly on a no-go trial. Especially given that go trials are more frequent, the entire task could be approximated as a simple repetition task that consists only of "go" trials. According to the simple approximation of the SART, the instruction is: "Respond upon seeing *any* stimulus!". This approximation would be more efficient than the original task, though it occasionally leads to mistakes. Participants might make a mistake, without mind-wandering, if they are using the efficient approximation of the SART. It is possible that after adopting the task-approximation strategy, participants can more easily daydream (Forster & Lavie, 2009; Seli et al., 2016), but a subsequent disengagement from the task is not the same as the initial approximation of the task.

What might be taken as a sign of MW, therefore, might very well be a sign of engaging with alternative task rules. Likewise, expectation should be distinguished MW. Even those following the original task rules might occasionally expect, prior to seeing the next stimulus, that they will see a "go" stimulus. This expectation can also lead to error by reducing the decision threshold of responding. To address these possibilities, researchers have developed methods of distinguishing MW from changes in performance strategy (Seli et al., 2012, 2013b). These methods retain the spirit of the task-switching approach, because they are clearer about what it means to *not* mind-wandering (i.e., changing performance strategy) than what MW means.

Seli et al. (2013b, c) proposed an alternative to SART that does not include no-go trials. Participants respond to the beats of a metronome, attempting to keep their responses synchronous with the beats. The authors argued that deviations in RT can be used as a measure of MW. A possible problem with this solution is that removing the no-go trials makes the task more monotonous and predictable than the standard SART, which might in turn affect what is under investigation (Forster & Lavie, 2009; Seli et al., 2016; Zhao et al., 2013). In the metronome version of SART, MW is similarly interpreted as an insensitivity to, or disengagement from, task-related stimuli. In the standard SART, MW involves reduced insensitivity to the defining feature of the "no-go" stimulus, whereas in the metronome task, it involves reduced insensitivity to the rhythm (the repetitive rate of stimulus onset). One way of describing such insensitivity is to use the phrase "perceptual decoupling," which we ought to consider (Schooler et al., 2011; Smallwood & Schooler, 2006, 2015). We should pay particular attention to how perceptual decoupling fits within the task-switching approach to MW, emphasizing what the mind wanders *away* from.

In favor of the perceptual-decoupling view of MW, Weissman et al. (2006) found that increased response time, an implicit measure of MW, was associated with a decrease in visual-evoked activity in occipital areas. Other electrophysiological studies found a negative correlation between frequency of MW reports and

sensory-evoked P3 for both targets and distractors (Barron et al., 2011; Smallwood et al., 2008). Also consistent with the perceptual-decoupling view, Smilek et al. (2010) found a positive correlation between eyeblink rate prior to a trial and the likelihood of reporting MW. Smilek et al. (2010) reasoned that due to their effect on attenuating visual sensation, an increase in eyeblink could be a symptom of MW.

The limitation of the perceptual-decoupling view has to do with the type of tasks it presupposes, namely, tasks that require attention to some specified perceptual features. That is, for perceptual decoupling to mean disengagement from a task, the task must specify in advance the relevant features of the stimuli. Many tasks do not share these characteristics. When I am trying to commit a phone number to memory or calculate the number of days left until a deadline, I am attending to information that is perceptually absent, although I am not mind-wandering. Similarly, playing a game of chess involves attention both to perceptual objects and to plans, possible futures, tactics, and strategies that are not present on the board. Task engagement can, in many cases, narrow down attention to stimuli, because only a subset of what is perceptually available is relevant to the current activity (Bilalić et al., 2008; Eitam et al., 2013, 2015). Unless we limit ourselves to a particular type of task, the external-internal dichotomy does not map onto the distinction between being on-task and MW (Chun et al., 2011).

Another example can illustrate the limits of the perceptual-decoupling view. Imagine that we are instructed to look at a series of visual items and pay attention only to their shape (e.g., categorizing them as "square" or "circle"), even though the items vary in size, color, texture, and their accompanying sound. If we pay attention to colors, the sounds, while still keeping track of the shapes, are we perceptually less engaged with stimuli? It would be reasonable to regard attention to multiple features of an event as *more* perceptual engagement, compared with attention to a single feature of the same event. Even though we would recognize attention to irrelevant features as MW, we would also note that this instance of MW is associated with *more* engagement with the stimuli. In the well-known inattentional-blindness tasks, this would be the type of disengagement that can increase the likelihood of finding the "gorilla" (Simons & Chabris, 1999; see also Dreisbach, 2012). We should, therefore, qualify the perceptual-decoupling view. In tasks that require sustained attention to some task-relevant stimulus features, failure to sustain attention to those features would constitute MW. This circular description reveals that the perceptual-decoupling view is, in fact, less useful than it appears. It carries a view of task performance that tacitly identifies, in advance, MW with perceptual decoupling.

If MW cannot be defined as perceptual decoupling, how should it be defined? In general, the task-switching approach to MW maintains an obscure view of MW while tracking it with the help of (deviations from) task performance. How MW is defined in each study depends, to some extent, on the operational definition—which is communicated with the participants—within that study. More importantly, because MW is identified in distinction from task performance, the task-switching approach views MW as a unified set of phenomena. Consequently, given that MW is treated as one set of phenomena, we can begin searching for laws or lawlike

regularities, without a clear definition of MW. We might ask, "Is MW related to negative mood?" and "What do people think about during MW?" Pursuing such questions might result in taking contingent observations as general regularities (Smedslund, 2016), and expect replicability where replicability should not be expected. As Stawarczyk (2018) noted, what people think about during MW varies widely, ranging from positive to negative, self-related to other-related, and past-related to future-related. That is not to say that all these possibilities content is equally frequent, but frequency should not be confused with necessity. It might be possible that MW is frequently associated with negative mood (Killingsworth & Gilbert, 2010; Ruby et al., 2013), but such a finding reflects a fact that is historically and culturally contingent.

The instructions given to research participants about MW vary across studies. Weinstein (2018) reviewed 105 published articles and found 69 variations in their methods. Probes (e.g., "Where you mind-wandering just now?") differ with respect to the words used, the number of available options for response, which option is presented first, and so forth. The choice was binary in some studies (on-task vs. off-task), while other studies provided more than two options (on-task, task-related distraction, task-unrelated distraction, mind blank). When the term "mind-wandering" is used, experimenters and participants must come to some agreement about the meaning of MW, and the agreed-upon meaning might differ across studies. For example, Antrobus et al. (1970) instructed participants that feeling hungry during the experiment did not count as MW, though thinking about what to eat after the experiment did. Of course, avoiding a precise definition of MW and operating with an ambiguous concept of MW can also be agreed upon.

The instructions, including the working definition of MW shared by the researchers and their participants, as well as the features of the probe, might affect the frequency of MW reports. Weinstein et al. (2018) found that emphasizing on-task state ("Were you on task just now?"), as opposed to MW ("Was your mind-wandering just now?"), in the probe question, was associated with 10% decrease in MW reports. Seli et al. (2013a) found that MW reports increased with a longer delay between probes, though they interpreted this change as a change in decision criteria (i.e., the meaning of MW held by the participants), and not MW frequency per se. Robison et al. (2018) found no association between MW reports and the frequency of probe presentation, but they found a decrease in MW reports when the instructions distinguished between intentional and unintentional MW.

In addition to the instructions, task characteristics can also influence the frequency of MW. If the task is relatively simple, frequency of MW is thought to increase (Forster & Lavie, 2009; Seli et al., 2016). Motivation is another factor. Seli et al. (2017) compared MW reports across two conditions. In the "low-motivation" condition, participants received the standard instructions about how to perform the task. In the "high-motivation" condition, participants were told that performing accurately would allow them to leave the experiment earlier. MW reports were fewer in the high-motivation condition. Organization and coherence of the task is another factor that can affect MW frequency. For instance, Smallwood et al. (2003) found fewer MW reports, on average, when people read a list of words that belonged

to the same category, compared to when the words did not belong to the same category. Stated differently, weakly motivated tasks and disorganized tasks are effective tools for MW.

The correlations between MW and working-memory capacity should be considered in this context (McVay & Kane, 2009; Wiemers & Redick, 2019). The term "breakdown" is open to two different interpretations. First, it is possible that thinking about multiple goals is itself the "breakdown." According to this view, the breakdown occurs when the participant's mind begins to wander during task performance, regardless of any subsequent effect on task performance. Perhaps participants first disengage from the task because of their low WM capacity, after which they become susceptible to MW. Alternatively, it is possible that the breakdown arises *after* multiple goals have occupied working memory and that the breakdown is the inability to simultaneously pursue multiple goals. According to the second view, individuals with high working-memory capacity may mind-wander during the task, but their ability to think about multiple goals enables them to mind-wander without compromising task performance. Thus, low working-memory capacity might not make the onset of MW more probable, but instead increase the negative consequence of MW on performance.

Performance might suffer due to participants' inability to organize subtasks into a coherent whole (Smallwood et al., 2003). In fact, tasks that are used for estimating working-memory capacity include a task-switching component, requiring participants to keep track of multiple subtasks (Redick et al., 2012; Wiemers & Redick, 2019). This suggests that the measures of working-memory capacity might reflect, in part, participants' ability to be flexible in relation to multiple goals while at the same time persisting on a superordinate goal. According to both interpretations, individual differences in cognitive control cause differences in MW tendency, although the two interpretations characterize the causal connection differently. If measures of working-memory capacity cannot be clearly disentangled from measures of MW, any correlation between the two would be uninformative.

To summarize this section, the task-switching approach to MW begins with assigning participants with a specific task, which typically involves attention to a subset of available perceptual events and a clear stimulus-response mapping. These methods for the study of MW are themselves cognitive tools that limit the way researchers think about MW. The view of MW as task-switching is a consequence of the methods that take task performance (treated in an abstract and homogenous way for all participants) as their starting point. In particular, MW is believed to involve perceptual decoupling. This claim is difficult to justify in general, because many activities that involve an imaginative component might require perceptual decoupling (Tateo, 2020). Moreover, the task-switching approach maintains the impression that MW consists of a single set of phenomena (Gozli, 2019). This treatment of MW, which is a *decision* made in advance by the researchers, leads us to seek general laws or lawlike regularities about MW. Many of the findings reveal the unsurprising role of the methods for studying MW (e.g., tasks that are uninteresting, disorganized, and unmotivated are more likely to result in MW), rather than task-independent attributes of MW.

Mind-Wandering as Style

A second approach characterizes MW in terms of a style, rather than as a special type of task (to which the person would "switch"). Let me admit at the very outset that the purpose of this approach is *not* providing a unified definition of all kinds of MW that experimental psychologists have included in the category. Neither do I wish to defend the idea that MW is associated with unique, necessary, and sufficient attributes. Nevertheless, the style-based approach can, in my view, accomplish the following. First, it accounts for the fact that some phenomena are categorized as MW. Second, it identifies the essential feature of an important subset of MW phenomena without relying on task performance. Third, it clears the way for making further distinctions between phenomena, as well as using other (clearer) words for describing related phenomena. Given that I am addressing an existing field of research, I continue using the term MW, writing *as if* there is an identifiable referent for the term.

To begin, we can recognize that MW might not necessarily involve disengaging from the current task but involve a change in how the task is performed. What would happen, for instance, if you begin mind-wandering during a conversation? Could we conceive that you can mind-wander without leaving the conversation? If so, then your contributions to the conversation would become scattered, less relevant to what was said previously, or perhaps your contributions would cease to be parts of a predictable thread of thought. You might also pay attention differently to what your conversation partner says. Despite all these changes, you can still remain in the conversation. The distinction is similar to that between walking in a straight path toward a clear destination and walking around without a clear direction. We might even say that the practice of "free association" (i.e., speaking whatever comes to mind with honesty, without pause, or correction; e.g., Freud, 2003/1940) is an attempt to combine speaking with MW.

A description of the style-based approach to MW requires two additional theoretical pieces. First, we need to recognize the hierarchical organization of goals (Gozli, 2019; Gozli & Dolcini, 2018; Powers, 1998). Relatively subordinate goals (e.g., pressing a button on a "go" trial of the standard SART) serve relatively superordinate goal (e.g., continuing the task until completion). Second, we need to recognize the distinction between persistence and flexibility developed by researchers interested in cognitive control (Dreisbach & Fröber, 2018; Goschke, 2013; Hommel, 2015; see also Hills et al., 2015). "Persistence" describes a state in which the selected goal or action is strongly activated and competing alternatives are strongly inhibited. By contrast, "flexibility" describes a state in which the selected goal or action is weakly activated and competing alternatives are weakly inhibited.

Persistence and flexibility are styles of performance. Although MW cannot be associated with general flexibility (without regard to the distinction between super- and subordinate goals), flexibility at relatively superordinate levels of a goal hierarchy can be associated with MW. For instance, in the standard SART, flexibility at the subordinate level enables switching between "go" and "no-go" responses and

should not be equated with MW. Flexibility at the relatively superordinate level, at which task goals compete with task-unrelated goals, can be associated with MW. Similarly, we can distinguish errors that result from too much persistence at the subordinate level (what I previously described as task approximation), without calling them MW. MW is here conceived not in terms of disengaging from the task, but in terms of the weakening of the currently dominant superordinate goal. Compared to the "on-task" state, in which the subordinate goals are set up in an antagonistic relation to each other (task requires performing either "action 1" or "action 2", but not both), MW would characterized by a decrease in the antagonistic relation between the subordinate goals, meaning that activating "action 1" would not necessarily involve inhibiting "action 2" (Goschke, 2013; Hommel, 2015).

It would be helpful to compare stimulus-response tasks (e.g., SART), commonly used in experimental research, with a slightly more complex activity. Imagine that I am playing a friendly game of chess against Peter and that nobody else is observing our game. My goal in this situation is to win the game or practice/improve my game. Now imagine a second scenario, in which I play a game against Peter in order to impress Sally. The superordinate goal, winning-the-game, is not the same goal as winning-to-impress-Sally. We could describe the winning-to-impress goal as a "distraction" or as an object of MW. The simplistic (task-switching) approach would divide my engagement with the situation into two mutually exclusive states: (a) focused on winning the game and (b) focused on impressing Sally.

The style-based approach, on the other hand, considers the influence of concurrent goals on each other, and the possibility that new states might emerge as a result. If I am simply immersed in the game, driven to win the game, I might adopt a boring and cautious style of play that leads to victory. If I am "distracted" by the goal of impressing Sally, I might play a daring tactical combination that wins *and* is impressive. The cognitive flexibility entailed by MW can, therefore, result in disengagement from an activity (distraction from the game), switching to a different activity (imagining how good it would to win Sally's affection, albeit with the delusional assumption that winning a game of chess could have such an effect!), or modifying the first goal to accommodate the second goal (playing in a more daring and interesting way). The third outcome is possible in tasks that are open to modification. Experimental tasks, with pre-specified and usually nonnegotiable goals, cannot be modified in this way, which is why the task-switching approach appears as the only available way to theorize about MW.

The style-based approach to MW does not presuppose a difference between goals related to the current task and goals unrelated to the task. There is no inherent difference between the goals that are relevant to the current task and those that happen to be irrelevant to it. Similarly, the content of MW (e.g., self-related themes) is not inherently different from what we think about during task performance. One could perform self-related tasks as much as one can daydream about self-related themes. Thus, MW is not equated with disengagement from task. In a task-switching paradigm, where participants are required to regularly switch between Task 1 and Task 2, we would not regard switching from Task 1 to Task 2 as the participant's mind-wandering away from Task 1, even though MW and task-switching might

depend on the same underlying capacities (Baird et al., 2012; Lu et al., 2017). Similar to explorative behavior, MW could involve weakening of the current superordinate goal or the adoption of a more flexible relation to the goal (Gozli, 2019; Gozli & Dolcini, 2018). One might not begin mind-wandering only after one takes note of a task-unrelated goal; rather, one might take note of a task-unrelated goal because, and *after*, one has already entered a flexible mode of task performance.

Identifying MW with a style leads to asking whether some tasks, due to their structure, are more likely to encourage MW. Flexibility is a requirement in task-switching (Lu et al., 2017), when the stimuli we are presented with do not constitute a coherent whole (Smallwood et al., 2003), when the stimuli are ambiguous (Murray, 1938), or when we are asked to list as many different ways of categorizing an object as we can (Chrysikou, 2006; Hommel, 2015). By requiring flexibility, these tasks might promote MW *away* from tasks. In such cases, the task-switching approach cannot clearly distinguish between off-task (MW) and on-task (performance) states, because the structure of the task itself involves the same style of performance that is present during MW. By contrast, the style-based approach can identify MW independently of whether someone is in an off- or on-task state. That is because, to repeat, certain tasks (and tools) require MW.

Contrary to the perceptual-decoupling interpretation, MW can be associated with a more complex way of attending to stimuli. A brainstorming session or in a disorganized conversation between two improvisational actors is, in many ways, more complex than a conversation that stays on a narrow course. In an improvised conversation, or during an exploratory walk, each instance offers several different paths for further exploration. Similarly, in a metronome task, if I pay attention to the intensity of the sound of the metronome, and how far the metronome is from where I am sitting, rather than focusing on the rhythm, I am going from a superficial perception of the stimulus to a richer perception, although I would be covertly disengaging from the task and falling out of synchrony with the rhythm. In contrast to repetitive tasks that require sustained attention to particular features are the so-called divergent-thinking tasks, which require a scattered search for many categories that can be applied to a given stimulus (Guilford, 1967). We might also include among these the projective tasks that involve free-associating with reference to an ambiguous image (Murray, 1938). These tasks blur the boundary between performance and MW (Singer, 1981, p. 51).

You might think about counterexamples that do contradict the style-based approach. For example, being distracted by thoughts about an assignment during a lecture should presumably be categorized as MW, at least according to the task-switching approach, even when the thoughts are neither flexible nor explorative. What the task-switching approach labels as MW can include focused engagement, in thought or imagination, with something that is irrelevant to the nominal task. It is worth asking: What perspective demands the student's attention to always be devoted to the lecture? And can this perspective meaningfully label the inattention to the lecture "MW?" If we let go of that perspective (e.g., of the educational authority; norms of classroom behavior), do we have a psychological reason for labeling

the inattention "MW?" On the other hand, the style-based approach does not demand such an inattention to be called "MW."

Even though I believe inattention and MW should be distinguished as distinct categories, there might be a reason for identifying inattention during a lecture as MW. Importantly, this reasoning differs from the task-switching approach. The reason for calling such an inattention "MW" is because it involves simultaneous engagement with multiple distinct perspectives. In an important study of daydreaming, Morley (1998) identified three perspectives involved in his participants' reports: (1) the director and spectator of the daydream, (2) the participant in the daydream, and (3) the person left behind in reality. The three positions can vary in salience. A vivid daydream, (1) and (3) are in the margins of experience, while (2) comes to the foreground. Moreover, salience in (1) is associated with a feeling of control over the imagined world. The reason why daydreaming is an instance of MW is not merely because daydreaming is directed at an absent situation. Rather, it is because daydreaming involves multiple perspectives. These perspectives require flexibility both for maintaining them at the same time and for shifting emphasis among them. Thus, inattention during a lecture might be called MW, not because of what the student is paying attention to, but because of how the student is maintaining multiple perspectives at the same time and shifting her focus among those perspectives.

The style-based approach is consistent with some of the intuitive decisions made by experimental researchers. Recall the distinction between feeling hungry (not MW) and thinking of what one would like to eat for lunch (MW), during an experimental task (Antrobus et al., 1970). The distinction agrees with Morley's (1998) analyses, who identified daydreams of staging of a mood or desire (see also Freud, 1989/1907 and Žižek 1991). To become a daydream, the desire and its imagined fulfillment must be "staged." This approach can explain the intuitive appeal of the "perceptual decoupling" idea. To mentally stage a desire, one has to disengage from what is perceptually present, especially when what is perceptually present is unrelated to one's desire. Thus, we recognize the possibility of perceptual decoupling without seeing it as a necessary feature of daydreaming. The style-based approach also opens the possibility of examining how MW can evolve transform time (Dario & Tateo, 2019). People can achieve a more reflective and self-aware relation to their MW, for instance, by enacting scenarios in which a desire is conceived in concrete terms (Morley, 1998). Of course, the *possibility* of reflection and self-awareness does not guarantee that we always reach these states in relation to our daydreams. But even when it lacks reflective self-awareness, a daydream offers an opportunity for further explication and reflective awareness.

By providing a direct description of MW, the style-based approach can more easily recognize that MW does not have to represent a disrupted activity (Dario & Tateo, 2019). Neither does it have to accompany negative affect (Stawarczyk, 2018). If people believe that the object of their MW, including something they desire, is utterly unavailable, then they may experience a negative feeling. On the other hand, if they believe the desire is soon to be fulfilled, they may experience a positive feeling. Accordingly, we do not need two distinct types of MW that correspond to positive and negative affect. Likewise, we can argue that reflective and unreflective

daydreaming correspond not to two distinct types of phenomena, but to variations in relative dominance of different perspectives involved in some instances of MW (Morley, 1998). Reflective MW can be characterized by the dominance of the "spectator" perspective, whereas an unreflective MW can be characterized by the relative dominance of the "participant" perspective. Again, we do not immediately have to assume two distinct types of MW that correspond to reflective and unreflective states when we can attribute the differences to features of a multidimensional concept.

Throughout the chapter, I have emphasized how the tasks/methods for studying MW influence reasoning about MW and the possible conclusions that become available. Perceptual decoupling was an example of an idea that results from a bias built into the methods of research. Returning to the idea of *tools for MW*, let us consider the following task. Participants are sitting in front of a movie screen, on which a movie about dolphins is being shown. While their eyes are directed at the screen, they are instructed to completely ignore the movie and, instead, to imagine playing a game of golf. They are instructed to imagine the golf game in as much detail as possible. Successful performance in this task requires perceptual decoupling from the dolphin movie. We might even consider attention to the dolphins as MW in this context. In this example, we could describe the movie as a "distraction" or as a tool for mind-wandering. This tool could be used differently by different participants. One person might unreflectively become immersed in the movie, disengaging from the task. Another participant might deliberately imagine playing golf under water against a team of dolphins, in an attempt to combine the movie with the task requirement.

MW tools might include familiar objects and artifacts, such as a smartphone or a song, although they do not have to be familiar. An opaque piece of art or an unfamiliar piece of music can become entangled with our ongoing thoughts and feelings, taking us in directions we would not have taken without them. Characterizing MW in terms of perceptual decoupling, or in terms of attention to "internal" and private events, neglects instances where MW is enabled, triggered, and guided by perception of external events. In discussing his experience, Singer (1981) referred to his use of pen and paper for daydreams that had elaborate details (e.g., a series of baseball games). What if the daydreamer encounters the notes from a previous daydream? Will he be more likely to initiate another episode of daydreaming? With the increasing role of technology in our lives, it is worth considering in what ways a smartphone can become a tool for MW.

Considering the role and availability of technology might result in different styles of inquiry in MW research. For instance, we might ask whether students who do study near their smartphones have daydreams that differ in quality from students who study away from their smartphones. That could be because smartphones represent access to domains of experience that would be inaccessible without them. Rosen et al. (2013), who observed students studying for an exam, found that students spent, on average, 65% of a brief (15-min) study session on social media. Would it be reasonable to describe such distractions as MW? If daydreaming is the enactment of a desire, it stands to reason that certain tools might facilitate it. Social

networking sites might provide the tools for MW about one's social status, social comparison, and relationships. We might also be able to control MW with the help of technologies designed for regulation of our attention (see Mrazek et al. 2012).

Conclusion

Without a direct approach to MW, the task-switching approach is vulnerable to making distinctions that are ultimately unhelpful to understanding what MW. That is because task performance is taken as the point of reference, against which MW is identified. For instance, Wang et al. (2018) identified two statistically dissociable individual traits that could be described as MW. These two traits were described as "habitual positive-thinking" and "habitual distractibility." Similarly, Kane et al. (2017) identified two types of MW, associated with inside-the-lab tasks and outside-the-lab activities. The first category was correlated with trait Neuroticism, whereas the second was correlated with trait Openness. Although these studies are informative, they do not address the common features of MW. Rather than showing that MW is a useful construct, they suggest that it does not correspond to an organized category of phenomena.

The very possibility of MW, or the fact that certain phenomena have been called MW, entails that two or more competing goals can be simultaneously active. The goal of completing an experiment, for instance, can be concurrent with the goal of minimizing effort, guessing the purpose of the experiment, or planning the rest of the day. When faced with a difficult task, participants might covertly adopt an approximation of the task rules that (a) allows them to be efficient and (b) results in occasional errors. Likewise, to test how well an experiment is designed, a participant might commit errors intentionally and test whether the experiment will provide any feedback. MW further indicates that tasks can be treated in more or less flexible ways. Participants might switch between the original form of the task and their own approximation of the task while occasionally daydreaming or reflecting on their boredom. The task-switching approach regards MW in terms of focus (succeeding vs. failing to maintain focus on task). The style-based approach, in addition, can regard MW in terms of multitasking (succeeding vs. failing to maintain multiple tasks at once).

We began with the idea of tools for MW, which helped blur the boundary between, on one hand, the mind and mental processes and, on the other hand, the tools and tasks that enable or facilitate the mental processes. I applied the idea of tools to research methods in MW, arguing that the dominant methods of research have severely limited the concept of MW, representing it primarily as a type of task-switching. In contrast, to the task-switching approach, I developed a style-based approach, which views MW in terms of a flexible relation to goals. When our thinking is not overly constrained by the standardized experimental tasks, with fixed goals and simple rules of performance, we can identify cases in which a flexible relation to multiple goals can result in the emergence of new goals (cf. Gozli &

Dolcini, 2018; Tateo, 2020). In general, therefore, research would benefit from considering MW, not only as a failure that happens to research participants but also as a persistent phenomenon that could run through a field of research, guiding and limiting its scope. Finally, I hope to have shown how the two approaches to MW reflect different paths for future research, particularly in relation to tools that enable and facilitate MW in scientific and educational contexts.

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