The purpose of this research study was to investigate these empathy subtypes in relation to empathic concern, empathic cheerfulness, and empathic happiness at separate time points.

→ The paradigm included 18 video clips in total: three that elicit peak empathic concern/empathic cheerfulness (in the first part of the episode) and thirteen that elicit peak empathic happiness (in the second part of the episode) with two neutral clips embedded among the empathy-inducing clips. All video clips were presented in a random order to maintain the integrity of the story and ecological validity.

→ Participants were asked to rate their emotional reactivity immediately following each video clip. These scores were used as regressors at the individual level of fMRI data analysis.

Trait Empathy Measures

→ The Light-Moran PES Empathic Cheerfulness and Empathic Happiness Subscales were used to measure trait empathic cheerfulness and happiness.

Statistical Analyses

→ Brain data were regressed to predict self-reported positive emotionality facets.

Regression analyses revealed that globus pallidus activity during peak empathic concern video clips (relative to neutral video clips) predicted greater trait empathic cheerfulness.

Greater activity in the globus pallidus during empathic concern inducing video clips related to greater trait empathic cheerfulness score \( (R^2 = 26\%, \ p < .05). \)

Results

Figure 1

Conclusions

→ Our findings show that increased activity in the globus pallidus while viewing empathic concern-eliciting clips relates to increased trait empathic cheerfulness (Figure 1).

→ A certain degree of globus pallidus activation may be necessary for a person to experience trait-like empathic cheerfulness; with activity in this region providing a basis for the ingrained “urge” to act in a positive manner when faced with the suffering of someone else.

→ This study provides preliminary evidence for the role of the globus pallidus, not only in the reward and pleasure system, but in the ability to feel positive empathy.

→ These results further validate the use of the Light-Moran PES (Positive Empathy Scale).

→ Future work should include clinical populations (e.g. Major Depressive Disorder, Parkinson’s disease, and dementia) rather than the healthy population used in this study.

→ This will allow further understanding of this region’s role in positive emotionality, and will help researchers pinpoint how manipulating activity in the globus pallidus through deep brain stimulation, repetitive transcranial magnetic stimulation (rTMS), pharmacological intervention etc. may help alleviate the symptoms of reduced empathy and elevated anhedonia alike.

References


