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Don't just think there, do something: A call for action in psychological science

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ABSTRACT

This paper challenges what seems to be a scientific axiom in prospective simulation and memory reconsolidation experiments, namely that projecting ourselves back into the past or forward into the future belongs exclusively to the category of a thought experiment. Using the clinical model of re- and pre-experiencing life episodes in psychodrama, the paper investigates, both conceptually and practically, a move from the imagining of doing to actual doing, from virtual, reproduced in-the-mind versions of experimentation to real, witnessed and executed experiments. Supporting evidence is provided, suggesting that this trend would evoke a unique plethora of neurological and psychological processes, relevant to the world outside the lab, without jeopardizing a *general* description of the phenomena. On the contrary, recognizing the primacy of the action and interaction would help contextualize cognitive activity, and thus assist scientists and practitioners to achieve their intended goals.

Introduction

Cognitive psychology has traditionally been interested in the investigation of internal mental states. Cognitive neuroscience has provided evidence of physiological brain states that directly correlate with these mental states, thus providing support for the central goal of cognitive psychology. This information processing approach to cognitive functioning led cognitive psychologists to run psychological experiments, with the goal of gathering information related to how the human mind takes in, processes, and acts upon inputs received from the outside world (Braisby & Gellatly, 2012; Gerrig & Zimbardo, 2002).

The main idea of this paper is that, in many cases, a confusion between the goal and the means has occurred, such that psychological experiments have largely been limited to "internal" or "in the head" *methodology*, excluding the crucial role of action techniques. By this I mean that the implicit – and sometimes explicit – instructions given to subjects in psychological experiments are "imagine", "think" or "consider", but seldom "show", "do" or "act". And, for reasons elaborated below, I do not consider a reaction-time "click" or a gaze rotation "an action". This is not merely semantics. It goes deep into acknowledging that different states of mind are invoked by different experimental requirements (and vice versa). For example, imagining, recalling, watching and, generally sharing one's representations of a handshake is fundamentally different from actually experiencing a handshake. As "experiencing" is also an internal representation, the role of actions is critical not only in probing overt behavioral patterns, but also to patterns of representations that have more typically been at the center of psychological science. More specifically, I suggest that using the instruction "show me how" rather than "tell me why/what" in psychological research, would necessarily evoke a unique plethora of neurological and psychological processes, more relevant to the world outside the lab, *without* jeopardizing the generality of phenomena under study.

To illustrate this *action* approach to science, I will draw upon a rapidly growing area of memory research in both psychology and neuroscience: the ability to simulate alternate pasts and hypothetical futures. I chose this subject for two reasons: First, it seems an axiom that projecting ourselves back into the past or forward into the future belongs exclusively to the category of a thought experiment (*Gedankenexperiment*), a widely used element of scientific theorizing since Galileo. Refuting *this* truism may help substantiate the claim and attract further assessments. And second, because of the relevance of the simulation capacity not only to scientists but also to clinical practitioners. Episodic simulation holds the potential for memory updating and reconstructive experiences and, as such, could be used in both therapeutic and non-therapeutic settings.

The move from the imagining of doing to actual doing, from virtual, reproduced in-the-mind versions of experimentation to real, witnessed and executed memory experiments, is presented here using the model of re- and pre-experiencing life episodes in psychodrama, a particular instance of action methods that serves

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to advance psychological growth and well-being. The interface between psychodrama clinical method and approach, and the scientific exploration of episodic simulation, can develop into a constructive, whilst surprising, synergy. The article thus follows the tradition of combining science and social practice (Argyris, Putnam, & McLain Smith, 1985; Stricker, 1992).

Concepts and criteria

Memory is neither a unitary process nor does it serve a single function. It is a general and insufficient concept that requires consideration of elements such as types and phases. Similarly, action methods (e.g., psychodrama), is an umbrella term that may carry with it some misleading associations, especially to people who are inexperienced with action groups. I will therefore first define several key concepts that are important for the remainder of the article and will be later elaborated.

Declarative memory is the system that provides the basis for conscious recollection of facts (semantic) and events (episodic). *Episodic memory* refers to the capacity to recollect past events and happenings in their particular spatial and temporal contexts. *Semantic memory* refers to the capacity for recollecting facts and general knowledge about the world. In contrast to the former, the latter is "detached from its context of acquisition and devoid of any subjective sense of mental time travel" (Renoult, Davidson, Palombo, Moscovitch, & Levine, 2012, p. 550). According to this model, these memory types depend on consciousness and an intact hippocampus. Conventionally, it is distinguished from *nondeclarative memory*, which is a collection of memory faculties that do not require conscious awareness for retrieval (e.g., procedural memory, priming and classical conditioning). Despite serving as a prominent model, it is incomplete (cf. Renoult et al., 2012) and memory systems may be distinguished based on other processes as well (Henke, 2010).

Memory consolidation refers to the progressive post-acquisition stabilization of the memory trace in which a memory item or event – of any sort – is transformed into a long-term form. The traditional *consolidation hypothesis* implied that, for any item in long-term memory, consolidation starts and ends just once. This view was challenged when researchers reported that the presentation of a reminder cue rendered a seemingly consolidated memory item labile to amnesic agents (Lewis, 1969; Misanin, Miller, & Lewis, 1968). This reactivation-induced reopening of a consolidation-like window challenged the unidirectional memory maturation view (Spear, 1973) and was termed *reconsolidation* (Przybyslawski & Sara, 1997; Rodriguez, Phillips, Rodriguez, & Martinez, 1993). This process is assumed to transiently destabilize long-term memory, allowing memory updating.

Research from diverse domains has revealed that memory plays an important role in the mental simulation of future events. For example, many brain regions that support memory for past events are similarly involved in the simulation of possible future events (e.g., Schacter, Addis, & Buckner, 2007; Schacter et al., 2012; Szpunar, Watson, & McDermott, 2007). *Prospective simulation* or *future event simulation* refers to imaginative constructions of hypothetical events or scenarios that might occur in one's personal future (Schacter & Addis, 2009; Schacter, Addis, & Buckner, 2008a, 2008b). Although these studies focus on the idea that simulation is critical for envisaging possible future events, people also engage in simulations of present and past events, a point relevant to action methods.

Conceptually corresponding with episodic simulations and memory reconsolidation, *action methods* characteristically dramatize narrative by means of dialog and role reversal. Events, problems, other people, or parts of the self are represented concretely (externalized), and an action in space is initiated. To reiterate, the chief knowledge-producing tool in action methods is concretization or incarnation. The action may last a short time, may be group-centered rather than individual-centered, and may even be a simple illustration of a point, such as explaining or teaching something by having chairs or cushions representing two sides of a debate or two scientific theories. Mostly, there tends to be a bit of moving around and taking up of roles. The versatility and color of action make contrasts clearer, allow new points of view to emerge and can inject an exhilarating air of experimentation and play.

For many people, the term *psychodrama* has negative semantic connotations, suggesting madness, histrionic behavior, or excessive emotionality. Psychodrama is in fact a complex of tools for thinking and communicating about feelings and relationships. It adds the dimensions of space, action, and imagination to the more conventional "technology" of rational verbal discussion in therapy or education (Blatner, 2000). Settings that are wary of intensity are thus put off by this term. Yet, in organizations, classrooms and scientific research, where there is no commitment to classical psychodrama as such, and where indeed the processes of a full psychodrama would be inappropriate, the use of action *methods* such as role playing or behavioral simulations is suitable, because of their ability to be safe and low key.

The science of prospective simulations: some questions and caveats

Empirically, it is becoming increasingly clear that predicting the future and remembering the past may be more closely related than everyday experience might suggest (for an in-depth review, see Schacter, 2012). During the past several years, neuroimaging studies have revealed a marked overlap in the neural systems and processes that are engaged when people remember past events and imagine future events or novel scenes (e.g., Addis, Wong, & Schacter, 2007; Szpunar et al., 2007), and behavioral studies have documented striking similarities in the corresponding cognitive processes (e.g., Addis, Wong, & Schacter, 2008; D'Argembeau & Van der Linden, 2005). This research shows that episodic memory supports the construction of future events by extracting and recombining stored information into a simulation of a novel event. In a typical "prospective simulation" experiment, participants are asked to recall personal episodic events and, a few days later, are induced to engage in a recombination process. The process involves imagining future events for a few seconds by experimentally recombining details that were randomly selected by the experimenter from the participants' own reported past events. In spite of the randomness inherent in this experimental recombination procedure, subjects are nevertheless asked in some studies to rate their mental simulations on certain phenomenological measures, such as Emotionality and Personal Significance, which, as expected, are significantly lower than those ascribed to true past events (e.g., Addis, Pan, Vu, Laiser, & Schacter, 2009; Martin, Schacter, Corballis, & Addis, 2011; Sharot, Riccardi, Raio, & Phelps, 2007; Van Boven & Ashworth, 2007).

This paradigm represents many simulation experiments that are limited to *imaginative* or *mental* representations and do not include behavioral or in-action performances. Schacter et al. (2008a, 2008b) explicitly refer to "*imaginative* constructions of hypothetical events or scenarios" and emphasize using the simulation concept interchangeably with the more general notions of "thought" or "thinking" (p. 42). A broader conception of simulation is found in research exploring the "sameness" hypothesis, postulating that conscious thinking reflects the simulation of perception and action (Barsalou, 1999, 2003; Hesslow, 2002; for a review see Decety & Grèzes, 2006). For example, Hesslow (2002) contends that