


# BRAIN WAVES



## THE ASTUTE GOOSE

THE BRAIN-TRAINING  
MEMORY GAME FOR  
THE WHOLE FAMILY



REINER KNIZIA

KOSMOS

## Fun memory games for the whole family

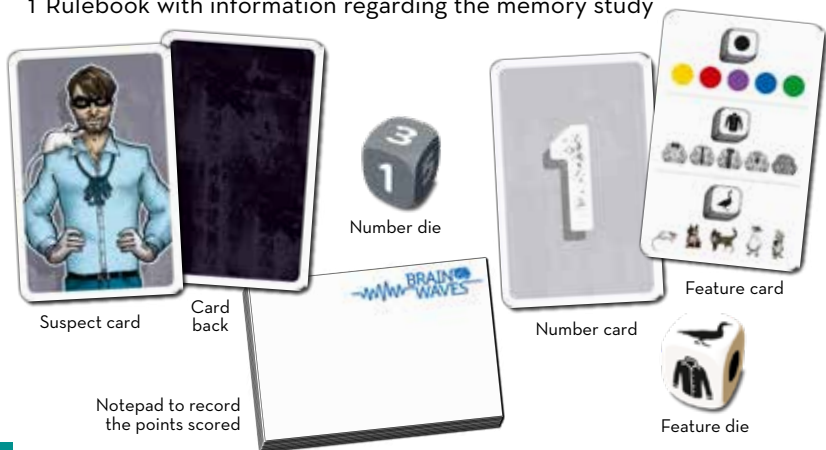
### Exercise your brain while playing games!

Brainwaves games can help you to train your brain – in just 15 minutes. The game series was developed by experienced game designers and scientifically tested by neuroscientists. Their conclusion was that these games work the parts of the brain that handle fluid intelligence, working memory, and episodic memory. Above all, episodic memory, which is responsible for memories of autobiographical events, is trained in this particular game.

## For 1-5 players, ages 8 and up

### Game Components

- 25 Suspect cards (featuring 5 colors, 5 clothing features, and 5 animals)
- 6 Number cards
- 5 Feature cards
- 1 Number die
- 1 Feature die
- 1 Notepad
- 1 Rulebook with information regarding the memory study



## Game Overview

What exactly did the perpetrator look like? What color were their clothes? There are number cards from 1 to 6 on the table. Below each of them is one face-down suspect card. You have already had a chance to memorize the suspects. During a player's turn, the player rolls the number die and feature die. The number die indicates one of the six positions in the suspect lineup. The feature die indicates which characteristic of the suspect that you must identify: the clothing color, the clothing feature, or the animal companion. The player must identify the feature rolled on the feature die of the suspect located in the position corresponding to the number that was rolled on the number die, without looking at the card.





If the player gives the correct answer, then he or she takes the suspect card. This card counts for one point at the end of the game. A new suspect card is placed in the empty space left by this card. All players memorize the new card and then it is turned face down.

In this way, the card display changes throughout the game. And this is exactly what is intended to stimulate those brain cells in the frontal and parietal lobes that are important for mental abilities (see the information at the end of the rulebook).

## Game Preparation

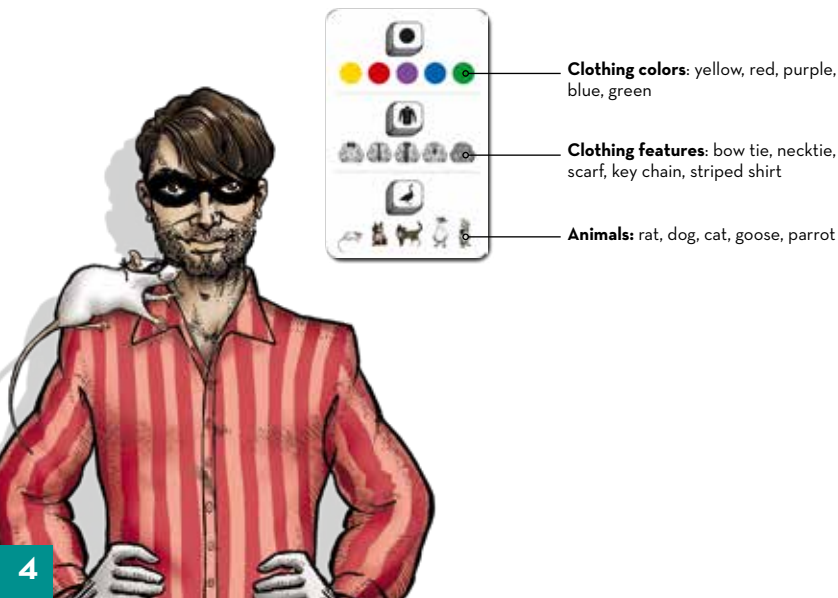
- Each player receives a **feature card** and places it face-up in front of them.
- Place the two **dice** within reach of all players.
- Lay the **number cards** out on the table according to the desired difficulty level. See the following page.
- Shuffle the **suspect cards** and place them on the table in a face-down deck. Depending on the difficulty level, draw suspect cards from this deck and place them face up in a row, below the number cards. See the following page.
- The **notepad** is only needed at the end of the game to record the points scored.



Difficulty Level 1 <i>Rookie</i>	Difficulty Level 2 <i>Experienced</i>	Difficulty Level 3 <i>Advanced</i>	Difficulty Level 4 <i>Expert</i>
3 suspect cards are laid out and the number cards are placed above them as follows:	4 suspect cards are laid out and the number cards are placed above them as follows:	5 suspect cards are laid out and the number cards are placed above them as follows:	6 suspect cards are laid out and the number cards are placed above them as follows:
			

**Tip:** Begin with the lowest level of difficulty and increase the difficulty level step by step.

**Note:** The suspects have three variable features. The feature card provides an overview of all the possible features.



## Gameplay

The players study and memorize the features of the suspects in the suspect card lineup as well as possible.

After about two minutes, or when all the players are ready, the cards are flipped over so that only their back sides are visible.



This is the display for the Expert difficulty level with 6 cards.



Draw deck

The youngest player starts. Then, the game continues clockwise. During a player's turn, the player rolls both dice and then announces the clothing color, clothing feature, or animal companion of the specified suspect.

### • The player rolls both dice

The number rolled on the number die specifies the suspect card (positions 1 to 6) and the feature rolled on the feature die specifies the feature that must be identified (clothing color, clothing feature, or animal companion).

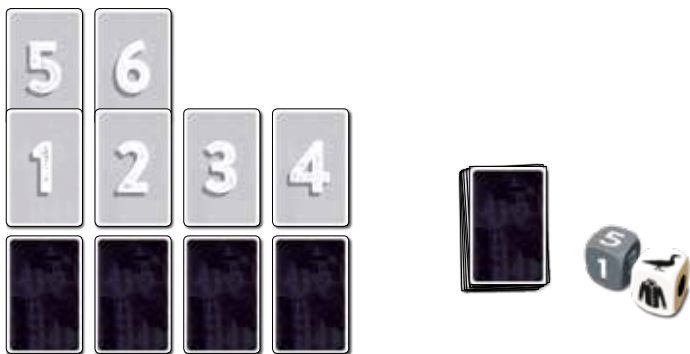
**Example A:** If the 3 and the clothing feature symbol were rolled, then the question would be: What is the clothing feature of suspect number 3?



**Example B:** If the 2 and the clothing color symbol were rolled, then the question would be: What color is suspect number 2's clothes?



**Example C:** If the 5 and the animal symbol were rolled, then the question would be: What animal does suspect number 5 have with him?



**Note:** In games with less than six suspects, some suspects are assigned to two number cards. For example, if only four suspects are in the lineup, then suspect 1 is also suspect 5, and suspect 2 is also suspect 6. This is easy to understand from the way the cards are set up, as shown in the example above.



## ● The player gives his or her answer

Once the player has named the clothing color, clothing feature, or animal aloud, then he or she takes the suspect card from the display and looks at it secretly. Was the answer right or wrong?

✓ **Right:** If the answer was correct, then the player shows the card to the other players and places it face-down in front of them. This will be the player's points pile.

✗ **Wrong:** If the answer was wrong, then each of the other players now have a chance to give an answer, starting with the player to the left of the player with the card in his or her hand.

✓ If another player states the correct answer, then the player shows the card in his or her hand and gives it to the player who answered correctly. This player places it face-down in front of them.

✗ If no player gives the correct answer, then the card is removed from the game and is placed in the box.

**Note:** If the player accidentally reveals the card to the other players, even though the player has given an incorrect answer, then the player immediately to the player's left automatically receives the card for his or her points pile without having to give an answer.

## ● A new card is placed in the lineup

Draw a new card from the draw deck and place it face-up in the empty space in the lineup. The players memorize the features of the suspect on the new card. Then the card is flipped face down. The next player (to the left of the player who last rolled the dice) now has his or her turn.



## End of Game

When there are no more cards in the draw deck, the game continues with empty spaces in the suspect lineup. As soon as the roll of the number die indicates an empty position, the game ends immediately.

All players count the cards in his or her points pile. The player with the most cards in his or her pile wins the game. Record the scores by player on the notepad so you can compare the results later, and track your improvement, after more games.

## Solo Version

The player selects the difficulty level and shuffles the suspect cards. The game is played the same as previously described with the following rule change:

Whenever the player gives an incorrect answer, the suspect card is placed on a separate error pile.

At the end of the game, the player counts the cards in the points pile as well as the cards in the error pile. Then, the player deducts the number of error cards from the number of correctly answered cards and records the result on the notepad.

After more solo games, the player can compare the results and see whether his or her performance has improved.

## Cooperative Game

Players can also play cooperatively to win as many cards as possible together: After rolling the dice, the group agrees on an answer and then the card is revealed. If the answer is correct, then the card is put into a shared points pile; otherwise the card goes into a shared error pile. At the end of the game the group then calculates the score in the same way as described in the solo variant.





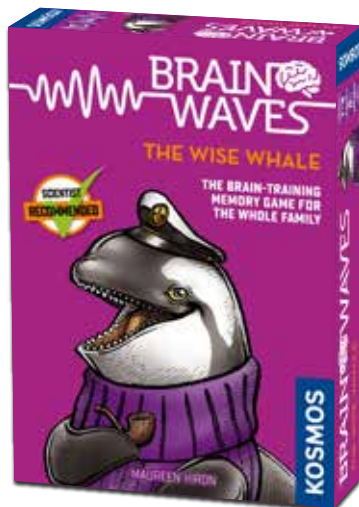
## The Author

After years spent in England, Reiner Knizia now lives again in Munich. He invents and tests his game ideas in detail – including not only short, entertaining children's games but also complex strategy games. Kosmos has published many of his games, including the best-selling Lost Cities and Ingenious.

Reiner Knizia and Kosmos thank all of the test players and rule readers.

## Interested in More Brain Training?

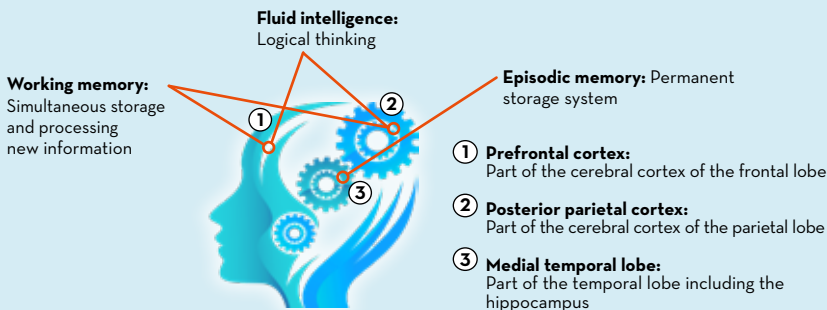
The Brainwaves series contains additional games offering a variety of brain training exercises.



## Scientific Study

The following is some additional information about how the Brainwaves games have been specifically designed and tested to work the memory.

Neuroscientists from the Clinical and Biological Psychology Research Group at the University of Ulm, Germany investigated the Brainwaves series as part of a scientific study. The question at the heart of the study was which brain functions are used or required by these games. The demands placed on the working memory (simultaneous storage and processing of new information), long-term or episodic memory (the brain's permanent storage system), and fluid intelligence (logical thinking) were examined.



### The games studied:

THE BRILLIANT BOAR  
THE ASTUTE GOOSE  
THE WISE WHALE

**Results of the scientific study:** The Brainwaves series places demands on all three of the brain functions that were examined (fluid intelligence, working memory, and long-term memory) and is therefore suitable for mental training exercises from the scientists' point of view.

Other well-known memory games are usually “static” – there are often no changes in the positions of the elements being memorized. The Brainwaves series is totally different: the players’ memories must be constantly updated because the elements in their hands or in the display change with each turn. This means that the players must remove already-imprinted elements associated with a certain position from their memories and remember new elements over and over again.

The game series thereby places demands on several important brain functions. This results in an effective, simple, and quickly played series of brain exercises. And the games are fun, because many people of all ages find these mental challenges and competitions enjoyable – whether played alone or in a social group setting.

**Conclusion: Playing these games will help you train your memory.**

## Memory Terms Defined

**Fluid intelligence**, or fluid reasoning, is the ability to think logically and solve newly confronted problems. It is the ability to analyze a problem, see patterns underlying it, and come up with solutions using logic.

**Working memory** enables us to temporarily store and simultaneously manipulate and process information. We require working memory, for example, to remember the beginning of a sentence when the sentence comes to an end so that we can understand its content.

**Episodic memory**, or long-term memory, refers to memories that are held indefinitely – longer than short-term memories. Episodic memory is required, for example, to remember a conversation that already took place several days ago.

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