Contribution ID: **742** Type: **Talk in simposio**

Individual Differences in Salience Attribution: Neural Correlates of Sign- and Goal-Tracking in Human

Friday, September 12, 2025 9:00 AM (20 minutes)

Background. Aberrant reward processing plays a central role in several psychiatric disorders. The Sign-Tracker/Goal-Tracker (ST/GT) model, developed in rodent research, distinguishes individuals who attribute incentive salience to reward-predictive cues (ST) from those who focus on the reward itself (GT). We translated this model to humans using functional MRI (fMRI) and investigated its neural correlates across large independent cohorts. Additionally, we examined ST/GT profiles in relation to personality and cognitive functions.
Methods. fMRI data were collected from 1,135 healthy participants across two cohorts: Discovery (n=890, 436M/454F, age=22.1) and Replication (n=245, 104M/141F, age=25.7), each performing a variant of the Monetary Incentive Delay (MID) task. This task probes reward anticipation and outcome processing without involving learning. We applied hierarchical k-means clustering to BOLD signal responses from reward-related brain regions to identify ST and GT profiles and assess their replicability across samples.
Results. ST exhibited greater BOLD activation during reward anticipation, while GT showed higher activation during outcome. The clustering solution was robust across cohorts (84.9% classification accuracy in Discovery, 78.7% in Replication). Trial-level analyses confirmed that ST consistently assigned incentive salience to cues ($p = 0.005$). No significant differences in personality traits were found, but ST showed greater reward sensitivity in a passive avoidance learning task and higher executive function scores (both pFDRs < .05).
Conclusions. ST/GT profiling based on fMRI reveals stable interindividual differences in reward-related brain function. These findings offer a mechanistic framework for characterizing salience attribution processes and may inform future research into psychiatric conditions marked by dysfunctional reward processing.

If you're submitting a symposium talk, what's the symposium title?

Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

Primary author: SAMBUCO, Nicola (Università di Bari)

Co-authors: LUPO, Antonella (Università di Bari); PASSIATORE, Roberta (Lieber Institute for Brain Development, Johns Hopkins Medical Campus); SELVAGGI, Pierluigi (Università di Bari); ANTONUCCI, Linda A. (Università di Bari); BERTOLINO, Alessandro (Università di Bari); BLASI, Giuseppe (Università di Bari); GRASSO, Daniela (IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo); RAIO, Alessandra (Università di Bari); RAMPINO, Antonio (Università di Bari); PERGOLA, Giulio (Lieber Institute for Brain Development, Johns Hopkins Medical Campus)

Presenter: SAMBUCO, Nicola (Università di Bari)

Session Classification: Embodied emotion and motivation: interoception, physiology, and brain dynamics in affective experience

Track Classification: Emotions and motivation