

Narrative and social cognition: Bridging theory to neuroscientific evidence

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Abstract Narrative processing involves perspective-taking mechanisms that enable readers to infer characters' complex emotional and social experiences, drawing on their ability to understand others' thoughts and feelings. A growing body of research has investigated the relationship between narrative and social cognition, with particular attention to the impact of narrative exposure on social capabilities. This line of research suggests that engagement with narrative can positively influence abilities such as Theory of Mind and empathy. This paper explores this relationship through a twofold approach. First, it provides a critical overview of the main theoretical approaches addressing the psychological and neurocognitive mechanisms underlying narrative processing. Second, it aims to bridge theory and empirical evidence by discussing recent behavioral and neuroscientific studies that investigate which specific narrative features may modulate social cognition. In particular, we focus on a recent line of electroencephalographic research showing that both reading emotionally engaging narratives and writing introspective self-narratives can modulate neural responses to socio-emotional stimuli associated with the understanding of others' mental states. By highlighting the role of narrative in enhancing social cognition, this work points to potential implications for clinical practices, education, and overall well-being.

Keywords: narrative, social cognition, theory of mind (ToM), self-narrative, electroencephalogram (EEG)

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0. Introduction

Narrative serves as a constitutive element in the way individuals organize both their inner experiences and their interactions in social contexts. Likewise, social cognition encompasses a set of competences that are essential for navigating and sustaining social life. In recent years, a growing body of research has highlighted that exposure to narrative, whether grounded in fictional imagination or autobiographical introspection, can have a significant positive impact in enhancing cognitive and emotional processes underlying social cognition. On the one hand, fictional narratives facilitate the immersion of readers

in alternative worlds, fostering the interpretation of others' experiences through perspective-taking. On the other hand, self-narratives promote greater self-awareness, which may in turn facilitate a deeper understanding of others. Importantly, however, not all narratives seem to produce the same effects: factors such as the degree of narrative transportation elicited by fictional stories, the narrative perspective adopted, or the extent to which psychological information about characters is accessible can differently modulate social cognitive performance.

Against this background, the present article aims to examine the relationship between narrative and social cognition through a twofold approach. First, it offers an analysis of the main theoretical frameworks supporting the hypothesis of a close connection between these two domains, with particular emphasis on the neurocognitive mechanisms engaged during narrative processing. Second, it seeks to bridge theory and empirical evidence by discussing recent behavioral and neuroscientific studies that investigate the effects of narrative exposure on social cognition. Specifically, in the first part of the paper, we outline the theoretical reasons for considering narrative a powerful tool in shaping both individual well-being and social interaction, highlighting how the link between narrative and social cognition is grounded in theoretical arguments, empirical findings, and evolutionary considerations. We then distinguish between fictional narratives and self-narratives, reviewing recent behavioral studies suggesting that narrative engagement can enhance social cognitive abilities. Finally, in the last section, we present our own line of research employing electroencephalography (EEG) to address two main aims: first, to identify which specific narrative characteristics have the greatest impact on socio-cognitive processes; and second, to provide neurophysiological evidence of narrative-induced modulation effects on social cognition.

1. The power of stories

Narrative is not merely a source of entertainment or a cultural product; rather, it should be understood as a primary resource for representing internal and external experiences, one that is intrinsic to human nature. At a general level, narrative can be defined as a type of discourse characterized by a sequence of temporally and causally connected events (Genette 1980, Trabasso and Sperry 1985), driven by the goals and motivations of one or more agents (Bruner 1997). Conceived in this way, narrative structure functions as an organizing principle that allows events to be integrated into a unified and meaningful representation. The tendency to organize experience narratively appears to reflect a fundamental human disposition (Scholes et al. 1966). Notably, the impulse toward storytelling emerges before the full development of verbal skills. Across cultures, infants show a spontaneous attraction to structured sequences involving repetition, exaggeration, and surprise, and engage in early protoconversations with caregivers (Goleman 2006, Stern 1995). These early interactions can be regarded as the first window onto the narrative dimension of experience, a window through which individuals continue to engage with the world throughout their lifespan.

The hypothesis of humans as “storytelling animals” (Gottschall 2012) captures the dual function of narrative. On the one hand, narrative serves as a means for recounting personal or fictional events; on the other hand, it operates as a cognitive resource that guides individuals in interpreting experience by segmenting and organizing events into coherent stories (see, e.g., Walsh 2007). Cognitive processes thus provide the bridge between these two dimensions of narrative, understood both as the act of telling stories and as an internal mechanism of meaning construction. In this sense, research in cognitive narratology has increasingly emphasized that the processes enabling humans to produce and comprehend narrative worlds – and to experience them as if they were real – may

also contribute to the enhancement of cognitive and affective resources beyond imagination alone. Narratives, from this perspective, are not merely fictional worlds to be inhabited, but powerful tools for reconfiguring and reorganizing experience, with a profound impact on mental life, that is, on how individuals process and interpret the world.

Several lines of research support the idea of the pervasive power of narrative. In cognitive psychology, narrative is widely regarded as a constitutive mechanism in the construction of personal identity (e.g., Deriu et al. 2024). According to this view, identity is grounded in an autobiographical narrative that individuals construct about themselves, in interaction with the stories others tell about them. This narrative integrates salient life events with psychological states, organizing them into a coherent and unified plot (McAdams 2001, McLean et al. 2007). The role of narrative in shaping personal identity is well established, with evidence showing that changes in self-narration can lead to changes in self-perception, motivation, and agency (e.g., Nelson and Fivush 2004, Schechtman 2007). This close relationship is further corroborated by studies on clinical populations, which indicate that lower levels of narrative coherence are associated with certain psychopathological conditions, whereas higher levels tend to correlate with greater psychological well-being (e.g., Deriu et al. 2024, Mitchell et al. 2020, Vanden Poel and Hermans 2019).

Beyond its impact at the personal level, narrative also appears to play a significant role in fostering social competences and civic engagement. Empirical evidence suggests that individuals who regularly engage with narrative fiction are more likely to participate in social activities such as voting, volunteering, and charitable giving (Katz 2006). Importantly, this effect seems to be largely mediated by enhancements in socio-cognitive abilities, as narrative exposure facilitates perspective-taking and empathy, which are core components of social interaction. A growing number of studies report a strong association between narrative engagement and the development of social cognition skills (e.g., Bal and Veltkamp 2013, Peskin and Astington 2004), suggesting that greater immersion in narrative forms is linked to more advanced social competences. In the following sections, we examine this relationship in greater detail.

2. The relationship between narrative and social cognition

In recent years, a growing body of research has focused on the relationship between narrative and social competences, suggesting that engagement with narrative can positively affect social cognition. Social cognition refers to a multidimensional construct encompassing a set of interrelated processes and abilities that enable individuals to interpret and elaborate information about their own and others' experiences, and to produce appropriate behaviors in social interaction (De Jaegher et al. 2010, Frith and Frith 2008, Happé et al. 2017, Malle 2005). Among these capacities are affective empathy, defined as an emotional response to others' emotions (Dvash and Shamay-Tsoory 2014); cognitive empathy, understood as the ability to comprehend others' feelings without necessarily experiencing them (Walter 2012); and Theory of Mind (ToM), namely the capacity to attribute mental states such as beliefs, desires, and intentions to others in order to predict and interpret behaviors (Wellman et al. 2001).

In this paper, we use the term *social cognition* to refer broadly to the set of abilities that enable individuals to navigate social life and respond effectively in social contexts (e.g., Happé et al. 2017), with a specific focus on ToM. Two main theoretical models have been proposed to explain ToM. According to the so-called *theory-theory account*, ToM was originally conceptualized as a high-order representational capacity that enables mental state attribution through inferential processes commonly referred to as “mindreading”

(Baron-Cohen *et al.* 1985, Gopnik and Meltzoff 1997, Wimmer and Perner 1983). In this perspective, the ontogenetic development of mental state understanding unfolds through increasingly complex stages, progressing from a desire-perception framework to an advanced belief-desire model based on intentionality and epistemic states (Carruthers 1996, Wellman and Woolley 1990). However, more recent work has broadened this view by proposing that ToM encompasses a wider range of mental states, including perception, emotion, and intention (Carlson *et al.* 2013, Hughes and Leekam 2004, Tager-Flusberg 2001). This alternative perspective is captured by simulation theory, which posits that understanding others relies on lower-order and often implicit processes, whereby individuals internally simulate others' experiences (Gallese and Goldman 1998, Goldman 2006, Gordon 1995). From this standpoint, access to other's mind is achieved by projecting oneself into another's perspective, through simulation processes which support mental state attribution and behavioral prediction (e.g., Vogeley *et al.* 2001).

Recent neuroscientific evidence appears to support simulation-based accounts of social cognition. In particular, the discovery of the mirror neuron system (Gallese 2003, Gallese *et al.* 2007, Iacoboni 2008, Molenberghs *et al.* 2012, Rizzolatti and Craighero 2004) revealed overlapping neural activations during self- and other-related processing, spanning both lower- and higher-order cognitive operations. Due to their high temporal resolution, electrophysiological methods such as electroencephalography (EEG) have proven especially valuable in disentangling bottom-up and top-down processes involved in social cognition. Event-related potential (ERP) studies have shown that both ToM (e.g., Libsack *et al.* 2022, McCrackin and Itier 2021, Sabbagh *et al.* 2004, Tesar *et al.* 2020) and empathy (Fan and Han 2008, Mella *et al.* 2012) recruit early, automatic bottom-up processes, reflected in early ERP components (e.g., N100/N200, P200), as well as later, higher-level inferential processes, indexed by later components such as the P300 and late positivities (e.g., Coll 2018, Liu *et al.* 2009, Sabbagh *et al.* 2004).

A substantial body of empirical evidence has documented a close association between exposure to narratives and social cognitive abilities (Bal and Veltkamp 2013, Castano *et al.* 2020, Mar *et al.* 2009, Peskin and Astington 2004). Repeated engagement with narratives appears to enhance ToM and empathy, with positive effects observable from early childhood onward (e.g., Castano *et al.* 2020, Doddell-Feder and Tamir 2018, Kidd and Castano 2013, Mar *et al.* 2009, Zunshine 2022). Indeed, children who are more frequently exposed to narrative – particularly through listening to stories – tend to show an earlier development of naïve psychological abilities compared to their less-exposed peers. The interdependence between narrative and social cognition is supported by theoretical considerations, empirical findings, and evolutionary accounts.

From a theoretical standpoint, the nature of narrative itself provides a compelling explanation for this relationship. As narratives consist of temporally and causally linked events driven by agents' motivations, they necessarily convey both implicit and explicit information about characters' inner worlds, including thoughts, beliefs, emotions, and intentions (Dyer *et al.* 2000). Narrative processing therefore often requires perspective-taking in order to infer characters' goals and motivations, drawing on social cognitive resources (Adornetti *et al.* 2023, Ferretti 2022, Trabasso 2005). As emphasized by Mar (2018), a defining feature of narratives lies in their capacity to represent and evoke mental models of the social world. Because stories typically depict characters embedded in social contexts, they naturally activate social cognitive processes in readers and listeners. Moreover, as argued by Bruner (1991), narrative constitutes a mode of thought particularly suited to organizing social experience through folk psychology – that is, the culturally embedded frameworks used to attribute mental states and explain behavior. In this sense, the comprehension of social events is inherently narrative in nature.

Neuroimaging studies further support the link between narrative and social cognition by revealing partial overlap between the neural networks engaged during narrative comprehension and those involved in ToM tasks, independent of representational modality (e.g., Mason et al. 2008, Mason and Just 2009, Kuperberg *et al.* 2006). This network includes the dorsomedial prefrontal cortex, which appears to function as an executive hub remaining active throughout narrative processing, as well as temporo-parietal regions that may operate as a simulation system, generating predictive inferences to support the understanding of protagonists' intentions (Mason and Just 2009).

Finally, the impact of narrative on social cognition can be understood in light of its adaptive value. Evolutionary accounts suggest that narratives function as simulations of the social world, allowing individuals to rehearse complex social interactions in a low-risk context (Mar and Oatley 2008, Oatley 2016, Scalise-Sugiyama 2001). Because narratives typically require the interpretation of characters' inner lives, they may serve as training grounds for social understanding (Mar and Oatley 2008, Willems and Jacobs 2016). Moreover, narratives often elicit social and moral emotions, contributing to the regulation of behavior by stigmatizing antisocial actions and valorizing prosocial ones, thereby promoting cooperation within groups (Boyd 2008; Carroll 2015). In this respect, stories can induce regulatory emotions such as moral indignation in response to deception or manipulation, influence social attitudes (Djikic et al. 2009), and strengthen empathy, moral reasoning, and compassion (Bal and Veltkamp 2013, Gottschall 2012, Hogan 2003, Mar *et al.* 2009).

Overall, these theoretical and empirical findings converge in highlighting a robust association between narrative engagement and social cognition. They suggest that the perspective-taking processes involved in narrative comprehension may enhance social skills, and that greater immersion in narrative forms is associated with more developed social competences (Mar *et al.* 2006). However, narrative processing per se does not appear to be sufficient to explain these effects. In the following sections, we therefore examine studies investigating how specific features of two distinct narrative forms – fictional narratives and autobiographical self-narratives – differentially modulate social cognitive abilities.

2.1 Narrative as fictional worlds

Fictional narratives can be defined as imaginative constructions that represent temporally and causally structured events involving intentional agents, situated within scenarios that need not correspond to real-world facts (e.g., Bruner 1991, Mar and Oatley 2008). By inviting readers to engage with socially meaningful situations and to adopt perspectives different from their own, fictional narratives prompt sustained mental simulation of others' experiences. Interpreting the inner lives of fictional characters may intersect with readers' personal experiences, potentially leading to psychological changes, particularly when readers perceive similarities between themselves and the characters they encounter (Mathies 2020).

Importantly, however, not all fictional narratives appear to be equally effective in enhancing social-cognitive abilities. Rather, a growing body of research suggests that specific narrative features exert a stronger impact than others (e.g., Fong *et al.* 2013, Kidd and Castano 2013, Vaccaro *et al.* 2021), and that these effects may also depend on individual reader characteristics. In this regard, a study examining demographic variables, personality traits, and exposure to both fictional and non-fictional texts found that only exposure to literary fiction significantly predicted Theory of Mind performance. In contrast, engagement with non-narrative texts, such as essays, was even associated with lower levels of empathic ability (Fong *et al.* 2013). Along similar lines, Kidd and Castano

(2013) showed that reading literary fiction was associated with higher performance on both affective and cognitive ToM tasks compared to reading popular fiction, non-narrative texts, or not reading at all. Consistently, Mar *et al.* (2006) reported a positive relationship between individuals' familiarity with fiction and levels of affective empathy. These findings align with the view that fictional narratives are particularly effective in enhancing social cognition insofar as they immerse readers in simulations of characters' social experiences (Foroni and Mayr 2005, Hodson *et al.* 2009, Oatley 1999). Empirical evidence suggests that narrative reading is associated with increased empathy primarily when readers experience a high degree of emotional transportation and engage in vivid mental simulation of characters' thoughts, emotions, and social contexts (Bal and Veltkamp 2013, Vaccaro *et al.* 2021, Zunshine 2006). For example, Bal and Veltkamp (2013) found that empathy increased in participants who read a fictional story compared to those who read non-fictional texts, and that this effect was mediated by the degree of emotional engagement with the narrative. Taken together, these results indicate that mentalizing and empathic processes depend crucially on readers' capacity to immerse themselves in simulated social scenarios.

A key factor in fostering such immersive experiences is the narrative focus on characters' inner worlds. Nuanced depictions of subjective experiences – such as thoughts, emotions, and motivations – promote vivid mental simulation and facilitate a deeper connection with the narrative world (Kidd *et al.* 2016). The centrality of inner experience as a privileged dimension for understanding the relationship between narrative and social cognition thus applies not only to fictional narratives, but also to introspective and autobiographical forms of storytelling, which will be examined in the following section.

2.2 Narrative as introspective self-narrative

Beyond fictional narratives, narrative can also be approached from a first-person perspective through self-narrative, a form of introspective storytelling that plays a central role in personal meaning-making, the construction of life stories (Soroko and Majchrzak 2020), and the development of narrative identity (McAdams and McLean 2013). Self-narratives draw on internal processes accessible through introspection and can be, at least partially, externalized through verbal expression, for instance in the form of written autobiographical accounts (Soroko and Majchrzak 2020). Research has shown that self-narrative practices are associated not only with individual well-being, but also with social cognition and empathy, yielding measurable benefits at both psychological and clinical levels.

Behavioral studies on expressive and autobiographical writing have demonstrated that individuals who are regularly encouraged to write about emotionally significant experiences show improvements in both physical and mental health (Pennebaker 1997). These findings are further supported by work in the field of narrative medicine (Charon 2006), a clinical approach that treats patients' life stories as integral components of medical practice (Chen and Huang 2017). Within this framework, autobiographical writing and narrative reflection exercises appear to produce broad benefits, enhancing overall well-being as well as empathic abilities in both patients and healthcare professionals. Importantly, the positive effects of self-narrative on psychological well-being may, in turn, facilitate the capacity to establish empathic resonance with others, thereby improving the understanding of others' emotional and cognitive states (Altavilla *et al.* 2022).

In line with this view, Dimaggio *et al.* (2008) suggest that individuals who are better able to reflect upon and coherently recall personal life events are also more proficient in understanding others' thoughts and emotions. Converging evidence from studies on

healthy individuals (Kok and Singer 2017, Valk *et al.* 2017) and on individuals with depressive symptoms (Nejad *et al.* 2019) indicates that forms of introspective training – such as meditation – can induce functional and structural changes in brain regions associated with socio-emotional capacities, including empathy and compassion. These findings suggest that sustained engagement with introspective practices may enhance social cognitive processes by strengthening self-reflective and affective regulatory mechanisms.

Notwithstanding the growing body of evidence supporting the role of self-narratives in modulating empathy and ToM, several questions remain open. In particular, it is still unclear which specific features of introspective self-narratives – such as emotional depth, coherence, or perspective-taking – are most effective in driving these socio-cognitive benefits. Addressing these issues is crucial for bridging theoretical accounts of self-narrative with empirical and neuroscientific investigations.

3. Neuroscientific evidence from our studies

Although previous studies have provided important insights into the positive effects of both fictional and self-narratives on social cognition abilities, the overall picture remains inconclusive. A key limitation of earlier studies is that they have often focused on broad narrative dimensions, such as the literary quality or fictional status of texts, making it challenging to isolate which specific narrative features are responsible for modulating socio-cognitive functions (Eekhof *et al.* 2022, Wimmer *et al.* 2021). Addressing this issue requires a shift in focus toward the identification of fine-grained narrative characteristics that may contribute to the enhancement of social cognition.

Recently, a line of research has sought to address this gap by examining whether and how specific characteristics of different types of narratives modulate socio-cognitive processes, employing EEG to investigate the underlying neurophysiological mechanisms. Regarding fictional narratives, in a recent study we investigated whether the representation of a protagonist's inner life – presented in either a first-person or a third-person perspective – modulates brain activation during a ToM task and enhances performance in this ability (Altavilla *et al.* 2024). Indeed, while prior research has suggested that the representation of characters' inner world plays a pivotal role in narrative (e.g, Kidd and Castano 2013, Kidd *et al.* 2016), behavioral studies on this topic have yielded mixed results (Creer *et al.* 2020, Samur *et al.* 2021, Wimmer *et al.* 2021). In our EEG study (Altavilla *et al.* 2024), fifty participants completed a ToM task while their neural activity was recorded, both before and after a narrative reading task. The participants were randomly assigned to one of three conditions: (i) a first-person literary narrative, consisting of an excerpt from Dostoevsky's *Notes from Underground* (1864/2017), characterized by a strong internal focus on the protagonist's psychological states; (ii) a third-person literary narrative, obtained by experimentally manipulating the same text to adopt a third-person perspective; (iii) a scientific essay devoid of characters. For the assessment of ToM, we employed the *Reading the Mind in the Eyes* test (Baron-Cohen *et al.* 2001). Participants first completed the ToM test (T0), which required them to view images of eye expressions for 2 seconds and then select the corresponding mental state from four alternatives, while EEG activity was recorded. After reading the assigned text, participants completed the same task again (T1) under EEG recording. The main results of the study revealed early neurophysiological modulations following narrative exposure. Specifically, modulation of the N100 ERP component was observed over left fronto-central electrodes: participants who read the third-person narrative showed a greater negative amplitude in response to images of eyes at T1 compared to T0, whereas the first-person group exhibited a reduced amplitude. In addition, a greater P220–400 amplitude over right temporo-parietal electrodes was

observed at T1 in the third-person narrative group. Notably, no significant behavioral differences in ToM accuracy were detected across groups before and after reading. These findings suggest that reading first-person narratives preferentially engages frontal regions associated with self-referential processing, whereas third-person narratives with internal focalization recruit broader neural networks, likely reflecting greater demands on integrating egocentric and allocentric perspectives. In this sense, third-person narratives may foster the implicit inhibition of an egocentric viewpoint, enhancing attentional orientation toward others' mental states. The absence of behavioral effects may be attributable to the limited temporal window available for detecting changes in explicit ToM performance.

Extending this line of inquiry, a subsequent study examined whether fictional narratives eliciting high versus low levels of narrative transportation differentially modulate neural responses to emotional facial expressions (Altavilla *et al.* 2025). Thirty-one participants were assigned to one of two experimental conditions: a psychological narrative characterized by high narrative transportation, focusing on the emotional and psychological dimensions of the characters (an excerpt from *A Small, Good Thing* by Raymond Carver, 1983/2014), or a descriptive narrative associated with low narrative transportation, emphasizing actions and environmental details (the short story *Big Two-Hearted River* by Ernest Hemingway, 1925). EEG activity in response to emotional facial expressions (joy, anger, fear, sadness) was recorded both before (T0) and after (T1) the reading task.

The results showed that narrative reading modulated early neural responses to emotional stimuli, as reflected in changes in the P100 and N170 ERP components, irrespective of narrative type. Crucially, however, only participants exposed to the psychological narrative exhibited an increased P100 amplitude, which was associated with higher levels of narrative transportation. These findings suggest that deeper immersion in a narrative enhances early perceptual and affective processing of social stimuli, likely through intensified internal simulation of others' emotional and mental states. Such effects may subsequently influence how individuals process socially relevant cues in everyday contexts.

Finally, shifting the focus to self-narratives, a further ERP study investigated whether engaging in introspective writing could modulate neural responses to socio-emotional stimuli and improve performance on a ToM task (Altavilla *et al.* 2022). In this study, EEG activity was recorded from twenty-nine participants during the Reading the Mind in the Eyes test, both before (T0) and after (T1) a writing intervention. Participants were assigned to one of two groups: an experimental group instructed to keep an introspective diary for seven days, focusing on emotions, thoughts, bodily sensations, and underlying motivations; and a control group asked to provide neutral descriptions of daily activities. The second EEG recording was conducted at the end of the writing period.

The results indicated that only participants in the introspective writing condition exhibited a significant increase in P300 amplitude over centro-frontal electrodes at T1 compared to T0 in response to socio-emotional stimuli. Given that frontal P300 components have been associated with selective attention and are sensitive to the motivational and affective salience of stimuli (e.g., Gray *et al.* 2004), these findings suggest enhanced attentional engagement with cues representing others' mental states following introspective self-narrative practice. As in the previous studies, no significant pre-post differences emerged in behavioral performance, indicating that the observed effects likely reflect implicit modulation of socio-cognitive processing rather than explicit changes in mental state attribution.

4. Conclusions

The research reviewed in this paper, together with the theoretical considerations discussed, suggests that both fictional narratives and introspective self-narratives constitute powerful tools for enhancing social cognitive abilities. The results of our studies align with previous behavioral findings and provide converging neurophysiological evidence showing that specific narrative features – such as internal focalization, narrative perspective, and the introspective dimension of storytelling – can modulate neural processes associated with social cognition. Importantly, these effects emerge at the level of early and late neurocognitive responses, even in the absence of overt behavioral changes, pointing to implicit mechanisms underlying narrative-induced socio-cognitive modulation.

Taken together, the reviewed evidence offers preliminary support for the idea that sustained engagement with narrative practices, as well as systematic introspective reflection on one's own internal states, may contribute to the strengthening of complex social cognitive abilities. In particular, such practices appear to enhance attentional sensitivity to others' mental states and to foster empathic processing, thereby supporting more nuanced forms of social understanding. Although further longitudinal and ecologically valid studies are needed to assess the durability and generalizability of these effects, the present findings suggest that narrative engagement holds promise as a means of promoting prosocial dispositions, cooperative behavior, and more effective social interaction.

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