



## Ecological validity in cognitive assessment and treatment

## ARTICLE INFO

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Cognitive impairment is a core symptom across the psychosis spectrum, is highly predictive of functioning, and is not responsive to first-line treatments (Barch, 2009; Green et al., 2019). However, the extent to which traditional laboratory-based measures of cognition map onto real-world cognitive functioning remains unclear. Evidence suggests that standard neuropsychological assessments have limited ecological validity, as they are administered in a highly controlled setting by a trained administrator (Miskowiak et al., 2017). Additionally, cognitive tasks are often designed to isolate specific cognitive processes such as attention or working memory, or to include stimuli presented in a particular sensory modality, so that identification of patterns of strengths and weaknesses is possible. As a result, however, formal cognitive testing bears little resemblance to cognitive challenges that that people encounter in everyday life. Not surprisingly, performance on neuropsychological tasks accounts for only a small proportion of variance in real-world functioning (Van der Elst et al., 2008; Jespersen et al., 2025).

Cognition is a key treatment target in schizophrenia-spectrum disorders, with the ultimate aim of driving functional gains via cognitive improvement (Horan et al., 2023). However, targeted cognitive training, for example, does not consistently show transfer to improved functioning (Horan et al., 2023; Lewandowski et al., 2017), which may in part be related to the lack of ecological validity of the measures used to assess and train cognition (Jespersen et al., 2024). Thus, developing cognitive assessments and interventions that more closely map onto cognitive demands in the real world may both drive transfer effects and capture cognitive functioning in a way that is more aligned with cognition in daily life as opposed to cognitive capacity (Jespersen et al., 2025).

This special issue aims to highlight novel reports of efforts to improve ecological validity in the assessment and treatment of cognitive impairments in psychosis. The review by Cavieres and colleagues found

that, as predicted, research on ecological validity in social cognition assessment is lacking and focuses largely on verisimilitude (the extent to which tasks resemble real-world demands) with less attention on veridicality of the results (the extent to which task performance correlates with functioning). The systematic review by Lane and colleagues examined smartphone-delivered cognitive assessments. They found strong support for the feasibility of smartphone-based assessments and provide recommendations for improvements to move this field forward. Harvey and colleagues examined the feasibility of migrating two digital assessments of functioning to cloud-based delivery. For both functional capacity measures, the Virtual Reality Functional Capacity Assessment Tool (VRFCAT) and the Functional Capacity Assessment and Training System (FUNSAT), the authors found considerable similarity across delivery strategies, supporting the feasibility of remote digital assessment. Two projects described clinical trials aimed at improving the ecological validity of cognitive training. Komemi and colleagues reported pilot data from a virtual reality (VR)-delivered cognitive remediation program in inpatients with schizophrenia. They found evidence of feasibility, acceptability, and improvement in both cognition and functional outcomes. The trial by Bogie and colleagues used a VR cognitive training program targeting verbal memory in people with schizophrenia. This proof-of-principle study reported good feasibility and acceptability of the intervention, and evidence of cognitive improvement. Mayol-Troncoso and colleagues examined visual processing in people with schizophrenia during a natural vision task. They found that reduced visual attention response was associated with a reduction in attention mechanisms needed to initiate and maintain visual exploration. Finally, Fiorentino and colleagues present a case report of a novel task to assess sensory-motor abnormalities linked to body image misrepresentation in schizophrenia.

These articles highlight both the need for and promise of the development of tools to assess and treat cognition in ways that map more

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closely to cognitive functioning in every-day settings, as well as deeper understanding of physiological and psychological processes that result in abnormalities in information processing during naturalistic tasks. These reports also highlight the potential for technological advances such as smartphone and remote computer-based task delivery to reach people in the real world, and the potential for technologies like VR to deliver cognitive assessment and treatment using procedures and stimuli that more closely resemble cognitive demands in daily life.

#### CRediT authorship contribution statement

**Kathryn E. Lewandowski:** Conceptualization, Project administration, Writing – original draft, Writing – review & editing.

#### Declaration of competing interest

None.

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