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Enhanced visuo-spatial learning and memory effects in time-space synesthesia

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Abstract: Time-space synesthetes report that they consistently experience time events, such as the months of the year, as having a specific spatial layout. Two studies compared 11 synesthetes' and 41 non-synesthetic controls' ability to memorize novel spatial calendars. Both studies revealed better memory performance (quicker reaction times and higher consistency) in synesthetes than controls, even if the memorized calendar was specifically designed to conflict with synesthetes' own involuntarily experienced calendar. Furthermore, an additional group of controls' performance was better for counterclockwise than clockwise calendars, perhaps due to less interference with conventional mappings. These findings suggest that time-space synesthetes' enhanced visuo-spatial memory abilities may underlie the emergence of time-space synesthesia, as people with a greater capacity to learn mappings between spatial forms and temporal sequences might be more likely to think of months of the year in terms of idiosyncratic shapes, while others might be more reliant on culturally established mapping schemes.