

New Research in *Psychological Science*

May 12, 2023



[Visual Short-Term Memory Persists Across Multiple Fixations: An n-Back Approach to Quantifying Capacity in Infants and Adults](#)

Bret Eschman and Shannon Ross-Sheehy



Infants show a similar relation between fixation and visual working memory to that of adults, this research suggests. Eschman and Ross-Sheehy tracked eye movements as infants (5- and 11 –months –old) and adults viewed an array of four colored circles. After a blank interval, the researchers presented an array that either was identical to the previous array or identical except for one circle that had changed color. They measured change detection for the last fixated item (one-back), the second-to-last fixated item (two-back), or the nonfixated item (change-other). Results for all ages indicated memory for up to two sequentially fixated objects (i.e., one-back, two-back), with moderate evidence for nonfixated array items.

[Universal Constraints on Linguistic Event Categories: A Cross-Cultural Study of Child Homesign](#)

Lilia Rissman, Laura Horton, and Susan Goldin-Meadow



Could universal constraints on how languages describe actions reflect humanity rather than particular cultures and experiences? This research suggests that they could. Rissman and colleagues analyzed descriptions of tool events (e.g., cutting bread with a knife) from two groups. One group consisted of hearing adult speakers of English, Spanish, and Chinese. The other group consisted of deaf child homesigners (each of whom had created a gestural language without input from a conventional language model) ages 3 to 1 in fGuatemala, Nicaragua, United States, Taiwan, Turkey. The researchers found alignment across these two groups—events that elicited tool-prominent language among the spoken-language users also elicited tool-prominent language among the homesigners.

[Predictive Processing of Scene Layout Depends on Naturalistic Depth of Field](#)

Marco Gandolfo, Hendrik Nägele, and Marius V. Peelen



Boundary extension is a memory illusion in which observers remember more of a picture than they actually saw. Gandolfo and colleagues found that boundary extension depends on depth of field, as determined in their research by the aperture settings on a camera. Participants revealed larger boundary extension when they saw photographs with naturalistic depth of field (i.e., in the range of human vision) compared to photographs with unnaturalistic depth of field (i.e., deeper, when everything in the picture is sharp). Thus, a scene might need to be naturalistic to support prediction of upcoming views. Moreover, depth of field appears to be an important variable to consider in the study of scene perception and memory.

[The Development of Spatial Cognition and Its Malleability Assessed in Mass Population via a Mobile Game](#)

Shan Xu, Yiyang Song, and Jia Liu



To determine the developmental trajectory of spatial cognition and the best years in which to improve spatial skills, Xu and colleagues used a mobile game involving mental rotation. They tested a large sample of people from China, ranging from under 10 years old to older than 60, who played the game multiple times on their mobile devices. Results indicated that performance peaked at the age of 28, whereas the benefit of training peaked at 18. This asynchrony in development suggests that malleability may lay the foundation for developing spatial ability. Children showed low malleability, possibly because of their underdeveloped ability of mirror-image discrimination.

[Contactless Real-Time Heart Rate Predicts the Performance of Elite Athletes: Evidence From Tokyo 2020 Olympic Archery Competition](#)

Yunfeng Lu and Songfa Zhong



Psychological stress can impair the performance of elite athletes, this research suggests. During the 2020 Tokyo Olympics archery competition, cameras measured athletes' real-time heart rates in a contactless manner and then displayed this information during the competition broadcast. Lu and Zhong examined whether the athletes' heart rate predicted their performance. They found that higher heart rates—which indicate an increase in psychological stress—were associated with lower scores in the competition. These findings support the detrimental effect of psychological stress, as measured by a real-time biomarker in a high-stakes competition.

[Cross-Cultural Sex/Gender Differences in Produced Word Content Before the Age of 3 Years](#)

Mikkel Wallentin and Fabio Trecca

Sex/gender may influence the types of words children produce, this research suggests. Wallentin and Trecca classified the words spoken by children (12–36 months old) who were acquiring 26 different languages. In 22 of the 26 languages, differences in word type predicted sex/gender with higher accuracy than differences in vocabulary size. Boys produced more words for vehicles and outdoor scenes, whereas girls produced more words for clothing and body parts. The researchers used the data to create a model that was able to predict the child's sex/gender on the basis of the types of words

produced, and this prediction accuracy increased as a function of children's age. These findings suggest differences in how children live and may themselves cause further differences in development.

[What's in a Badge? A Computational Reproducibility Investigation of the Open Data Badge Policy in One Issue of *Psychological Science*](#)

Sophia Crüwell et al.

Crüwell and colleagues used the April 2019 issue of *Psychological Science*, in which all 14 articles received the Open Data badge, to investigate whether the badge reflected its aim of sharing both data and code to ensure reproducibility of results. Twelve researchers (at least three researchers per article) attempted to reproduce the articles' results. They found that all articles provided at least some data, and six articles provided analysis code. But only one article was rated to be exactly reproducible, and three were rated as essentially reproducible with minor deviations. Crüwell and colleagues suggest that researchers should be encouraged to adhere to the higher standard in force at *Psychological Science*.

In an accompanying note, the Editor of *Psychological Science*, Patricia J. Bauer, writes: "Critically, transparency and scientific community building are not mutually exclusive goals. In this regard, it is my pleasure to report that upon learning of the work of Crüwell and colleagues, several of the author groups with articles in Volume 30, Issue 4 of *Psychological Science* appended their registries to include elements identified in the audit as missing or insufficient."

[The Impact of Implicit-Bias-Oriented Diversity Training on Police Officers' Beliefs, Motivations, and Actions](#)

Calvin K. Lai and Jaclyn A. Lisnek



Diversity trainings that are brief and isolated in time are unlikely to change police behavior, this research suggests. Lai and Lisnek tested the effectiveness of a day-long implicit-bias-oriented diversity training designed to increase U.S. police officers' knowledge of bias, concerns about bias, and use of evidence-based strategies to mitigate bias. Immediately after the training, police officers showed improvements in all three areas, relative to their pre-training assessment. However, after one month, officers' concerns and strategy use regressed to pre-intervention levels, despite maintaining knowledge. Lai and Lisnek suggest that in future training efforts, agencies may consider integrating training with organizational initiatives and extending training over longer periods.

[Awe Sparks Prosociality in Children](#)

Eftychia Stamkou, Eddie Brummelman, Rohan Dunham, Milica Nikolic, and Dacher Keltner

Awe, rooted in the novel and the mysterious, might help societies flourish by making children more generous, this research suggests. Stamkou and colleagues studied how awe elicited by art affected children's prosocial behavior toward an out-group, along with accompanying physiological correlates. Children between 8 and 13 years old viewed movie clips that elicited awe, joy, or a neutral (control) response. Children who watched the awe-eliciting clip were more likely to spend their time on an effortful task and to donate their earnings from an experiment toward benefiting refugees. They also exhibited increased respiratory sinus arrhythmia, an index of parasympathetic nervous system activation associated with social engagement.

See this 2015 *Observer* article, "[All About Awe.](#)"

Impaired and Spared Auditory Category Learning in Developmental Dyslexia

Yafit Gabay, Casey L. Roark, and Lori L. Holt

Gabay and colleagues tested whether category learning is served by procedural (information-integration) learning systems, declarative (rule-based) learning systems, or both. They used nonspeech auditory category learning tasks to test adult Hebrew-speaking participants, some neurotypical and some with dyslexia, which has been linked to disruptions in information integration. Results indicated that the dyslexia group had impaired information-integration category learning and spared rule-based category learning compared with the neurotypical group. Further analyses suggested reduced use of, and slower shifting to, optimal procedural-based strategies among participants with dyslexia, whereas both groups used similar hypothesis-testing strategies. These findings support the idea that multiple systems serve category learning.

The Role of Beta Oscillations in Mental Time Travel

Mariano D'Angelo, Francesca Frassinetti, and Marinella Cappelletti



People's ability to project themselves into the past and the future (i.e., mental time travel [MTT]) appears to be supported by brain oscillations in the beta band (20 Hz) that also process seconds-long temporal information, this research suggests. D'Angelo and colleagues used transcranial alternating current stimulation (tACS) to exogenously modulate parietal oscillations while participants did an MTT task. When they modulated parietal beta oscillations, participants underestimated temporal distances in past but not in future MTT. Participants who overestimated seconds-long intervals also overestimated temporal distances in past MTT and showed a stronger effect of brain stimulation.

On How to Be Liked in First Encounters: The Effects of Agentic and Communal Behaviors on Popularity and Unique Liking

Michael Dufner and Sascha Krause



When meeting other people for the first time, how should one behave to be liked? Dufner and Krause asked pairs of adults to have one-on-one conversations. After each conversation, both participants rated the other for likeability. Observers viewed recordings of the conversations and rated each interaction partner on four agentic behaviors (leading, dominant, confident, boastful) and four communal behaviors (polite, benevolent, warm, friendly). Participants who generally showed agentic and communal behavior were generally liked (popularity). Participants who showed communal, but not agentic, behavior were particularly well-liked by the respective interaction partner (unique liking). These findings indicate how individuals may become popular and friendships may develop.

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