MENTAL IMAGERY OF POSITIVE LIFE EXPERIENCES: THE NEURAL BASES OF EUDAIMONIC AND HEDONIC HAPPINESS

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AIMS: In recent years, neuroimaging studies using mood induction procedures (MIP) have been conducted to investigate the neural correlates of happiness. However, a well-defined neural network for happiness has not been determined yet, mainly because of methodological and theoretical limitations (Suardi et al., 2016). Indeed, researchers using MIP asked participants to imagine or recall happy events during brain scanning. However, they did not guide participants in generating their mental imageries or recollections, thus increasing the activation of interindividually and intraindividually variable neural networks. A second limitation concerns the absolute lack of neuroimaging studies taking into account the theoretical distinction, proposed in the field of Positive Psychology, between eudaimonic happiness (i.e., the positive psychological condition derived from the development of one's best potentials) and hedonic happiness (i.e., the experience of pleasure and positive affect). In the present functional magnetic resonance imaging (fMRI) study, a novel mental imagery task allowed us to investigate the neural correlates of both eudaimonic and hedonic happiness. MATERIALS: During fMRI scanning, participants were cued with written sentences describing three different classes of events: Hedonic (HE), eudaimonic (EE), and neutral events (NE). In order to enhance vividness during the imagery task, each event description included four features: Sensory details, emotional feelings, interoceptive activations, and movements. METHOD: Seventeen students (7 males, 10 females; mean age = 25.06, SD= 5.05) underwent fMRI while cued with written sentences. Participants were asked to image themselves into the described event. A block-design experimental protocol randomly alternating the three different events categories (HE, EE, NE) was used. RESULTS: Compared to NE, HE and EE events activated a network of frontal, temporal and parietal regions, as well as subcortical structures. In the direct HE/EE comparison, HE events showed enhanced activity in medial/middle frontal regions and anterior cingulate cortex, whereas EE showed increased activity in the right precentral gyrus. DISCUSSION: Mental imagery of hedonic events was related to increased activity in regions which are typically implicated in reward representation and self-referential processing (Kringelbach, 2005). By contrast, mental imagery of eudaimonic events showed higher activation in the right precentral gyrus, which has been linked to goal-directed actions and cognitive reappraisal (Seo et al., 2014). CONCLUSIONS: Results suggest that imagining hedonic and eudaimonic happy life experiences is associated with relatively differentiated brain circuits, underlying distinct functions.

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