



**game  
in lab**

SUPPORTING  
GAME  
RESEARCH

# COGNITIVE – ADAPTATION – BEHAVIOUR

PROJECT DEVELOPED BY



LAB



**UCA** J.E.D.I.  
UNIVERSITÉ CÔTE D'AZUR



IN COLLABORATION WITH



**asmodee**  
RESEARCH

**\_INNOVATION  
FACTORY**

JAN 2019 – MAY 2020

# KEY POINTS

## This study suggests that:

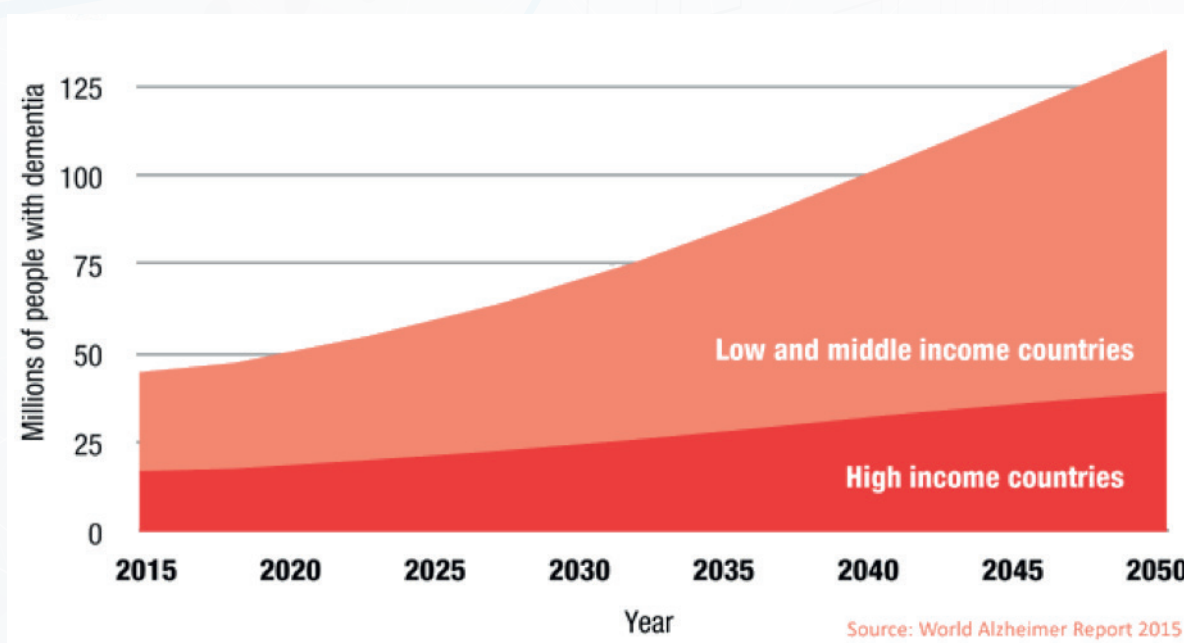
- ➔ **Board games** create **enjoyable activity** for two or a family to share together.
- ➔ **Board games** may be a valuable tool to promote **quality of life** when they fit with a **player's interests**.
- ➔ It is essential to offer **different games** (adaptable in terms of level and / or rules), **ergonomically usable** by patients and caregivers (visibility, held in the hand).
- ➔ Although board games are not a treatment for dementia, it is possible to consider **play as cognitive and behavioural stimulation** if it is practiced **on a regular basis** and with periodic guidance from a caregiver outside the family environment.
- ➔ **The play partner** should not be systematically the caregiver.
- ➔ **The caregiver should be trained beforehand** so that playing the game is a fun experience and not aimed at highlighting the patient's diminished capabilities.

# WHAT IS DEMENTIA?

Dementia is an umbrella term for a group of brain diseases, characterized by deterioration of cognition, behaviour and functional abilities. Because of the progressive nature of the condition, a person's ability to perform activities of daily living deteriorates over time, leading to dependence on caregivers and high levels of disability and disease burden.

Several etiologies can lead to dementia : Alzheimer's, Vascular and metabolic disease. Environmental factors, stress and quality of life may contribute to the rising of dementia syndrome.

*Source : WHO*



# SYMPTOMS

## COGNITIVE SYMPTOMS:

Memory first !  
Language, attention

## BEHAVIORAL SYMPTOMS:

Behavioral symptoms are the most disturbing for patients and caregivers.

Apathy is the most frequent.

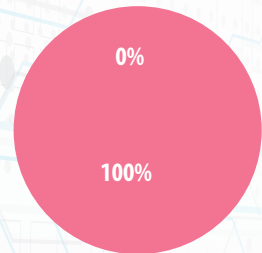
Apathy is frequently comorbid with other syndromes which may have symptoms of reduced interests/motivation/goal-directed behavior, such as depression and fatigue.

### APATHY

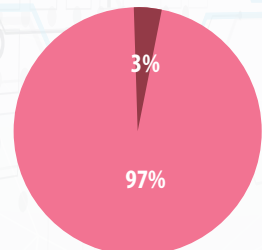
A quantitative reduction of goal-directed activity either in behavioral, cognitive, emotional or social dimensions in comparison to the patient's previous level of functioning in these areas.

- Preserved
- Not Preserved

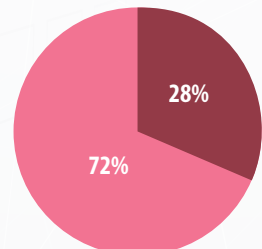
#### Behavior & Cognition



#### Emotion



#### Social Interactions



# TREATMENTS

As of today, there is no curative treatment.

Pharmacological symptomatic treatment is available but with modest efficacy.

Non Pharmacological Treatments (NPT) are the first line options including:  
social intervention  
group and individual stimulation & training activities.

NPT are useful to consider as therapies for people presenting with different neurocognitive and psychiatric diseases at all stages, with evidence of apathy across domains.

The presence of a therapist and/or a caregiver is important in delivering NPT effectively, but parts of the treatment may be performed by the patient alone.

NPT can be delivered both in clinical settings and at home.





# BOARD GAMES FOR BEHAVIOUR AND COGNITION

Cognitive and behavioral disorders are the core clinical features of Alzheimer's disease and related disorders. Currently, a pharmacological disease-modifying treatment is not available, but different non-pharmacological approaches appear to be useful. Behavioral manifestations and motivation disorders are partially influenced by environmental factors. To date, little is known about the impact of board games on behaviour and cognition.

## GOALS:

- ➔ To assess the impact of board games on the patient-caregiver relationship,
- ➔ To assess the relevance of the adaptation of board games for patients with Alzheimer's Disease and related disorders.

## METHOD:

**PHASE 1:** Feasibility tests in a memory workshop at the Nice University Memory Center to validate the usability of adapted games.

**PHASE 2:** Survey of professionals (nursing home, day care, at-home intervention) to validate the relevance of the use of adapted board games in professional practice.

**PHASE 3:** Clinical study with patients / caregivers consulting at the Memory Center.

# PHASE 1: FEASIBILITY TESTS

Cognitive training group April 24, 2019

(10 outpatients: 6 mild impairment, 4 moderate impairment)



## Games

# DOUBLE



# Timeline



All the patients enjoyed playing and would like to have these games adapted at home to play with their loved ones.

The classic rules of the games could not be used and were adapted to the patients. Some graphics and cards that were disturbing will require adaptation (colours were too similar, forms/shapes were not clear enough)."



# PHASE 2: SURVEY

## Care structure

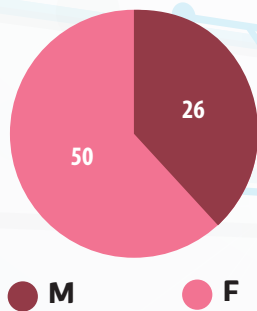
At home Care intervention team (ESA): 5  
Home services: 1  
Day care center: 2  
Nursing home: 1

## Professional caregivers

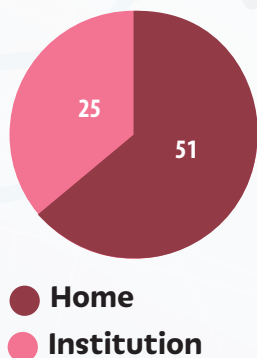
Care assistant in Gerontology: 2 (+)  
Psychomotrician: 5  
Psychologist: 5

**76 patients, 97 % enjoyed playing**

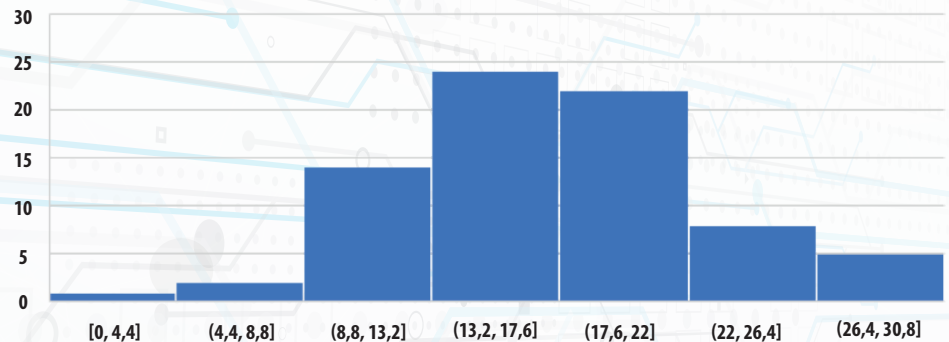
Who?



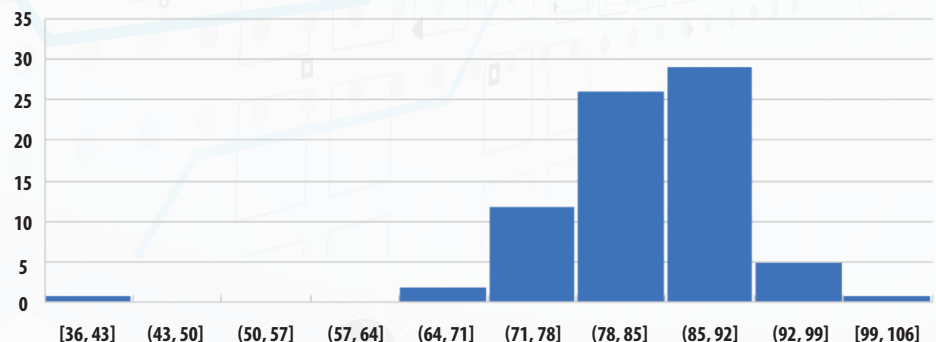
Where?



Mini Mental state score



Age distribution



## Suggestions for the use of the games in clinical practice

- ➔ All professionals have found the games useful in their practice (group or single).
- ➔ Games are interesting for:
  - ➔ assessment of the patient from one session to another
  - ➔ « flash instant » animations in order to reduce a patient's excessively high anxiety or agitation.
- ➔ Most of the patients would rather play with someone other than their spouse.

## Suggestions for adapting board games to a population of elderly subjects with cognitive impairment

- ➔ For ergonomic accessibility, address the size and the colour contrast.
- ➔ For cognitive accessibility, develop easy to understand rules as well as several levels of difficulty in order to avoid lowering of self-esteem.
- ➔ For regular use, create themes adapted to patients' interests (e.g. everyday life, reminiscence). Also ensure professional training is provided to caregivers so that rules are appropriately adapted to maintain the patient's motivation.

# PHASE 3: CLINICAL STUDY

## Goals:

To assess the effect of board games on behavior of patients with neuro cognitive disorders

Caregiver quality of life and assessment of the interaction between players

Inclusion criteria:

> than 65 years old(DSM 5)

Mini Mental Test Examination < 26/30

## Method:

2 months with a clinical interview at base line, month 1 & month 2

clinical interview done by phone with recording of free responses and questionnaire responses

## Results:

20 patients / caregivers have been included

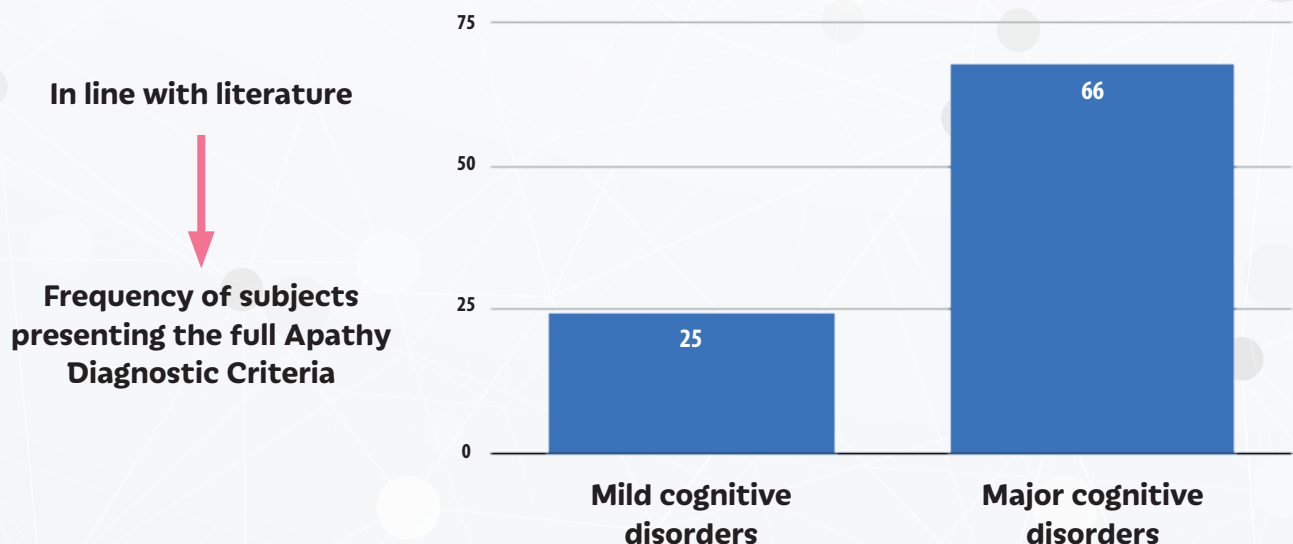
End of the clinical interviews, April 2020

The most interesting seem to be the qualitative responses

Impact of the COVID-19 crisis

## Patients' Characteristics

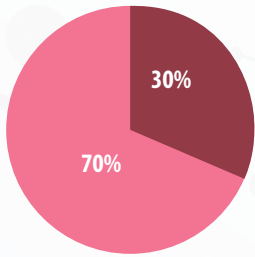
|  |   |
|--|---|
| GENDER   | 10 Female / 10 Male                                       |
| AVERAGE AGE  | 84 (75 - 97)  |
| COGNITIVE PERFORMANCE LEVEL USING THE MINI MENTAL SCORE EXAMINATION (AVERAGE SCORE / 30) | 17,7 (16 - 26)<br>indicating a moderate cognitive deficit |
| FREQUENCY OF APATHY DIAGNOSTIC CRITERIA  | 60 %  |





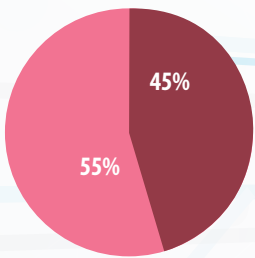
## Results of the the clinical study

### Behavior - Cognition



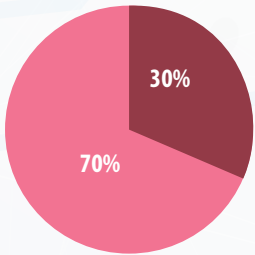
Board games are a stimulating tool because even if the patient has diminished interests, this is not the case for the caregiver. Personal interest in a game will encourage its use by the caregiver who is the main initiator of game play. It is important to be able to use games that are closer to the patient's interests. This is a condition for having the best possible engagement.

### Emotion



The emotional dimension is best preserved. Games are an instrument of emotional stimulation.

### Social Interaction

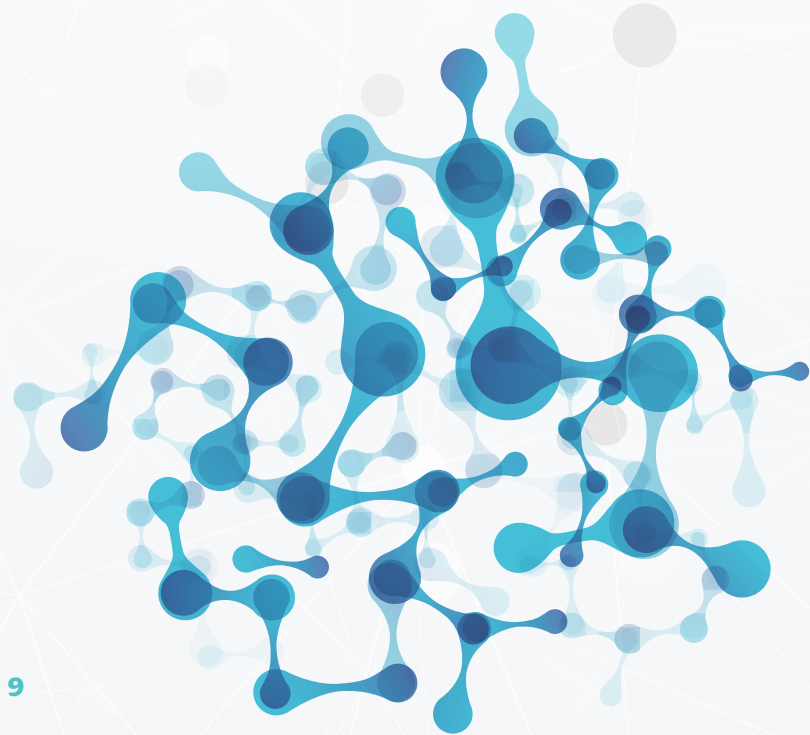


Board games are a tool that promotes interaction. For this:

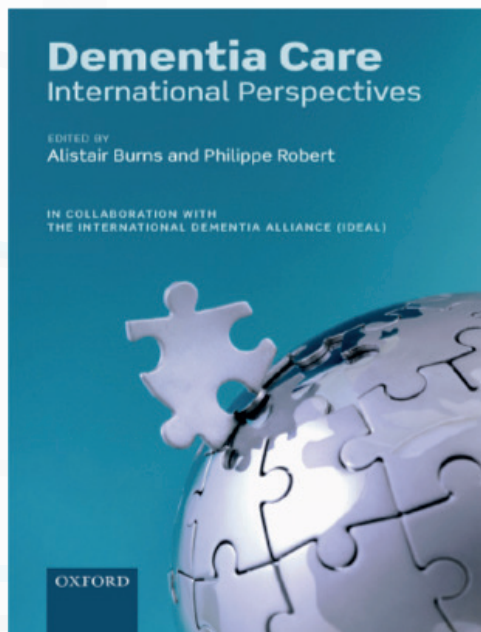
- ➔ it is necessary to have a partner
- ➔ if possible that the pleasure of playing is shared by the players.

● Preserved      ● Not Preserved

Study conducted by Julie Brousse,  
Laure Chantepy & Philippe Robert  
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# SELECTED REFERENCES



## Original article

### Is it time to revise the diagnostic criteria for apathy in brain disorders? The 2018 international consensus group

P. Robert<sup>a,\*,1</sup>, K.L. Lancôt<sup>b,1</sup>, L. Agüera-Ortiz<sup>c</sup>, P. Aalten<sup>d</sup>, F. Bremond<sup>a,e</sup>, M. Defrancesco<sup>f</sup>, C. Hanon<sup>g</sup>, R. David<sup>h</sup>, B. Dubois<sup>i</sup>, K. Dujardin<sup>j</sup>, M. Husain<sup>k</sup>, A. König<sup>l</sup>, R. Levy<sup>j</sup>, V. Mantua<sup>m</sup>, D. Meulien<sup>n</sup>, D. Miller<sup>o</sup>, H.J. Moebius<sup>p</sup>, J. Rasmussen<sup>q</sup>, G. Robert<sup>r</sup>, M. Ruthirakuhan<sup>b</sup>, F. Stella<sup>s</sup>, J. Yesavage<sup>t</sup>, R. Zeghari<sup>a</sup>, V. Manera<sup>a,e</sup>

Journal of Alzheimer's Disease 74 (2020) 669–677  
DOI 10.3233/JAD-191282  
IOS Press

### The “Interest Game”: A Ludic Application to Improve Apathy Assessment in Patients with Neurocognitive Disorders

Radia Zeghari<sup>a,b,\*</sup>, Valeria Manera<sup>a,b</sup>, Roxane Fabre<sup>a,d</sup>, Rachid Guerchouche<sup>c</sup>, Alexandra König<sup>a,c</sup>, Minh Khue Phan Tran<sup>a,c</sup> and Philippe Robert<sup>a,b,e</sup>

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<sup>c</sup>Inria Sophia Antipolis, STARS team, Sophia Antipolis, France

<sup>d</sup>Centre Hospitalier Universitaire de Nice, Département de Santé Publique, Nice, France

<sup>e</sup>Centre Hospitalier Universitaire de Nice, Resource & Research Memory Centre, Nice



## Regular Research Article

### Recommendations for the Nonpharmacological Treatment of Apathy in Brain Disorders

Valeria Manera, PhD, Sharon Abrabams, DClInPsy, PhD, Luis Agüera-Ortiz, MD, PhD, François Bremond, PhD, Renaud David, MD, PhD, Kaci Fairchild, PhD, Auriane Gros, PhD, Cécile Hanon, MD, Masud Husain, DPhil, FRCP, FMedSci, Alexandra König, PhD, Patricia L. Lockwood, PhD, Maribel Pino, PhD, Ratko Radakovic, CPsychol, PhD, Gabriel Robert, MD, PhD, Andrea Slachevsky, MD, PhD, Florindo Stella, MD, PhD, Anaïs Tribouillard, MSc, Pietro Davide Trimarchi, PhD, Frans Verbey, MD, PhD, Jerome Yesavage, MD, PhD, Radia Zeghari, MSc, Philippe Robert, MD, PhD

Received: 11 December 2018 | Accepted: 12 April 2019  
DOI: 10.1002/gps.5125

## RESEARCH ARTICLE

WILEY | International Journal of Geriatric Psychiatry

### A survey on the prevalence of apathy in elderly people referred to specialized memory centers

Valeria Manera<sup>1</sup> | Roxane Fabre<sup>1</sup> | Florindo Stella<sup>2,3</sup> | Júlia Cunha Loureiro<sup>2,3</sup> | Luis Agüera-Ortiz<sup>4</sup> | Jorge López-Álvarez<sup>4</sup> | Cécile Hanon<sup>5,6</sup> | Nicolas Hoertel<sup>5,6</sup> | Pauline Aalten<sup>7</sup> | Inez Ramakers<sup>7</sup> | Radia Zeghari<sup>1</sup> | Philippe Robert<sup>1</sup>

## Key words

Dementia - non pharmacological treatment - apathy - stimulation - interest



# game in lab

SUPPORTING  
GAME  
RESEARCH

Game in Lab is the first project undertaken by Asmodee Research, in partnership with the Innovation Factory.

## PROJECT PRESENTATION

- ➔ Game in Lab provides support to **board game research** projects,
- ➔ Co-created by **Asmodee Research** & the **Innovation factory**,
- ➔ to define scientific interests on modern board games influence.

## OUR 3 MAIN GOALS

- ➔ **Funding** scientific projects
- ➔ **Creating and animating** a mixed community (professionals & researchers)
- ➔ **Spreading** scientific knowledge to a broader audience

## THE SCIENTIFIC COMMITTEE

The scientific direction is provided by a **Committee** composed of a **dozen experts** from the **research community**, the **gaming industry** and the **field of innovation**.

This Council is the program's backer of the **ethics, neutrality & scientific quality**.

## OUR ACTIONS

Every year, we launch **calls for projects** to support research projects.

We organize several **events** and **meet ups** to share the results of our initiatives.

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[www.game-in-lab.org//](http://www.game-in-lab.org//)

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All pictures courtesy of  
Fantasy Flight Games