

Anka Slana Ozimič*
University of Ljubljana

Nina Purg Suljič
University of Ljubljana

Aleš Oblak
University Psychiatric Clinic Ljubljana

Jurij Bon
University Psychiatric Clinic Ljubljana

Toma Strle**
University of Ljubljana

Grega Repovš**
University of Ljubljana

* Corresponding author

** Authors share senior authorship

Bridging Behavioural, Neural, and First-Person Insights into Working Memory Strategies: A Multi-Level Framework

1 Introduction

In cognitive science, controlled experiments are central to investigating mental processes. By manipulating task parameters, stimuli, or instructions, researchers aim to selectively engage specific cognitive functions, enabling the testing of theories, computational models, and the identification of their neural underpinnings. While the goal of such experiments is to isolate target processes and assess them in a systematic way, interpreting experimental outcomes – whether behavioural or neural – remains a significant challenge (Morrison et al., 2019; Strle, 2020a; Szollosi & Newell, 2020). Data



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are often noisy, variable, and difficult to interpret within a single theoretical framework. A common issue is that individuals may use different strategies to perform the same task – a phenomenon known as task degeneracy (Seghier & Price, 2018) – thus relying on distinct cognitive resources that may differ from those researchers intended to study. Moreover, participants frequently report switching strategies within the same task, adjusting their approach from trial to trial or over time.

The variety of strategies individuals can employ to perform cognitive tasks presents several significant challenges in cognitive science research (e.g., Hart et al., 2024; Pearson & Keogh, 2019). Variability in strategy use has significant implications for the interpretation of both behavioural and neuroimaging data. Different strategies may rely on distinct cognitive processes, leading to variation in task performance – such as accuracy and response times – that reflects not only differences in ability, but also differences in how individuals approach the task (e.g., Siegler, 1987; Starc et al., 2017; Slana Ozimič & Repovš, 2020). Similarly, in neuroimaging studies, various strategies can engage different brain networks and regions to varying degrees, resulting in distinct patterns of brain activation or functional connectivity (e.g., Kirchhoff & Buckner, 2006; Miller et al., 2012; Seghier & Price, 2018; Pearson & Keogh, 2019; Purg Suljič et al., 2024). These variations can confound comparisons across individuals or groups and obscure conclusions about the underlying cognitive and neural mechanisms involved (Logie, 2011).

In clinical contexts, variability in strategy use can mask the true extent of cognitive deficits. Individuals with impairments often adopt compensatory strategies that help maintain behavioural performance despite underlying dysfunction (e.g., Brown Nicholls & English, 2020; Burianová et al., 2013). While such strategies may be adaptive, failing to account for them across studies, individuals, or groups introduces substantial inconsistencies in findings related to behavioural outcomes, brain activity, and functional connectivity. This strategy-driven variability complicates the accurate assessment of cognitive functioning and impedes the identification of underlying mechanisms. Moreover, by masking the severity or nature of impairments, compensatory strategies may hinder both the theoretical understanding of the underlying pathology and the development of effective diagnostic and therapeutic interventions.

To address these challenges, this paper proposes a conceptual framework designed to capture the dynamic interplay among strategy characteristics, the factors that determine strategy selection, and manifestations of strategies across multiple levels of observation. The framework aims to integrate behavioural, neural, and first-person perspectives, offering a structured approach to investigating cognitive variability in a systematic and context-sensitive manner. While broadly applicable across cognitive domains, it is here developed and illustrated through the lens of working memory – a domain in which strategy use significantly impacts both behavioural performance and neural activation patterns. By focusing on working memory, the paper shows how strategy variability can

be meaningfully conceptualized, empirically investigated, and methodologically integrated. In doing so, the framework provides a foundation for more nuanced models of cognition and highlights the need to bridge gaps among levels of analysis, methodological approaches, and perspectives (and particularly between the first- and third-person perspectives). The following sections first introduce the working memory domain, then outline the core components of the proposed framework, and finally review the existing working memory literature relevant to the conceptual framework.

2 A conceptual framework for understanding strategy variability in working memory

Working memory is a cognitive ability that enables active retention and manipulation of self-generated or perceived information from multiple sensory inputs over short periods of time (Baddeley & Hitch, 1974). As a core component of higher cognition, it serves as the foundation for a range of complex mental functions – including planning, problem-solving, reasoning, and the maintenance of goals and task sets – that are essential for goal-directed behaviour in everyday life.

Traditionally, working memory has been studied behaviourally, using cognitive tasks that require the maintenance and recall of different types of information (e.g., visual, spatial, verbal). Such cognitive tasks allow detailed measurements of response accuracy and response times, which are thought to reflect the underlying cognitive processes (e.g., Gonthier, 2021; Logie, 2011). Neuroimaging studies have complemented these approaches by identifying key brain regions – particularly in frontal and parietal cortices – that show sustained activity during working memory tasks (e.g., D’Esposito & Postle, 2015; Rottschy et al., 2012).

More recently, qualitative methods have provided deeper insight into the subjective experience of performing working memory tasks, often through open-ended, phenomenologically informed interviews (Laybourn et al., 2022; Oblak et al., 2022; Oblak et al., 2024; Slana Ozimič et al., 2023). These approaches reveal the rich diversity of strategies individuals employ, including verbal recoding, visualization, motor simulation, and semantic elaboration. Critically, studies show that individuals do not always rely on the modality in which information is presented. Visual stimuli may be verbalized (e.g., naming colour patches; Huang & Awh, 2018), verbal material may be visualized (e.g., creating mental images of word contents; Miller et al., 2012), and spatial locations may be encoded through motor planning or categorical recoding (e.g., Purg et al., 2022; Purg Suljič et al., 2024; Starc et al., 2017). Such flexibility in strategy use introduces variability that profoundly affects both neural activity and related behavioural outcomes.

To systematically address this variability, we propose a conceptual framework that captures the dynamic interplay between three key components: (1) working memory

strategies as flexible combinations of cognitive processes and representations, (2) the factors that determine strategy selection and use, and (3) the levels at which strategy use can be observed and studied (Figure 1). Together, these components offer a structured lens for guiding empirical investigations of working memory and understanding the sources and implications of cognitive variability.

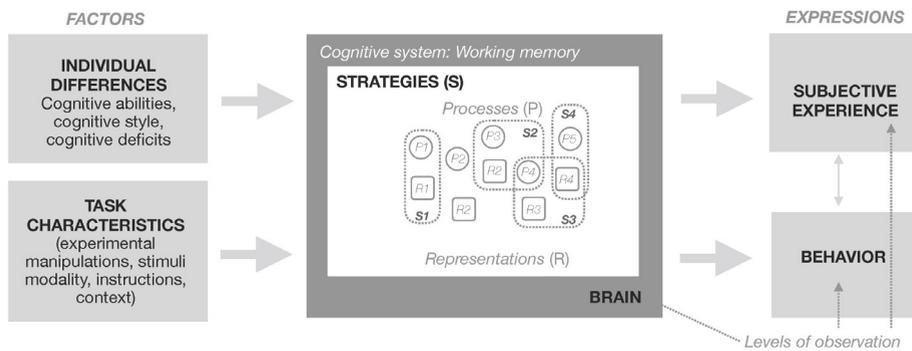
Working memory strategies emerge from the engagement of distinct combinations of cognitive processes – involved in encoding, maintenance, and retrieval – and memory representations. These processes may include rehearsal, imagery, and planning, which individuals may employ flexibly depending on task demands and contextual constraints. Additionally, the memory representations employed in these processes can vary across modalities, such as verbal (e.g., phonological codes), visual (e.g., mental images), or spatial (e.g., location-based information). Importantly, individuals are not limited to using processes and representations that match the stimulus modality. This flexibility enables individuals to dynamically recruit different cognitive resources to meet task goals – even when a task is designed to target a particular cognitive modality. As the core component of the framework, the conceptualization of working memory strategies as flexible combinations of cognitive processes and representations highlights the need for theoretical models that move beyond fixed mechanisms and instead account for the dynamic, context-sensitive, and individual-specific nature of strategy deployment.

Strategy selection and use are determined by three broad categories of factors: (a) task characteristics, including task demands and features such as stimulus modality, task structure, instructions (e.g., prioritization of speed, accuracy or precision); (b) individual differences, such as variations in cognitive ability and cognitive style (e.g., verbal vs. visual processing tendencies); and (c) cognitive deficits resulting from healthy ageing or neuropathological conditions. These factors interact in complex ways to shape how strategies are selected, modified, or abandoned across trials and tasks. For example, when robust maintenance of information is prioritized over fine-grained precision (e.g., remembering the general colour or location of an object), individuals may rely on categorical representations, such as “red” or “top right”. Conversely, when high precision is required (e.g., reproducing an exact orientation or location), strategies based on sensory-like representations or precise motor plans tend to be favoured.

The expression of strategy use can be observed at multiple levels, each offering complementary insights. Behavioural performance measures (e.g., accuracy, response time) enable the precise assessment of strategy-related variability in task performance. Brain activity data (e.g., fMRI or EEG) provide information about the neural substrates engaged during specific strategies. Finally, subjective reports – e.g., questionnaires or open-ended interviews – offer access to the first-person perspective on how participants experience the performance of cognitive tasks, which can contextualize and enrich the interpretation of behavioural and neural data, and, crucially, guide

task design or analysis of third-person data (see, for instance, Berkovich-Ohana et al., 2020). Integrating these levels of observation is thus essential for a comprehensive understanding of working memory processes and for disentangling strategy-driven variability at both individual and group levels.

By integrating these dimensions – processes and representations, the factors that determine their selection, and levels of observation – this framework provides a comprehensive lens for investigating the diversity of working memory strategies and addressing the challenges they pose to basic research and applied practice. In addition, such a framework recognizes the need to bridge the gap between different methodological approaches and levels of observation, fostering integration between behavioural, neuroimaging, and first-person perspectives. As such, it supports the development of more comprehensive and ecologically valid models of cognition.



3 A framework based review of working memory strategies

In this section, we will examine the current state of research on the complex interplay between working memory strategies and the factors that influence their selection. These factors include task characteristics, such as stimulus modality and experimental manipulations, as well as individual differences, such as cognitive style. Furthermore, we will explore this relationship across multiple levels of observation, encompassing behavioural manifestations, neural bases, and subjective reports. This review will provide a comprehensive overview of the existing literature relevant to the conceptual framework of the problem space outlined earlier.

3.1 Task characteristics and their influence on strategy selection

In working memory research, it has often been suggested that stimulus modality influences the modality of the resulting mental representation. For example, it has been

proposed that visual information is stored in a visual form (Pearson & Keogh, 2019). However, recent findings challenge this view, highlighting a wide variety of strategies that individuals may use to maintain the same material. For example, Gonthier (2021) reviewed studies on visuospatial working memory and identified eight broad categories of strategies, including chunking, holistic or relational encoding, subdivision, recoding (e.g., verbal labels), long-term memory strategies, semantic elaboration, and visuospatial rehearsal. Crucially, Gonthier's (2021) analysis demonstrates that the modality of the stimulus alone does not determine the strategy used. Instead, strategy use varies as a function of broader task characteristics – such as instructions, contextual cues, and experimental manipulations, in addition to stimulus modality.

To account for this variability, researchers commonly adopt one of the two approaches. One is to instruct participants to use a specific strategy, such as visual imagery or sentence construction during serial word recall (e.g., Bartsch et al., 2024; Oberauer, 2019). The other is to design tasks that encourage or limit specific strategies. For instance, some studies use hard-to-verbalize stimuli (e.g., Attneave shapes; Postle et al., 2005) or dual-task paradigms (e.g., articulatory suppression or verbal interference) to prevent verbal recoding (e.g., Soto & Humphreys, 2008; Brown & Wesley, 2013). Recent work by our group (Purg et al., 2022; Purg Suljič et al., 2024) further shows that subtle manipulations of task demands can bias participants toward distinct coding strategies, with observable effects at the neural level.

3.2 Individual differences and strategy use

A growing body of research indicates that individual differences play an important role in the selection and use of cognitive strategies in working memory tasks. One important dimension of such variability is cognitive style, which refers to an individual's typical way of processing information, often characterized by a tendency toward either verbal or visual modalities (Miller et al., 2012; Pearson & Keogh, 2019). These tendencies in cognitive style influence how individuals encode, maintain, and retrieve information, often leading to marked differences in task performance, even under identical experimental conditions. For example, individuals with a strong visual cognitive style may be more inclined to use visualization strategies, whereas verbalizers tend to rely on verbal rehearsal or recoding. Tools such as the Vividness of Visual Imagery Questionnaire and the Spontaneous Use of Imagery Scale (Pearson & Keogh, 2019) have been used to systematically assess these preferences. Studies show that individuals' self-reported cognitive styles are associated with the strategies they employ during working memory tasks (Pearson & Keogh, 2019). Furthermore, in-depth phenomenological studies suggest that variability in subjective experience – and thus in the cognitive style individuals employ when approaching tasks – may be significantly greater

than previously thought (Heavey & Hurlburt, 2008; Hurlburt et al., 2016). As such, differences in experiencing and cognitive styles are in need of further investigation through in-depth phenomenological methods of inquiry into experience (see, for instance Kordeš & Demšar, 2021; Strle, 2013; Strle 2020b).

Another important dimension of individual variability lies in cognitive abilities, such as working memory capacity, which have also been associated with the use of different working memory strategies. For example, individual spatial working memory capacity has been related to the use of fine-grained and categorical representations of spatial location in working memory, with individuals with higher capacity encoding and maintaining fine-grained information that are cognitively demanding compared to individuals with lower capacity who relied on coarser categorical representations (Crawford et al., 2016). In our previous work (Starc et al., 2017; Purg Suljič et al., 2024), we have shown that the degree of reliance on fine-grained versus categorical representations is linked to the variability in cognitive resources that can be employed by an individual, with increased cognitive effort exerted towards the formation of fine-grained representations reflected in pupil dilation and the activation of attentional and control brain networks.

Beyond individual differences in cognitive style and cognitive abilities in healthy individuals, clinical populations provide further evidence of how individual variability can shape and sometimes obscure performance outcomes. In these groups, compensatory strategies are frequently adopted to offset cognitive impairments. While such strategies may help maintain performance, they can also mask underlying deficits and complicate the interpretation of behavioural and neural data (e.g., Burianová et al., 2013; Brown Nicholls & English, 2020; Perellón-Alfonso et al., 2023). For instance, age-related declines in working memory – particularly in the visual and spatial domains – have been well documented (e.g., Johnson et al., 2010; Slana Ozimič & Repovš, 2020). Older adults often rely more on verbal strategies, such as recoding visual stimuli into verbal labels, to compensate for declining perceptual or spatial processing (Park & Reuter-Lorenz, 2009; Reuter-Lorenz & Park, 2014). In patients with high-functioning schizophrenia, additional attentional compensatory mechanisms are recruited allowing them to sometimes out-perform healthy controls in working memory task performance (Perellón-Alfonso et al., 2023). These adaptations are not merely behavioural but may also reflect broader neural reorganization, such as increased recruitment of frontal, attentional, or language-related brain regions, which support task performance in the face of domain-specific impairments or reduced activation in modality-specific cortical areas (e.g., Burianová et al., 2013).

Understanding compensatory strategy use is especially important in conditions like mild cognitive impairment (MCI), where deficits may be subtle and not immediately detectable through standard cognitive assessments. Individuals with MCI might,

for example, rely on verbal recoding to compensate for declining visuospatial memory, leading to performance that appears normal despite underlying impairment (Gonthier, 2021). Understanding these compensatory strategies is key to designing sensitive assessments and interventions tailored to ageing and clinical populations.

3.3 The relationship between working memory strategies and behavioural measures

One way to understand how working memory strategies influence behaviour is to relate task performance to specific strategy use. Studies suggest that certain strategies may enhance performance. For example, visualizing verbal stimuli can improve recall, particularly for concrete over abstract words (Miller et al., 2012), while verbalizing visual stimuli can enhance memory by associating items with semantic categories (e.g., Brown & Wesley, 2013; Postle et al., 2000; Souza & Skóra, 2017). However, other findings complicate this picture: some research suggests that verbalization does not always improve performance and can even impair recall (e.g., Brandimonte & Collina, 2008; Donkin et al., 2015; Sense et al., 2017).

Another approach to investigate the relationship between working memory strategies and behavioural outcomes involves inferring strategy use from behavioural patterns. For instance, König et al. (2019) distinguished between three spatial encoding strategies based on accuracy patterns. Similarly, our work (Starc et al., 2017) showed that both behavioural data and pupil dilation patterns could differentiate between the use of fine-grained and categorical representations in spatial working memory tasks.

While some strategies are associated with measurable differences in behavioural outcomes, others may not produce such clear effects and can therefore remain undetected by standard performance metrics. Nevertheless, their cognitive signatures can still be inferred indirectly through psychophysiological responses – such as pupil dilation – or more systematically via patterns of brain activity. This highlights the importance of integrating behavioural and neural data to gain a more comprehensive understanding of strategy use in working memory.

3.4 Neural underpinnings of working memory strategies

As neuroimaging has become increasingly central to working memory research, understanding participants' cognitive strategies is crucial. Different strategies rely upon distinct cognitive processes and memory representations, engaging varying brain networks (Gonthier, 2021; Pearson & Keogh, 2019).

Neurobiological studies consistently show that working memory involves a distributed network of frontal, parietal, occipital, and subcortical regions, with task modality influencing the specific areas engaged (D'Esposito & Postle, 2015; Emch et al., 2019;

Rottschy et al., 2012). For example, Broca's area is often active during verbal tasks, while premotor cortices are linked to object and spatial processing (Rottschy et al., 2012).

While these studies map core working memory networks, newer analytic methods such as multi-voxel pattern analysis (MVPA) and inverse encoding modelling (IEM) provide more fine-grained insights into representational specificity. Studies using MVPA have shown that despite the absence of sustained blood oxygen level-dependent (BOLD) activity measured with fMRI, specific memory content can be decoded from visual areas during memory retention (Albers et al., 2013; Harrison & Tong, 2009; Serences et al., 2009), highlighting the importance of low-level sensory areas in maintaining memory content. However, decoding information from higher-level areas has yielded mixed results – some studies reported limited success (Albers et al., 2013; Harrison & Tong, 2009; Serences et al., 2009), while others successfully decoded both content and task type (Bettencourt & Xu, 2016; Ester et al., 2015; Lee et al., 2013; Riggall & Postle, 2012). One possible explanation for these inconsistencies is that frontal regions may function as “pointers” to memory content, rather than storing the content themselves, which would make decoding specific information from these areas inherently difficult (Awh & Vogel, 2025).

However, variability in decoding success may also reflect differences in how individuals approach the task – specifically, in the strategies they employ. Miller et al. (2012) linked cognitive style to neural variability in word memorization. Similarly, Sanfratello et al. (2014) found that in spatial working memory tasks participants activate different brain networks depending on whether they use verbal or visual strategies. Our group observed that participants remembering spatial positions used either a sensory strategy (spatial attention) or a motor strategy (movement planning), activating distinct brain networks accordingly (Purg et al., 2022). In another study, the use of fine-grained versus categorical spatial representations was associated with different levels of attentional and control network engagement (Purg Suljič et al., 2024).

Altogether, these findings highlight that strategy-related variability may be an additional factor contributing to inconsistent neural results and emphasize the need to account for individual differences in processes and representations employed in working memory tasks.

3.5 Uncovering strategies through subjective reports

Subjective reports have often been viewed with scepticism in cognitive science due to early concerns about introspection's reliability. However, when properly employed, subjective reports reveal crucial information for understanding cognitive processes and their neurobiological foundations and, as such, need to become a more integral part of experimental research.

Within working memory research targeting task strategies, subjective reports are frequently acquired using strategy questionnaires. They are typically administered post-experiment or post-block (e.g., Kirchoff & Buckner, 2006; Miller et al., 2012), and less frequently after each trial (e.g., Bartsch et al., 2024). For example, some studies (Kirchoff & Buckner, 2006; Miller et al., 2012; Sanfratello et al., 2014) have used closed-ended strategy questionnaires at the end of the experiment, asking participants to indicate how often they used each of the strategies listed. They identified commonly used strategies, such as verbal elaboration, imagery, and visual inspection. These studies also reported links between self-reported strategies and neural activity patterns observed via fMRI. Furthermore, Bartsch et al. (2024), using trial-by-trial reports in a serial recall task, found rehearsal and elaboration were the most frequently used strategies, and that strategy use varied across trials.

Although closed-form questionnaires (or think-aloud methods; Ericsson & Simon, 1980; Maarten et al., 1994) have value for understanding what strategies individuals employ when performing tasks, advances in the development of in-depth phenomenological methods of investigating lived experience – such as the descriptive experience sampling method (Hurlburt & Heavey, 2006), micro-phenomenology (Petitmengin, 2006) or sampling reflectively observed experience (Kordeš & Demšar, 2021) – enable researchers to gain a much more precise insight into participants' experience when performing cognitive tasks.

Accordingly, our group has conducted in-depth phenomenological interviews to gain richer insights into working memory strategies (Oblak et al., 2022). Participants performed change detection tasks involving colours, orientations, and positions, and were interviewed every few trials. We identified 18 strategies, and classified them by level of engagement (active/passive) and task phase (encoding, maintenance, retrieval). The identified strategies spanned different modalities (e.g., visual, linguistic) and processes (e.g., simplification). A follow-up quantitative analysis (Slana Ozimič et al., 2023) found that some strategies were more general, while others aligned closely with task-specific demands. In our study, we favoured phenomenological interviews over brief questionnaires for three main reasons. First, close-ended questionnaires restrict responses to predefined options (Berkovich-Ohana et al., 2020). Second, while open-ended questions allow for more freedom, phenomenological interviews provide structured depth. Third, phenomenological interviews capture the lived experience of strategy use – offering insight into not just what strategies were used, but how they were experienced – thus offering a much more nuanced and precise view on what participants experience when performing tasks. We argue that phenomenological methods offer a powerful tool for deeper understanding of the subjective dimension of cognitive processes.

4 Conclusions

Our review has shown that working memory tasks often produce highly variable behavioural and neural results, complicating their interpretation and limiting reproducibility. A major factor behind this variability is the diverse array of cognitive strategies individuals can adopt. While existing studies have examined working memory from behavioural, neural, and first-person perspectives, they often do so in isolation or at best integrate two levels of observation. For example, some studies have combined behavioural data with phenomenological interviews or closed-ended strategy questionnaires with neuroimaging. However, truly integrative studies that examine multiple dimensions of strategy use (i.e., underlying processes and representations), the factors that determine strategy selection, and their observable outcomes across behavioural, neural, and first-person levels remain rare.

To move the field forward, we propose that future research take a more holistic approach by explicitly addressing the interrelations outlined in our framework. One promising direction is to systematically investigate under-explored relationships – for instance, the link between first-person experience and neural activity (the *neurophenomenological* approach; see Varela & Ura, 1996). First-person techniques for investigating experience can provide valuable insights into the cognitive landscape engaged during task performance and help direct the investigation of their neural correlates (for ways in which first- and third-person data can inform each other in terms of task design and analysis, see Berkovich-Ohana et al., 2020). Thus, understanding how subjective accounts of strategy use map onto neural patterns provides crucial insights into the mechanisms behind strategy selection and execution.

Moreover, experimental manipulation of task demands can be used to selectively engage specific strategies or processes, with behavioural, neural, and first-person data used to validate their deployment. Neuroimaging methods further facilitate identification of the brain systems underlying both performance and experience, offering an integrated picture of how working memory operates across individuals and contexts.

We believe that such a comprehensive approach is essential for advancing our understanding of working memory as well as other cognitive domains. Strategy variability is a key driver of inter- and intra-individual differences and must be accounted for to produce accurate, generalizable findings. Failure to consider this variability not only undermines the interpretability of cognitive research, but also reduces the power to detect meaningful effects. In light of the ongoing replication crisis in cognitive science (Ioannidis, 2005; Camerer et al., 2018), acknowledging and integrating individual differences in strategy use is critical for improving the reliability and explanatory power of research findings.

Exploring the full range of relationships among cognitive strategies, behavioural performance, subjective experience, and neural mechanisms will enable a deeper and more accurate understanding of this fundamental cognitive capacity and offer insights applicable to both basic science and clinical practice. Only such an interdisciplinary approach can offer a more robust methodological foundation for the study of working memory and is, as such, essential for advancing our understanding of working memory, as well as the human mind more generally.

Authors' notes

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Bridging Behavioural, Neural, and First-Person Insights into Working Memory Strategies: A Multi-Level Framework

Keywords: working memory, cognitive strategies, variability, behaviour, neuroimaging, phenomenology

Working memory is a core cognitive function, yet findings regarding its behavioural and neural underpinnings are often inconsistent. We argue that a major source of this inconsistency stems from the diverse strategies individuals employ to perform working memory tasks. To systematically address this variability, we propose a conceptual framework that captures the dynamic interplay among strategy characteristics, the factors determining strategy selection – such as task characteristics and individual differences in cognitive style and ability – and strategy manifestations across behavioural, neural, and first-person levels of observation. Drawing on evidence from behavioural

experiments, neuroimaging studies, and subjective reports, we demonstrate how differences in strategy use contribute to variability in task performance, brain activation patterns, and experience. We argue that accounting for this variability in strategies is crucial for improving the reliability and generalizability of findings in working memory research, particularly in light of the replication crisis in cognitive science. Ultimately, our framework advocates for an integrated, multi-level methodology that advances both theoretical and applied understanding of working memory.

Povezovanje vedenjskih, nevronskih in prvoosebni vpogledov v strategije delovnega spomina: večnivojski okvir

Ključne besede: delovni spomin, kognitivne strategije, variabilnost, vedênje, nevroslikovne metode, fenomenologija

Delovni spomin je osnovna kognitivna funkcija, vendar so ugotovitve glede njegovih vedenjskih in nevronskih osnov pogosto neskladne. Predpostavljamo, da je pomemben vir te neskladnosti raznolikost strategij, ki jih posamezniki uporabljajo pri izvajanju nalog delovnega spomina. Da bi sistematično obravnavali to variabilnost, predlagamo konceptualni okvir, ki zajame dinamično medsebojno povezanost med značilnostmi strategij, dejavniki, ki določajo izbiro strategij – kot so značilnosti naloge in individualne razlike v kognitivnem slogu in sposobnostih – ter njenimi manifestacijami na vedenjski, nevronski in subjektivni ravni opazovanja. Na podlagi dokazov iz vedenjskih eksperimentov, nevroslikovnih študij in subjektivnih poročil prikazujemo, kako razlike v uporabi strategij prispevajo k variabilnosti v uspešnosti na nalogah, vzorcih aktivnosti možganov in doživljanju. Trdimo, da je upoštevanje te variabilnosti strategij ključnega pomena za izboljšanje zanesljivosti in posplošljivosti ugotovitev pri raziskavah delovnega spomina, zlasti v luči krize ponovljivosti v kognitivni znanosti. Skupno naš okvir zagovarja integrirano večstopenjsko metodologijo, ki prispeva tako k teoretičnemu kot tudi uporabnemu razumevanju delovnega spomina.

About the authors

Anka Slana Ozimič is an Assistant Professor of cognitive science at the Department of Psychology, Faculty of Arts, University of Ljubljana. Her research focuses on basic cognitive processes such as working memory and cognitive control, investigated through behavioural studies and neuroimaging.

Email: anka.slanaozimic@ff.uni-lj.si

Nina Purg Suljič holds a PhD in neuroscience and is a postdoctoral researcher at the Mind & Brain Lab, Department of Psychology, Faculty of Arts, University of Ljubljana. Her research centres on basic cognitive processes, particularly working memory, using behavioural methods and brain imaging.

Email: nina.purg@ff.uni-lj.si

Aleš Oblak is a cognitive scientist at the University Psychiatric Clinic Ljubljana. His work explores first-person methodologies, neuroimaging, and brain stimulation in the study of basic cognitive processes such as working memory, with a focus on psychiatric disorders.

Email: ales.oblak@psih-klinika.si

Jurij Bon is a psychiatrist at the University Psychiatric Clinic Ljubljana and an Assistant Professor at the Department of Psychiatry, Faculty of Medicine, University of Ljubljana. His research focuses on the development of diagnostic methods and individualized treatments for psychiatric disorders by integrating descriptive and phenomenological psychopathology with cognitive neuroscience and non-invasive brain stimulation.

Email: jurij.bon@mf.uni-lj.si

Toma Strle is an Assistant Professor of Cognitive Science at the Center for Cognitive Science, Faculty of Education, University of Ljubljana. He heads the joint Middle European interdisciplinary master's programme in Cognitive Science at the University of Ljubljana and is a member of the Laboratory for Empirical Phenomenology. His research focuses on decision-making, phenomenology of mind-wandering, neuropsychology, self-referential processes, epistemology, and the intersection of applied behavioral science and the science of the mind.

Email: Toma.strle@pef.uni-lj.si

Grega Repovš is a Professor of Psychology and the head of the Mind and Brain lab at the Department of Psychology, Faculty of Arts, University of Ljubljana. His research includes multimodal neuroimaging and the investigation of basic cognitive processes such as working memory, cognitive control, and emotion regulation.

Email: Grega.repovs@ff.uni-lj.si

O avtorjih

Anka Slana Ozimič je docentka za kognitivno znanost na Oddelku za psihologijo Filozofske fakultete Univerze v Ljubljani. Njene raziskave se osredotočajo na osnovne

kognitivne procese, kot sta delovni spomin in kognitivni nadzor, ki jih preučuje s pomočjo vedenjskih pristopov in nevroslikovnih tehnik.

E-naslov: anka.slanaozimic@ff.uni-lj.si

Nina Purg Suljič je doktorica nevroznanosti in podoktorska raziskovalka v Laboratoriju za kognitivno nevroznanost na Oddelku za psihologijo Filozofske fakultete Univerze v Ljubljani. Njene raziskave se osredotočajo na osnovne kognitivne procese, zlasti delovni spomin, z uporabo vedenjskih metod in slikanja možganov.

E-naslov: nina.purg@ff.uni-lj.si

Aleš Oblak je kognitivni znanstvenik na Univerzitetni psihiatrični kliniki v Ljubljani. Njegovo delo se osredotoča na prvoosebno raziskovanje, nevroslikovne tehnike in stimulacijo možganov pri preučevanju osnovnih kognitivnih procesov, kot je delovni spomin, s poudarkom na psihiatričnih motnjah.

E-naslov: ales.oblak@psih-klinika.si

Jurij Bon je psihiater na Univerzitetni psihiatrični kliniki v Ljubljani in docent na Oddelku za psihiatrijo Medicinske fakultete Univerze v Ljubljani. Njegove raziskave se osredotočajo na razvoj diagnostičnih metod in individualiziranih zdravljenj psihiatričnih motenj z združevanjem deskriptivne in fenomenološke psihopatologije s kognitivno nevroznanostjo ter neinvazivno stimulacijo možganov.

E-naslov: jurij.bon@mf.uni-lj.si

Toma Strle je docent za kognitivno znanost na Centru za kognitivno znanost Pedagoške fakultete Univerze v Ljubljani. Vodi skupni srednjeevropski interdisciplinarni magistrski program Kognitivna znanost na Univerzi v Ljubljani in je član Laboratorija za empirično fenomenologijo. Njegovo raziskovanje se osredotoča na odločanje, fenomenologijo tavanja misli, neurofenomenologijo, samonanašalne procese, epistemologijo ter na povezovanje vedenjskih znanost in znanosti o človeškem umu.

E-naslov: Toma.strle@pef.uni-lj.si

Grega Repovš je profesor psihologije in vodja Laboratorija za kognitivno nevroznanost na Oddelku za psihologijo Filozofske fakultete Univerze v Ljubljani. Njegove raziskave vključujejo multimodalno slikanje možganov in preučevanje osnovnih kognitivnih procesov, kot so delovni spomin, kognitivni nadzor in regulacija čustev.

E-naslov: Grega.repovs@ff.uni-lj.si