



The paradox of fiction: Emotional response toward fiction and the modulatory role of self-relevance



Marco Sperduti ^{a,b,*}, Margherita Arcangeli ^{c,1}, Dominique Makowski ^{a,b}, Prany Wantzen ^{a,b}, Tiziana Zalla ^c, Stéphane Lemaire ^d, Jérôme Dokic ^c, Jérôme Pelletier ^{c,e}, Pascale Piolino ^{a,b,f}

^a Paris Descartes University, Sorbonne Paris Cité, Institute of Psychology, Memory and Cognition Laboratory, Boulogne Billancourt, France

^b INSERM UMR S894, Center for Psychiatry and Neurosciences, Paris, France

^c Institut Jean Nicod (CNRS-EHESS-ENS), UMR 8129 Ecole Normale Supérieure, Paris, France

^d Université de Rennes 1, Rennes, France

^e Ecole des Haute Etudes en Sciences Sociales (EHESS), Paris, France

^f Institut Universitaire de France (IUF), France

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ABSTRACT

For over forty years, philosophers have struggled with the “paradox of fiction”, which is the issue of how we can get emotionally involved with fictional characters and events. The few neuroscientific studies investigating the distinction between the processing of real and fictional entities have evidenced that midline cortical structures and lateral fronto-parietal regions are more engaged for real and fictional entities, respectively. Interestingly, the former network is engaged in autobiographical memory retrieval and self-reference, processes that are known to boost emotional reactivity, while the latter underpins emotion regulation. Thus, a possible modulation of the emotional response according to the nature (real or fictional) of the stimulus is conceivable. To test this hypothesis, we presented short emotional (negative and positive) and neutral video as fictional or real. For negative material, we found that subjective emotional experience, but not physiological arousal measured by electrodermal activity, was reduced in the fictional condition. Moreover, the amount of personal memories linked to the scenes counteracted this effect boosting the subjective emotional response. On the contrary, personal memories elicited by the scenes, but not fiction, modulate the emotional response for positive material. These results suggest that when a stimulus triggers a personal memory, the emotional response is less prone to be modulated by contextual factors, and suggest that personal engagement could be responsible for emotional reaction toward fiction. We discuss these results in the emotion regulation framework and underline their implications in informing theoretical accounts of emotion in the neuroscientific domain and the philosophical debate on the paradox of emotional response to fiction.

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1. Introduction

Fictions of all kinds (e.g., novels, movies) generate strong emotional experiences in large audiences. For example, when reading *Anna Karenina* one may feel pity toward Anna. However, it seems that emotions toward fiction and emotions toward real-life events are not on a par. The former differ from the latter in at least three respects. First, they do not result in the full range of behaviours that emotions toward real-life people and events produce. For instance, in watching a scary movie, though we feel fear, we do not usually panic and run out of the cinema. Second, we lack obligations toward fictional characters and

events. Arguably we do not feel any motivation to help Anna. Third, emotions triggered by fictions are directed toward characters and events that do not exist. These differences might lead to think that our affective responses toward fictional characters and events cannot be properly classified as emotions (e.g., Walton, 1978, 1990).

For over forty years, philosophers have struggled with the “paradox of fiction”, which is the issue of how we can get emotionally involved with fictional characters and events (the explicit formulation of the paradox is due to Radford, 1975; Weston, 1975; Walton, 1978). Typically this paradox has been described as an inconsistent triad (see, among others, Gendler Szabó & Kovakovich, 2006): (a) response condition (e.g., I feel genuine pity toward Anna Karenina), (b) belief condition (e.g., I believe that Anna Karenina is a fictional character), (c) coordination condition (e.g., in order to feel a genuine emotion one should not believe that the object of the relevant emotion is fictional). Philosophers have tried to solve the paradox mainly by rejecting either (a), (e.g., Radford, 1975; Walton, 1978, 1990; Charlton, 1984; Neill, 1991; Siatela, 1994; Hartz,

* Corresponding author at: UMR S894, Laboratoire Mémoire et Cognition, Centre de Psychiatrie et Neurosciences, Université Paris Descartes, 2 ter rue d'Alesia, 75014 Paris, France.

E-mail address: marcosperduti@yahoo.it (M. Sperduti).

¹ M.S. and M.A. are co-first authors.

1999; Zemach, 2003) or (c) (e.g., Carroll, 1990, 2010; Moran, 1994; Gaut, 2007).

A recent turn in the philosophical debate exploits neuropsychological data in order to address the paradox. Authors following this approach (e.g., Gendler Szabó & Kovakovich, 2006; Weinberg & Meskin, 2006) take for granted that our emotional reactions to fictions are phenomenologically and physically robust, and are primarily concerned with what grounds them, more than with rejecting either (a) or (c). Moreover, their analyses are based on studies not directly focused on emotional reactions to fictions (e.g., studies on emotions in practical reasoning, research on the cognitive architecture of imagination). Our work fits in this line of research, by proposing an experimental study that *directly* assesses this issue. Our hypothesis is that even if emotions toward fiction can be classified as genuine, the aforementioned peculiar aspects would result in a phenomenological/subjective difference.

Besides emotional processing, there are a handful of neuroscientific studies about the distinction between real and fictional events. These studies reported that real characters or events described as such engage to a greater extent cortical midline structures, especially the ventromedial prefrontal cortex (Abraham, von Cramon, & Schubotz, 2008; Han, Jiang, Humphreys, Zhou, & Cai, 2005), while fiction recruits lateral prefrontal cortex and anterior cingulate cortex (Abraham et al., 2008; Altmann et al., 2014; Metz-Lutz, Bressan, Heider, & Otzenberger, 2010). The first set of regions is linked to autobiographical memory and self-referential processing (Martinelli, Sperduti, & Piolino, 2013; Northoff et al., 2006) that, in turn, has been shown to boost emotional response (Herbert, Pauli, & Herbert, 2010; Herbert, Herbert, & Pauli, 2011; Fields & Kuperberg, 2012). The latter underpins cognitive control and emotion regulation (Hermann et al., 2009; Ochsner and Gross, 2005; Ochsner, Silvers, & Buhle, 2012), in particular emotional down-regulation (for a recent meta-analysis see Buhle et al., 2014).

These findings strongly suggest that contextual information about the nature (real or fictional) of an event could influence the related emotional response. Nevertheless, to our knowledge there are only two studies that tried to directly investigate this possibility. Goldstein (2009) did not report any difference in subjective rating of sadness and anxiety between films that were presented either as based on real or fictional stories. However, participants that have experienced in their lives an event similar to that experienced by the protagonist of the clip (self-relevance) scored the films as sadder and more anxious, independently of the nature of the clip. On the contrary, LaMarre and Landreville (2009) showed that participants felt guiltier, but no difference was evident for disgust rating, after a documentary compared to a fictional film of the same historical fact (e.g., the Rwanda genocide).

Even if these results give some interesting information about the modulation of emotion by the fictional context, several methodological issues hinder clear conclusions. First, both studies only employed subjective self-report of emotion. Second, in the study of Goldstein (2009) the manipulation of reality could not have been effective. Indeed, while the scenes were presented as based on real or invented facts, they had clear fictional features, since they were extracted from popular films (e.g., Kramer vs. Kramer, 1979), and this could have led subjects to ignore the nature of the scene. Concerning LaMarre and Landreville (2009)'s study, it is not clear if the difference reported is due to the nature of the stimulus (documentary or film) or just to a difference in the stimulus itself.

The aim of the present work was twofold: to the one hand, we wanted to investigate the modulation of the emotional response by the nature of stimulus (real or fictional) with a rigorous methodological approach. To the other hand, we aimed at understanding the impact of self-relevance on the emotional response, and the interaction between the two factors. To this end we used pre-validated emotional videos that were presented either as real or fictional. We recorded both the subjective rating of emotional response (intensity and valence), and an objective measure of autonomic arousal, the electrodermal activity (EDA). The rationale of this choice was that EDA is considered as a

good indicator of the arousal dimension of emotions, and it has been reported to correlate with subjective rating of emotional arousal (Sequeira, Hot, Silvert, & Delplanque, 2009). Moreover, we asked subjects to indicate to what extent each scene evoked a personal memory.

Our two main hypotheses, based on the aforementioned studies were: 1) a diminished emotional responses elicited by scenes presented as fictional compared to real scenes, due to a down regulation in the former condition, and 2) a greater intensity in the emotional responses for scenes associated to personal memories regardless of fictional and real scenes.

2. Materials and methods

2.1. Subjects

Twenty-nine healthy young volunteers (20 females; mean age 21.97 ± 2.44 years) participated in the study. All participants took part in the experiment after signing an informed written consent in accordance with the declaration of Helsinki and the local ethics committee of the Paris Descartes University.

2.2. Procedure

The study took place in a quiet experimental room whose temperature was kept at about 24 degrees. Since all the scenes were very realistic we made up a story to present the scenes either as real or fictional. Participants were explained that they would see a sequence of short videos, the content of which could be either real (documentary or amateur video) or fictional (mocumentary – films depicting fictional events as real and shot in a documentary style). All subjects were asked to read the French definition of “mocumentary” on Wikipedia (http://fr.wikipedia.org/wiki/Faux_documentaire) and were given two examples of famous “mokumentaries”: The Blair Witch Project (1999) and Paranormal Activity (2007).

The experiment was divided in two phases. In the first phase we presented 36 scenes in 4 blocks of 9 scenes (3 negative, 3 positive, 3 neutral). Scenes were extracted from films, documentaries, YouTube, and private *amateur* videos. The criteria for selecting the videos were the following: I) color video, II) containing at least one human character, III) not containing evident camera movements or cuts, IV) having a plausible and realistic content, V) emotion should be conveyed by the global context of the scene and not by specific details (e.g., facial expression). To this end we avoided scenes containing “close up”. The rationale of these criteria was that we wanted a homogeneous material (criteria I and II), that would be perceived as realistic (criteria III and IV), since we reasoned that realistic scenes could be presented as fictional, but the opposite would be more difficult. Finally, we would avoid automatic and fast emotional reaction prompted by emotional expression of faces (e.g., Tamietto et al., 2009; criterion V). All videos were selected by the agreement of two among the authors (M.S., and M.A.). Audio was removed from all scenes. All selected scenes were previously validated on an independent sample (detailed information about the validation and the selection of the experimental material see Supplementary material 1). The final 36 scenes were selected based on this preliminary validation. The scene had a mean duration of 4.61 s (range 3.48–5.99 s) for negative, 4.68 s (range 3.44–5.30 s) for positive, and 4.39 (range 3.28–5.32 s) for neutral scenes. The duration of the scenes did not differ between the three valences ($F(2,33) = 0.67$, $p > 0.05$, $\eta^2_p = 0.04$). For an example of one scene for each valence see Supplementary material 2–4.

Each block was preceded by a word cue (FICTION or REAL) indicating the “nature” of the scenes in the block. The presentation of the scenes in the two conditions (fiction and real) was counterbalanced among subjects, as well as the order of blocks (i.e., some subjects saw a “real” block first and others a “fictional” block first). The two real and two fictional blocks were alternated. Presentation of the scenes in each block

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