

Rehabilitation of everyday mathematics in people with aphasia

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What do we know?

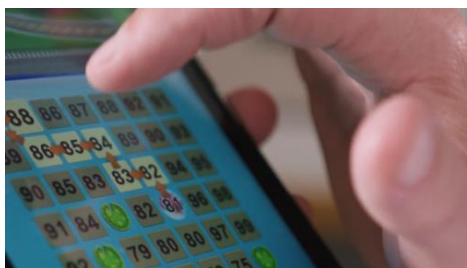
- A high proportion of people with aphasia are likely to have substantial numeracy difficulties (e.g. Proios et al., 2021), although some individuals can complete mathematical operations (Varley et al., 2005)
- Such difficulties have enormous impact on individuals' lives and independence (Benn et al., 2022)
- Very few interventions exist which address problems with numerical processing or calculation (Lemanissier et al., 2023; Ablinger et al., 2006)

What is needed?

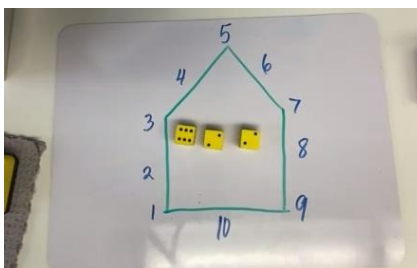
Results from a recent survey with SLPs in the US and UK:¹

- Findings underline the relevance / importance of considering numeracy abilities in aphasia rehabilitation
- Some clinicians are addressing difficulties using a variety of creative approaches
- However, there is a lack of psychometrically-sound assessments and evidence-based interventions

What are we doing?



SWAN: A digital therapy game, which aims to enhance foundational number language (i.e. counting & transcoding).²
University College London, UK



Aphasia + Math: A group intervention, delivered online (via VirtualConnections), which targets math tasks in daily life.
University of Nevada, Reno

What next?

- What kinds of difficulties with numbers/math have you observed?
- How are these impacting activities of daily life?
- What kinds of interventions are needed?
- How confident do you feel to deliver this kind of intervention?
- What kind of training would be useful?

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¹ Newton, C., Brancamp, D., & Brancamp, T. (2025). The rehabilitation of numerical processing and calculation in aphasia: An international survey of speech-language pathologists. https://doi.org/10.31234/osf.io/g63j9_v1

² Newton, C., Meitanis, V., Bruce, C., & Donlan, C. (2025). Evaluation of the SWAN game-based approach to re-building numeracy skills in aphasia: Feasibility and preliminary findings. https://doi.org/10.31234/osf.io/f7d39_v1

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I Spy Sums (modified from www.PEPnonprofit.org)

You need:

- One (1) deck of cards
- A = 1
- J = 11
- Q = 12
- K = 13

Skills:

- Addition
- Transcoding
- Working memory
- Executive function

How to play:

- Deal out 20 cards.
- 5 cards across and 4 cards down.
- Face up.



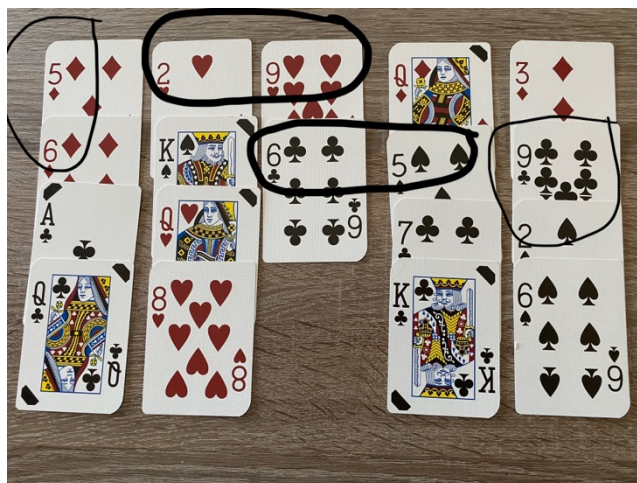
- Player One chooses 2 cards. They add the cards together mentally. [Example: 7]
- Player One says to Player Two, “I spy two cards with a sum of 7”
- Player Two looks at all the cards and finds 2 cards that are connected that equal 7.
- Cards must be touching or connected either vertically or horizontally.
 - [multiple examples are circled in the photo below]



- Once the Players agree that the 2 cards equal 7, they remove the pair from the board.



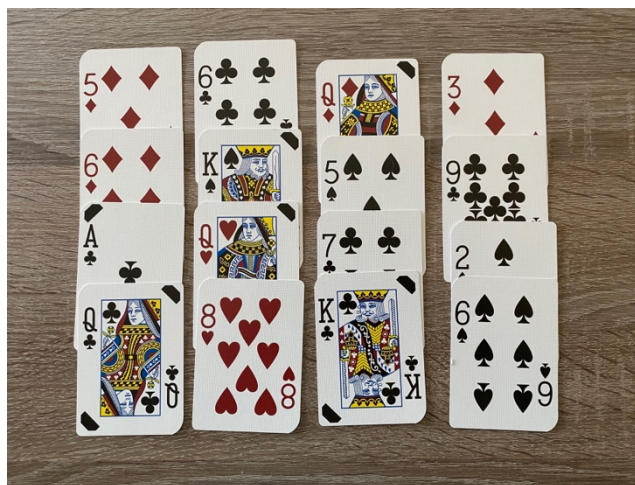
- Player Two swaps roles and continues. Example: "I spy two cards with a sum of 11."
 - Multiple examples are circled. Players need to find ONE expression only.



- Play continues as outlined above until the table is cleared.



- The winner is the player with the most cards at the end of the game.
- As large gaps appear in the array, the size of the array may be reduced to help fill in the gaps.



Variations:

- To reduce complexity:
 - use a smaller array to start with such as a 4 x 4 array or smaller
 - use the Ace through 9 cards for smaller sums. (Makes a 6 x 6 array)
 - Make all face cards = 10
- To increase complexity:
 - use larger array – all 52 cards, 13 x 4 array
 - add three cards together to create a sum
 - require the players to guess the exact cards that the other player is thinking of