**Supplemental Material**

**Supplemental Material 1**

**Review of the psychological consequences of CM on social cognition and their implications for treatment**

Childhood experiences might also shape social cognition. In healthy humans, research suggests that the social brain makes automatically predictions of others' future mental states indicating that the way the brain represents the social present gives people an automatic glimpse of the social future (Thornton, Weaverdyck, & Tamir, 2019). A systematic review found deficits of empathy or related processes in patients with BPD which might contribute to hinder the formation of stable interpersonal relationships, whereas enhanced emotional empathy might lead to personal (and interpersonal) distress, further contributing to abnormal social functioning in BPD (Salgado, Pedrosa, & Bastos-Leite, 2020). Indeed, another systematic review showed a significant association between early childhood social experience, including both insecure attachment and adversity relating to neglect or abuse, and poorer social cognitive performance (Rokita, Dauvermann, & Donohoe, 2018). Childhood rejection, particularly emotional abuse and neglect, appears to be linked to rejection sensitivity[[1]](#footnote-1) (Foxhall, Hamilton-Giachritsis, & Button, 2019), and rejection sensitivity is linked to BPD (Foxhall et al., 2019; Gao, Assink, Cipriani, & Lin, 2017). Altogether, these deficits might also impact (social) decision-making: A meta-analysis point partially out disadvantageous decision-making (i.e., altered valuation of outcomes) in BPD in a way that BPD patients discounted delayed rewards more strongly (Paret, Jennen-Steinmetz, & Schmahl, 2017). In line, a study found evidence for alterations in social decision-making in BPD (Hinterbuchinger, Kaltenboeck, Baumgartner, Mossaheb, & Friedrich, 2018). BPD patients seem to have general and specific Theory of Mind (ToM) impairments, e.g., they underperformed in mental state reasoning and cognitive ToM (Németh et al., 2018). Of note, the ToM network is sensitive to violations of strong versus weak prior beliefs in a way that ToM activity is enhanced following the violation of strong versus weak prior beliefs (Kim, Mende-Siedlecki, Anzellotti, & Young, 2020). In line, greater ToM activity following the violation of strong versus weak prior beliefs is consistent with predictive processing of the social brain (Koster-Hale & Saxe, 2013; Theriault, Young, & Barrett, 2020). As own mental states depend on inferred interoceptive states, ToM also might imply interoceptive predictions (Ondobaka, Kilner, & Friston, 2017). The *failed mentalization* theory of BPD (Fonagy & Luyten, 2009) supports this finding that increased mentalizing activity in light of strong positive priors may reflect the generation of alternative explanations, whereas decreased mentalizing activity may either reflect motivated discounting of unfavorable information or weak priors. From a psychodynamic point of view, *Mentalizing* might enrich Bayesian inference, enabling experience and feeling states to be processed and therefore stimulating patients to become aware of and revise the priors' they bring to interpersonal experience (Holmes & Nolte, 2019), also underlining *Failed Mentalization* theory (Fonagy & Luyten, 2009). In line, other authors argue for a process referred to as "mentalizing interoception" – the role "interoception" plays in the patients' emotional experience and subjective awareness – which can be fostered through focused attention to bodily sensations/reactions, in the safety of the therapeutic relationship, by means of the bodily cues that may be the only conscious element of deeply hidden priors and thus the clearest way to access them (Duquette & Ainley, 2019).

**Supplemental Material 2**

**Chronic emptiness**

Providing a coherent explanation for the other end of the emotional spectrum in BPD, i.e., chronic emptiness, is challenging. Psychologically, chronic emptiness is a sense of disconnection from both self and others; it is associated with dysphoric mood unique to people with BPD, self-harm, suicidality, and lower social and vocational function (Miller, Townsend, Day, & Grenyer, 2020). From a PP perspective, chronic emptiness might be related to extremely low precision of prior beliefs about the consequences of action, thus leading to a state of apathy. Indeed, apathy as a correlate of chronic emptiness has recently been associated with reduced precision of prior beliefs about action outcomes (Hezemans, Wolpe, & Rowe, 2020). As mentioned, low emotional awareness (Smith, Parr, & Friston, 2019; Smith et al., 2021) might be adaptive in an environment shaped by CM and unpredictability, but is linked to BPD (Derks, Westerhof, & Bohlmeijer, 2017).

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1. Rejection sensitivity is a personality disposition characterized by oversensitivity to social rejection (Gao et al., 2017). [↑](#footnote-ref-1)