Instability of indicator traces model as a way of quantifying a disorganised field of consciousness in psychosis: linking phenomenology and psychophysics

From a phenomenological perspective, psychosis has been conceptualised as a disturbance of the minimal self (Sass, Parnas, Zahavi), reflected in an unstable first-person perspective and a disorganised field of consciousness. This may manifest as diminished self-affection, hyper-reflectivity, or a loss of experiential transparency (Feyaerts et al., 2025). Processes that are typically implicit can become objectified and alien, disrupting the pre-reflective structure of experience. Across theoretical accounts, the shared core is a fundamental alteration of basic self-consciousness.

This study examines such disturbances through a psychophysical lens, focusing on manifestation rather than aetiology, while acknowledging that self-experience is embodied and intersubjectively embedded. We draw on Criterion Setting Theory (Treisman & Williams, 1984), which posits that perceptual decisions rely on a dynamically adjusted internal criterion. Instability in this system—reflected in sequential dependencies—may indicate disrupted perceptual organisation.

Using visual tasks sensitive to psychosis-related alterations (e.g., Gestalt perception), we quantified sequential dependencies via conditional PSEs across multiple lags and modelled response- and stimulus-driven adjustments with exponential decay functions. Derived instability indices captured criterion fluctuations, and psychometric slopes were estimated using probit fits.

Results showed that criterion noise predicted slope shape and differed between psychotic and non-psychotic observers, suggesting that unstable criterion-setting processes may underlie the disorganised field of consciousness in psychosis. These findings were further related to phenomenological measures (EAWE).