From active aging to healthy aging

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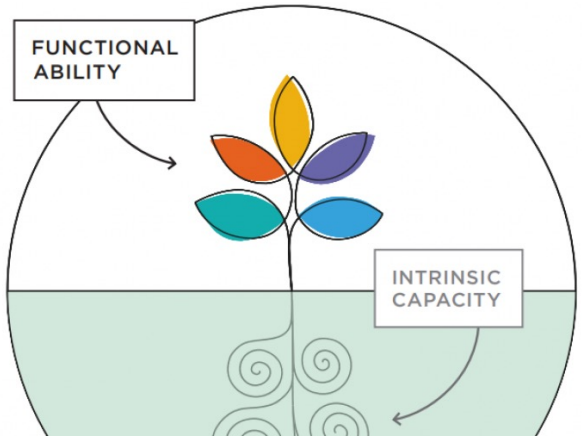
World Health Organization -WHO

defines *Healthy Aging* "as the process of developing and maintaining the **functional ability** that enables **wellbeing** in older age".

Functional ability is about having the capabilities that enable all people to be and do what they have reason to value. This includes a person's ability to:

- meet their basic needs;
- to learn, grow and make decisions;
- to be mobile;
- to build and maintain relationships;
- to contribute to society.



Functional ability is made up of the **intrinsic capacity** of the individual, relevant **environmental characteristics** and the interaction between them.

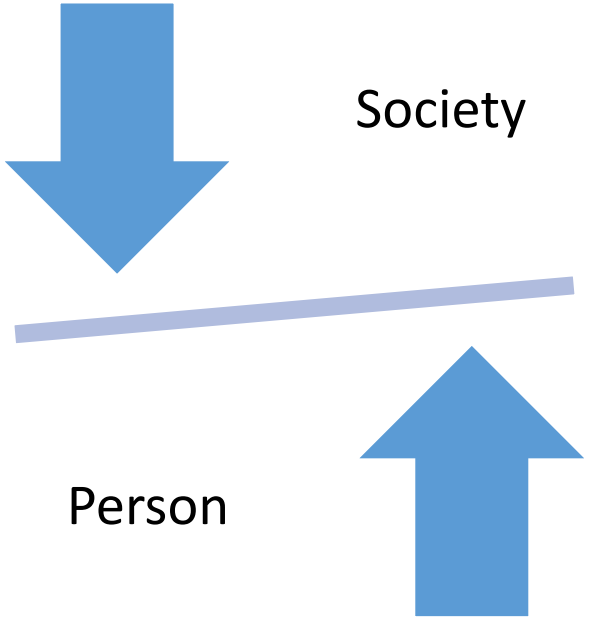
Age-friendly environments

Health and well-being are determined not only by our genes and personal characteristics but also by the **physical and social environments** in which we live our lives.

Environments play an important role in determining:

- our physical and mental capacity across a person's life course and into older age
- how well we adjust to loss of function and other forms of adversity that we may experience at different stages of life, and in particular in later years.

World Health Organization



Healthy Aging

is about creating the environments and opportunities that enable people to be and do what they value throughout their lives.

- Everybody can experience *Healthy Ageing*.
- Being free of disease or infirmity is not a requirement for *Healthy Ageing* as many older adults have one or more health conditions that, when well controlled, have little influence on their wellbeing.

World Health Organization

Active Aging

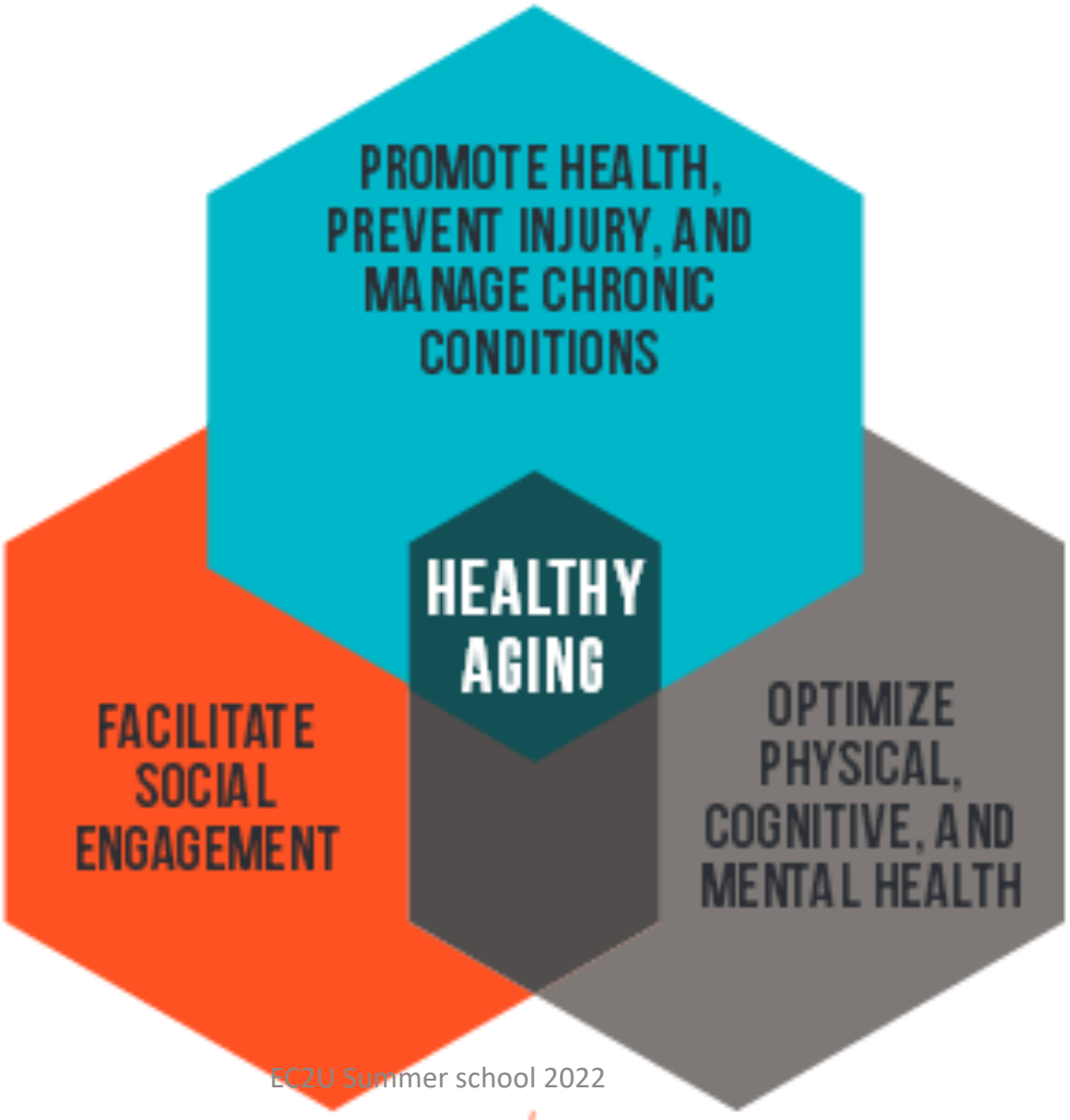
The process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age.

“Health” refers to physical, mental and social well being.

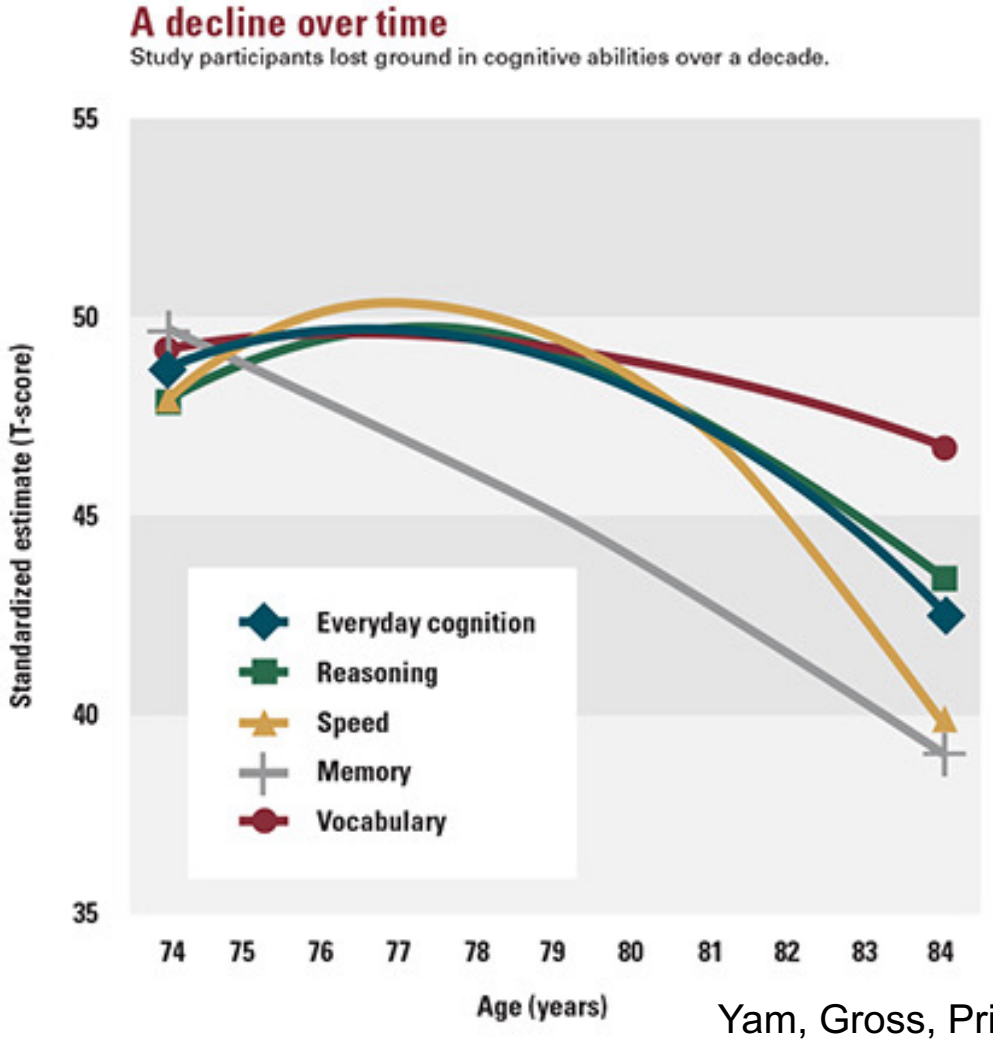
in an active ageing framework, policies and programmes that promote mental health and social connections are as important as those that improve physical health status.

World Health Organization

Guiding Model for Healthy Aging



Cognitive functioning



Yam, Gross, Prindle, & Marsiske, 2014

Fluid and crystallizzed intelligences

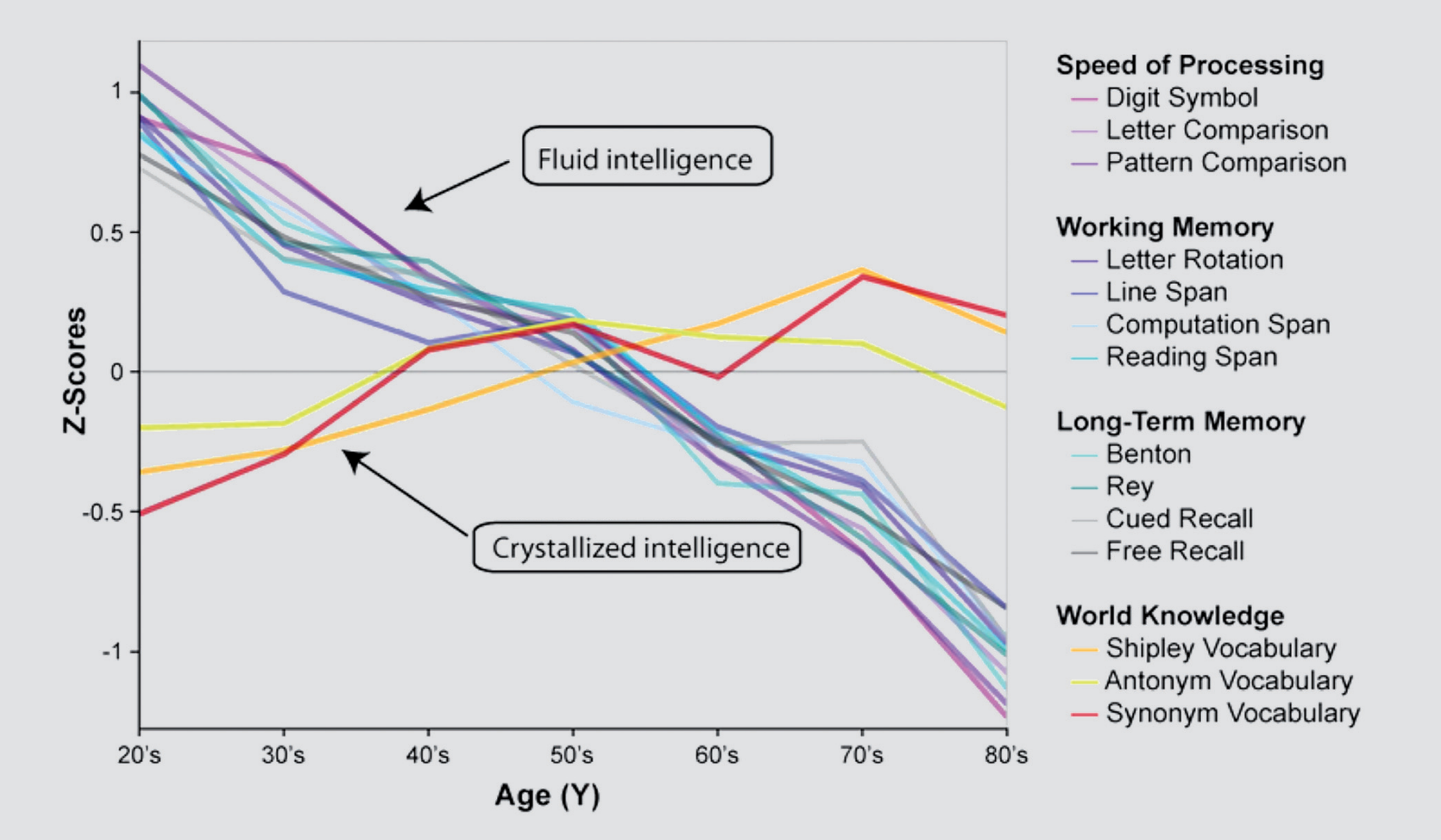


Figure 1. Cross-sectional aging data adapted from ref 9 showing behavioral performance on measures of speed of processing (ie, Digit Symbol, Letter Comparison, Pattern Comparison), working memory (ie, Letter rotation, Line span, Computation Span, Reading Span), Long-Term Memory (ie, Benton, Rey, Cued Recall, Free Recall), and world knowledge (ie, Shipley Vocabulary, Antonym Vocabulary, Synonym Vocabulary). Almost all measures of cognitive function (fluid intelligence) show decline with age, except world knowledge (crystallized intelligence), which may even show some improvement.

(Park & Bischof, 2013)

Individual differences?

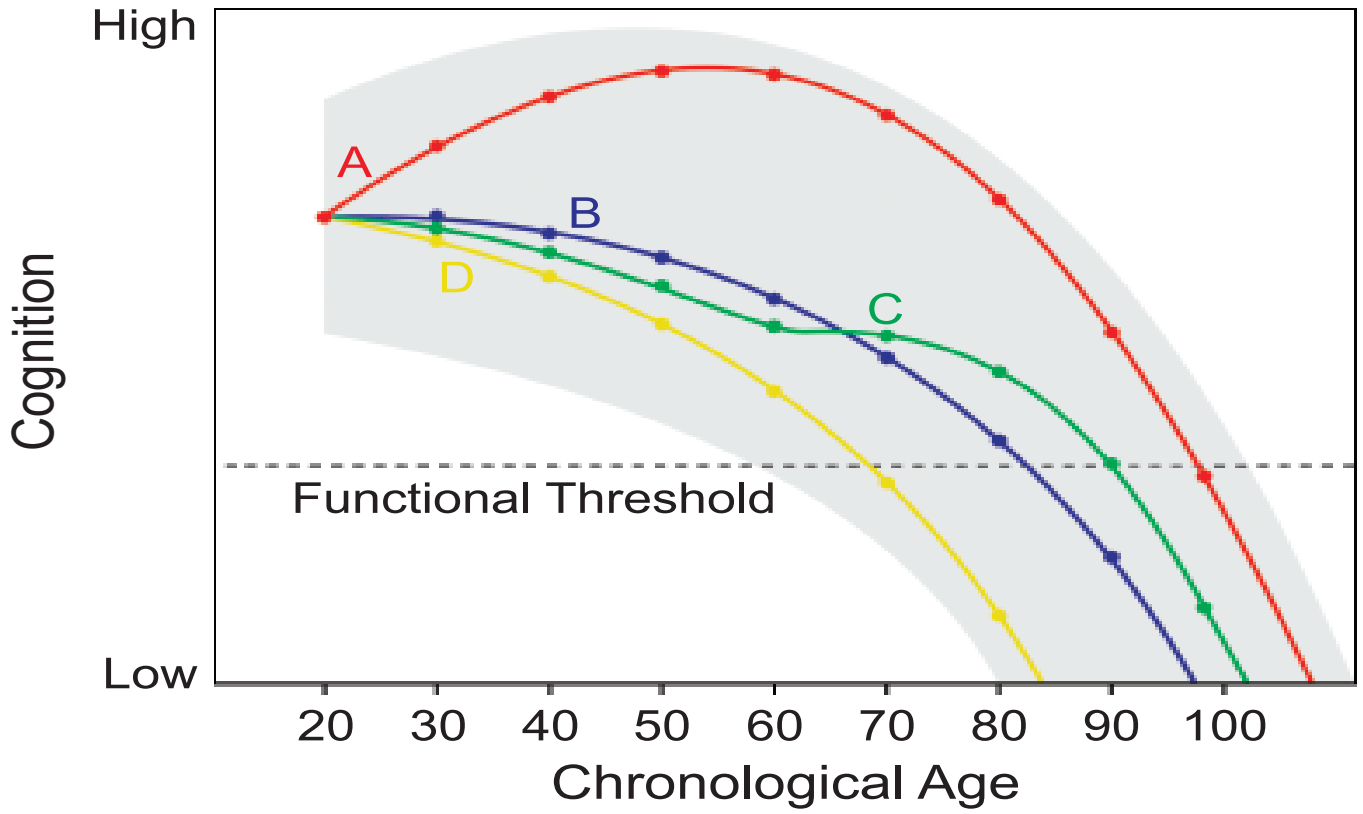
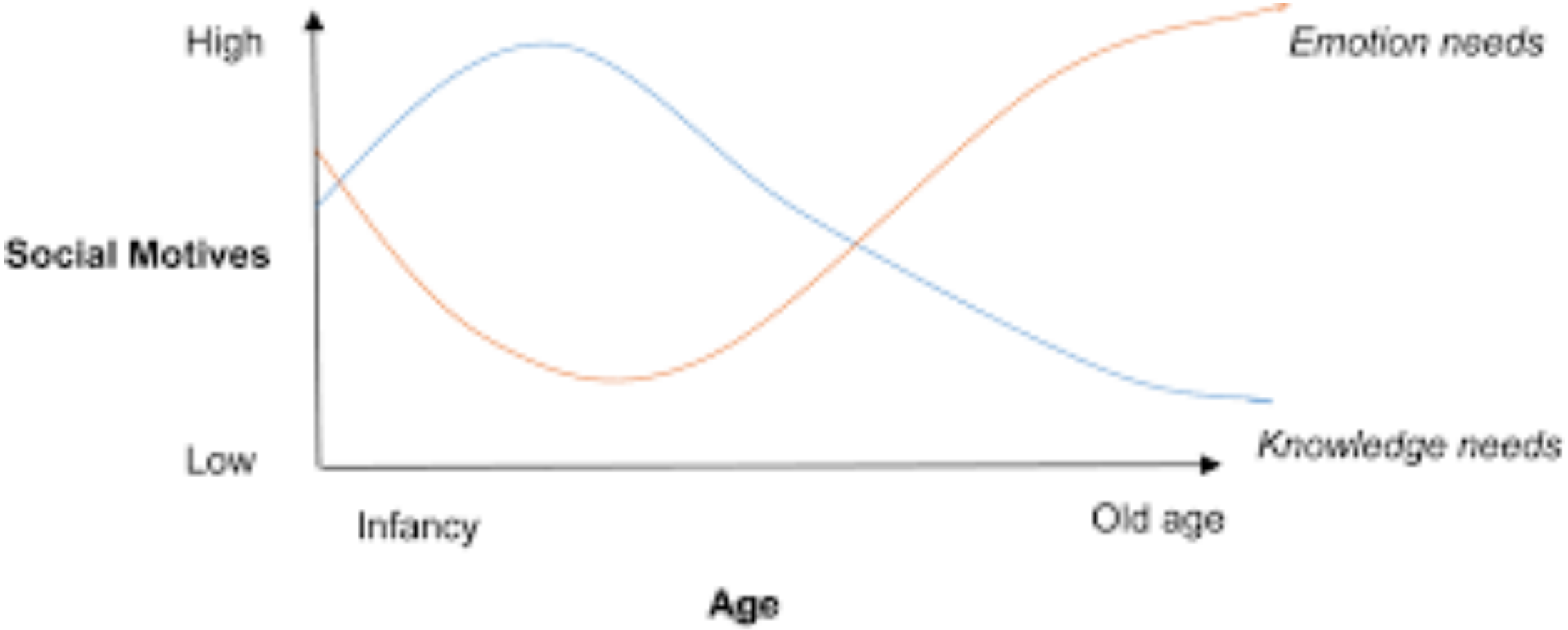


Fig. 2. Depiction of the zone of possible cognitive development for a given individual, along with four developmental curves (A, B, C, & D) indicating specific possible outcomes. Each possible curve starts from the same functional level at age 20, with different trajectories resulting as a function of interactions among behavioral, environmental, and genetic factors that permit vertical movement within the zone at different points in the life span.

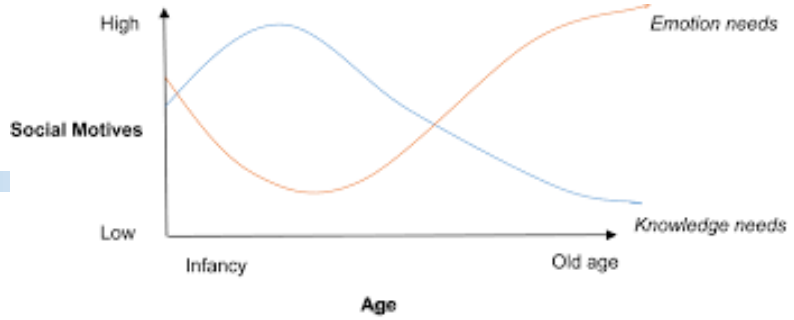
(Hertzog et al., 2008)

Socio-emotional selectivity theory

Carstensen et al., 1999



Socio-emotional selectivity theory



1. **Socio-emotional selectivity theory**
   - Research by Carstensen et al. (1999) indicated proportion of emotional material recalled increased with the age group, showing greater emotional response of older subjects.
   - Looks at older adults' social networks
   - Theory of motivation hypothesizes increasing emphasis is placed on emotional experience as we age

2. **Social contacts limited to a few individuals who are of major importance to us as we grow older**

3. **Does not mean older adults are antisocial**
   - See themselves as having less time to waste and they are more risk-averse
   - They do not want to involve themselves in painful social interactions

Selective Engagement of Cognitive Resources: Motivational Influences on Older Adults' Cognitive Functioning

Perspectives on Psychological Science
2014, Vol. 9(4) 388–407

DOI: 10.1177/1745691614527465
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SAGE

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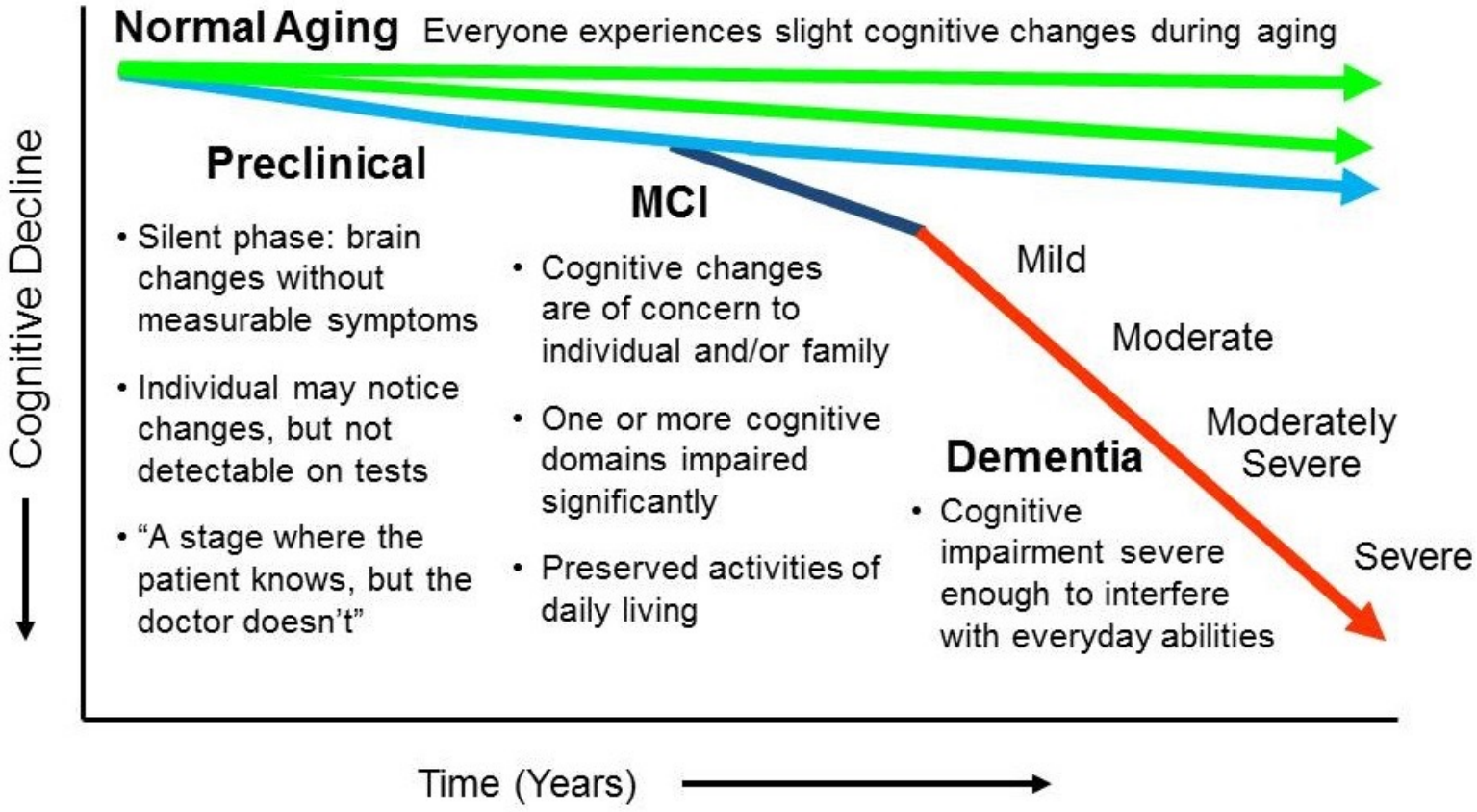
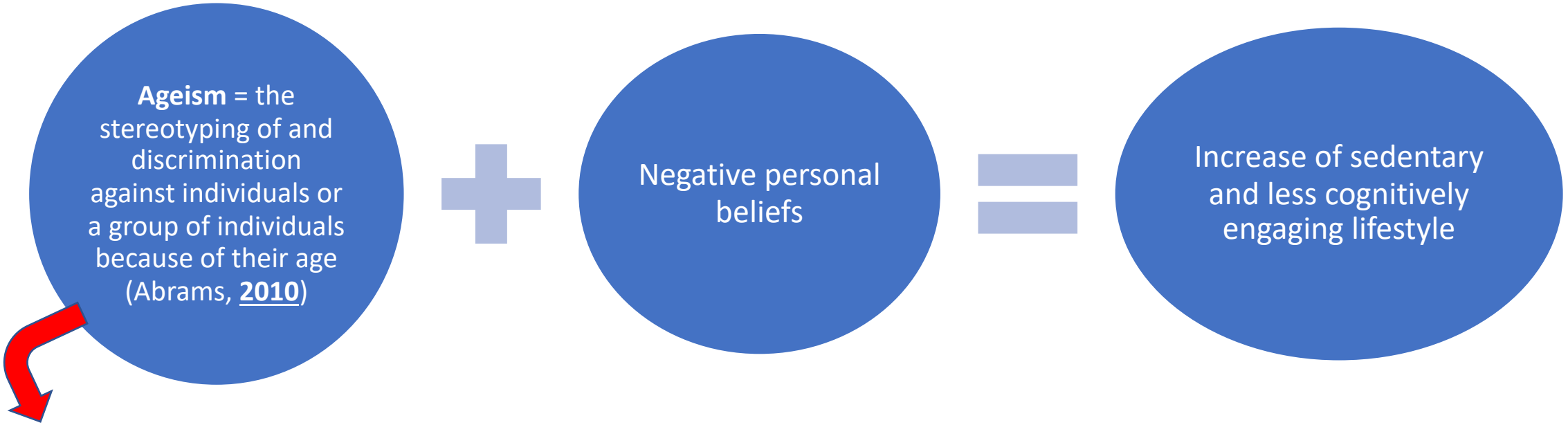
Abstract

In this article, I present a framework for understanding the impact of aging-related declines in cognitive resources on functioning. I make the assumption that aging is associated with an increase in the costs of cognitive engagement, as reflected in both the effort required to achieve a specific level of task performance and the associated depletion or fatigue effects. I further argue that these costs result in older adults being increasingly selective in the engagement of cognitive resources in response to these declines. This selectivity is reflected in (a) a reduction in the intrinsic motivation to engage in cognitively demanding activities, which, in part, accounts for general reductions in engagement in such activities, and (b) greater sensitivity to the self-related implications of a given task. Both processes are adaptive if viewed in terms of resource conservation, but the former may also be maladaptive to the extent that it results in older adults restricting participation in cognitively demanding activities that could ultimately benefit cognitive health. I review supportive research and make the general case for the importance of considering motivational factors in understanding aging effects on cognitive functioning.

Normal aging VS. pathological aging

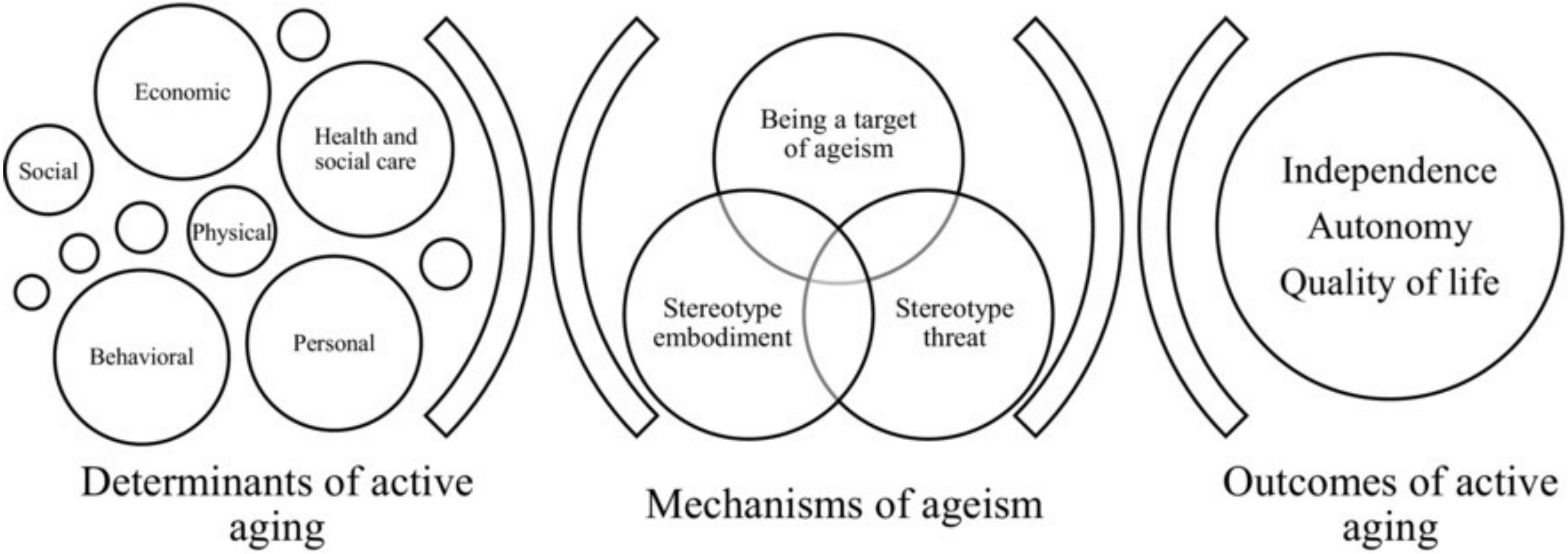


Ageist attitudes from others and negative attitudes about their own aging



Increase of chronical respiratory diseases, diabetes and an increase of money spent for health (Levy et al., 2018)

The Risks of Ageism Model



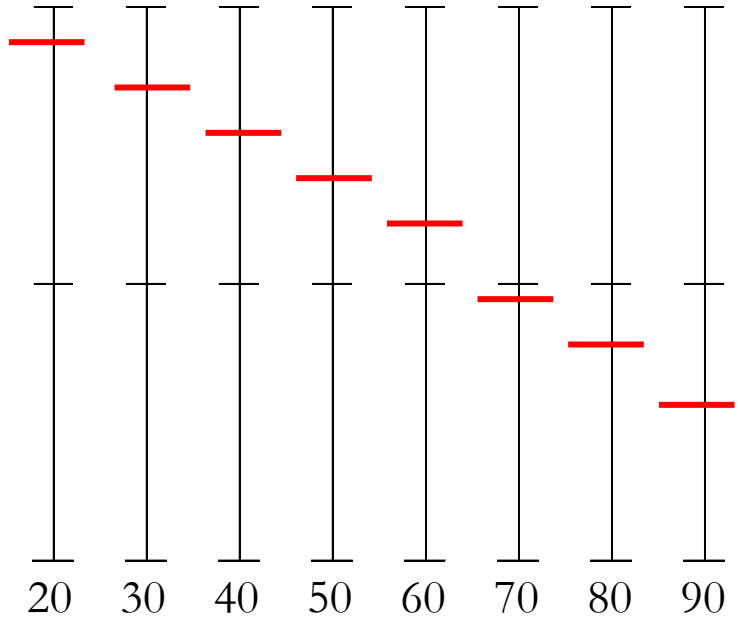
Sample of General Beliefs Memory Instrument

Global Memory Ability

We would like to know how good you think the memory is. This question is asking about the ability to remember in general. Please read the item carefully and mark your answer on a range from "Very Poor" to "Very Good."

1. Ability to remember in general is:

Very Good



Very poor

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Age and subcultural differences on personal and general beliefs about memory

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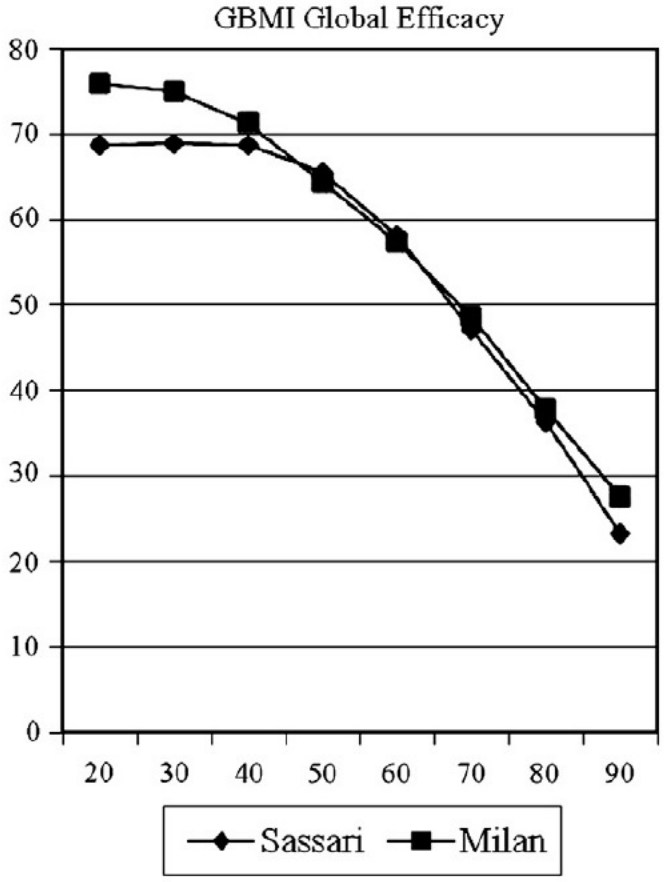
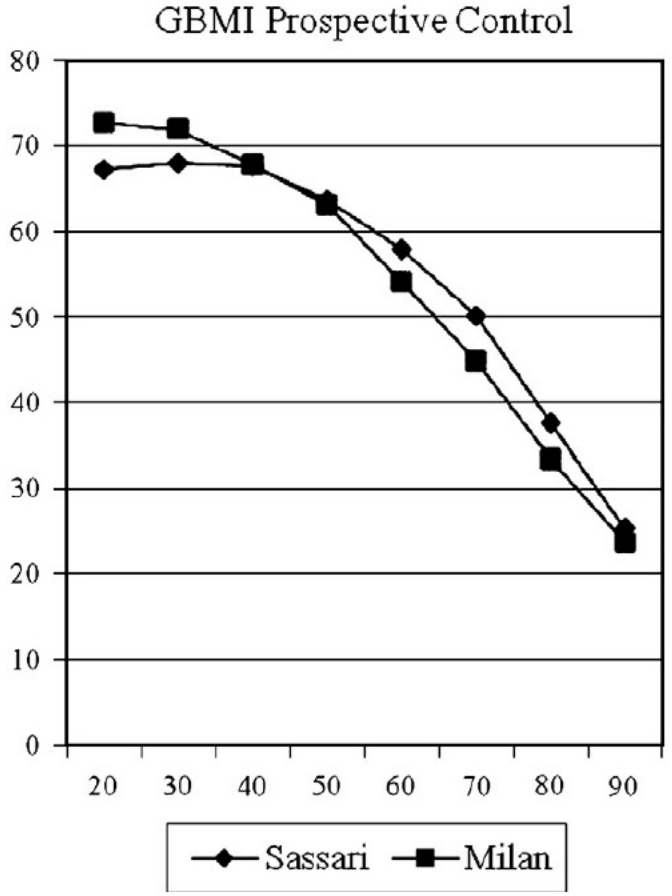




Personal Memory Beliefs

- Two important beliefs about one's own memory:
  - Memory self-efficacy (can I remember something?)
  - Memory control (are there things I can do to help me remember?)
- People with high memory self-efficacy and high perceived control over memory tend to perform better on memory tests
- Older people tend to have a low perception of their memory

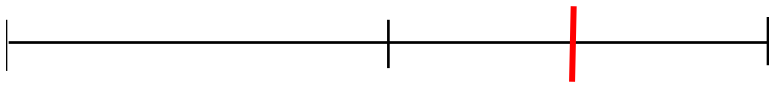
Sample of Personal Beliefs Memory Instrument

Global Memory Ability

We would like to know how good you think your memory is. This question is asking about your ability to remember in general. Please read the item carefully and mark your answer on a range from "Very Poor" to "Very Good."

1. My ability to remember in general is:

Very Poor Very Good



frontiers in Psychology

BRIEF RESEARCH REPORT
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Genes Versus Lifestyles: Exploring Beliefs About the Determinants of Cognitive Ageing

*Malwina A. Niechcial[1], Eleftheria Vaportzis[2] and Alan J. Gow[1]**

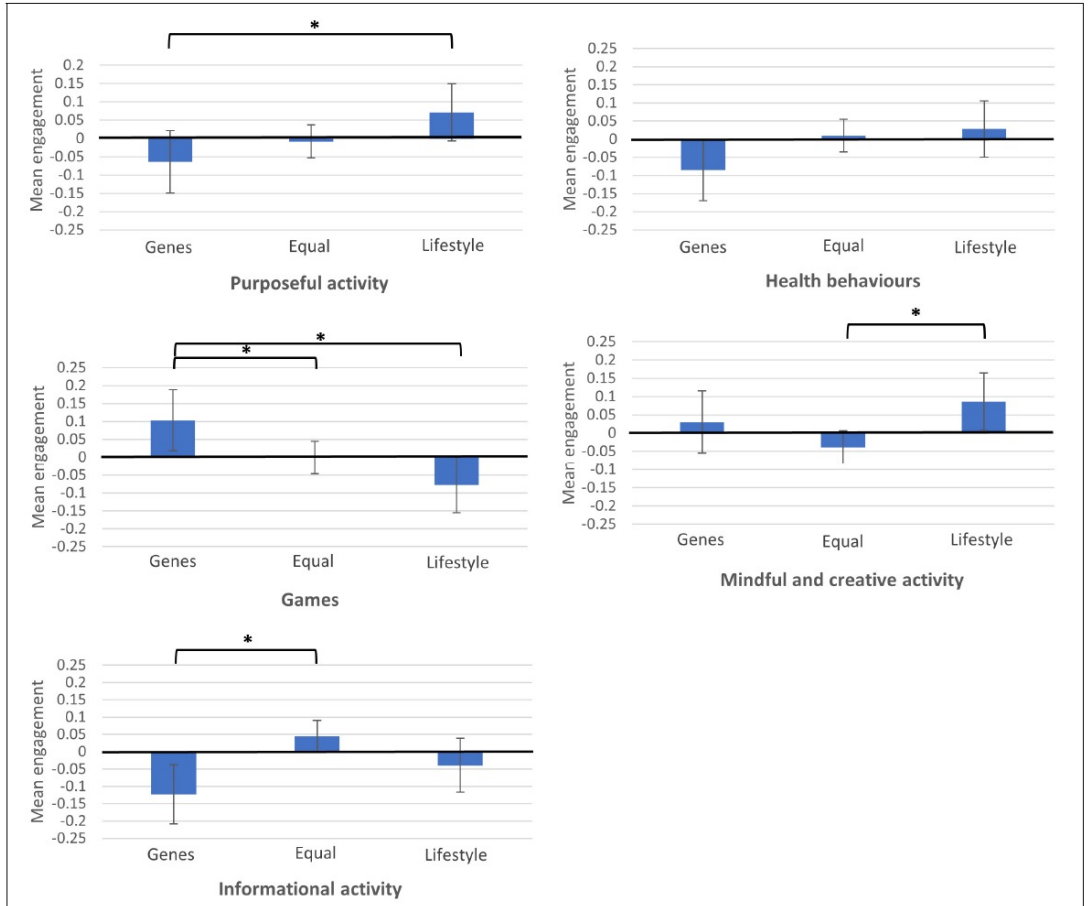


FIGURE 1 | Mean differences in engagement in five behaviours by determinants of cognitive skills. *Mean differences are significant at $p < 0.05$.

Social engagement

"Social functioning is the ability to pursue, coordinate, and maintain mutual activities and reciprocal relationships with others " (Bottema-Beutel et al., 2019)

- Our lifespan is defined by our different social experiences: making friends; social interactions with peers, family, friends; having social activities (e.g. group sports, going out, being part of a theatre company)

Importance in aging

- Social functioning is an important component of successful aging and quality of life.
- Rowe and Kahn (1997) defined successful aging as an unimpaired older adult with great physical, psychological and social functioning.
- Quality of social interactions has an influence on maintaining quality of life. (cfr TED talk)

IMPORTANCE IN AGING

- TED talk Robert Waldinger: What makes a good life? Lessons from the longest study on happiness

https://www.ted.com/talks/robert_waldinger_what_makes_a_good_life_lessons_from_the_longest_study_on_happiness?referrer=playlist-the_most_transformative_ted_talks#t-357741

LINK WITH WELL-BEING IN AGING

- According to Boggatz (2016) quality of life in old age is the sum of satisfied needs that are important for older persons, i.e., financial security, comfortable living arrangements, supportive social relationships and good health.
- Pauly and colleagues (2018) determined that higher quality relationships creates less negative affect during solitude in older adults. The literature also showed that older adults spend from 48 to 71% of their time alone. Negative affect in solitude can lead to feelings of loneliness.

LINK BETWEEN SOCIAL FUNCTIONING AND SOCIAL COGNITION IN AGING

To preserve social functioning, it is crucial to understand and predict other individuals' social behavior.

Social interactions rely on social cognitive capacities such as emotion recognition, empathy, emotion and mental states understanding.

Social cognition can decline with age which can create a decline in social functioning. Reduced social functioning can contribute to a decline in social cognition. **Bidirectional relationship**

LINK WITH SOCIAL COGNITION IN AGING: THEORY OF MIND (TOM)

- ToM refers to the ability to understand that mental states are a subjective representation of reality; it allows people to attribute mental states, such as beliefs, emotions, and desires to others, to understand them and distinguish them from our own.
- Several studies demonstrated an age-related decline in ToM abilities (Henry et al., 2013) especially in cognitive ToM abilities (Wang & Su, 2013)
- Reiter and colleagues (2017) demonstrated an advantage of socio-affective over socio-cognitive functioning.

Link with social cognition in aging: Theory of mind (ToM)

- The relationship between ToM and social functioning is bidirectional.
- Pearlman-Avnion et al. (2018) found that older people with a high level of social interactions performed better on the ToM tasks. Maintaining and increasing meaningful social interactions can prevent ToM decline.

Theory of mind (ToM)

"Theory of mind is the ability to reason about mental states, such as beliefs, desires, and intentions, and to understand how mental states feature in everyday explanations and predictions of people's behaviour"

Apperly 2012

- To avoid or solve misunderstandings
- To understand social gaffe
- To navigate in complex social situations
- To help others
- Irony understanding
- Visual perspective taking
- Pretense and deception
- Persuasion

Understanding mental states allows us to explain an individual's behavior

They act like this because they wished that …
They behave in this way because they think that …

Understanding mental states allows us to anticipate an individual's behavior

Mom is nervous today she will be angry when she sees my grade.
Luca is sad, so he won't feel like coming to my house.
Sara is happy, I ask to borrow her bag, I think she will give it to me.

Understanding mental states allows us to influence an individual's behavior

I know Andrea really wants to watch the game: if I blow out the power, I will be able to convince him to call the electrician.
If I don't show up for work, my boss will think I am sick and won't give me new assignments.

ToM and social interactions

ToM is an essential instrument for social interactions and successful relationships

CHILDREN

- Popularity or social rejection
- Social abilities
- Prosocial behaviors

→ Academic success

ADULTS

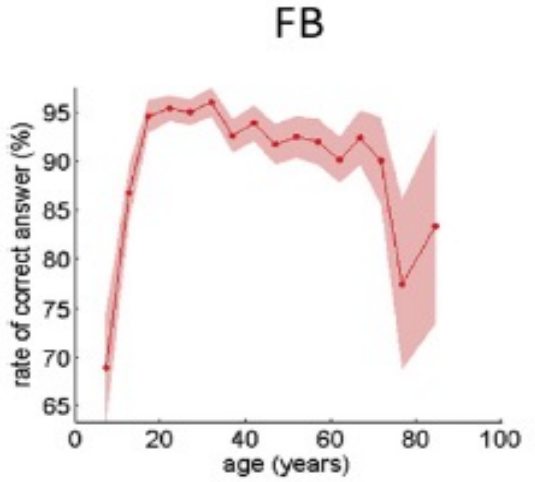
- Basic ToM skills are related to errors in social communication tasks.
- Gray matter volume in some areas (e.g., OFC) predicts both ToM and social network size.

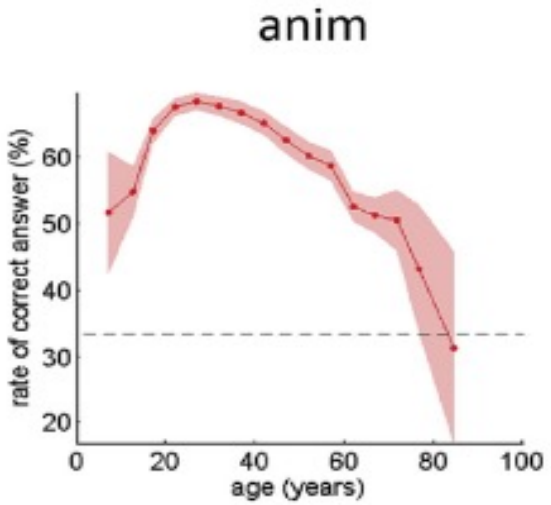
Older people

- The decline in social functioning is partially caused by the decrease of the socio-cognitive abilities.
- The spontaneous use of ToM is associated with enriched friendships.
- ToM is in part linked with satisfaction in communication and social interactions.

ToM in healthy aging

- decline starting from about 60 years
- different performances in cognitive vs. affective component
- difficulties are (partly) due to cognitive functioning decline
- effects on communicative skills and social interactions

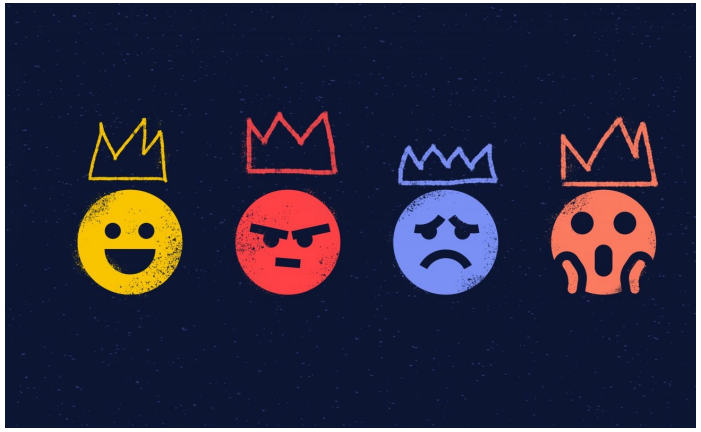


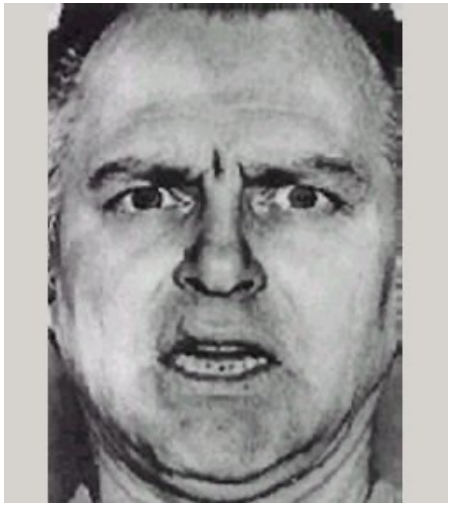


Blanke, Rauers, & Riediger, 2016; Henry et al., 2013; Klindt, Devaine & Daunizeau, 2017

EMOTION RECOGNITION

- “Emotion recognition is defined as the process of identifying affective states from facial expressions, body posture and movement, and verbal expressions.” (Ferguson & Bradford, 2021).
- Emotion recognition is a major factor of social functioning, because they relay crucial information to successfully interact with others.
- Advancing age exhibits a deterioration in basic emotion recognition abilities especially in negative emotions (Gonçalves et al., 2018; Ruffman et al., 2008).
- An age-related decline has also been established in complex emotion recognition especially in understanding shame and guilt facial expressions (Stanley & Blanchard-Fields, 2008).





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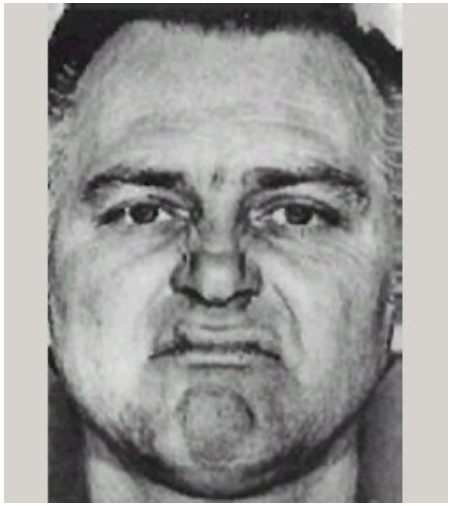

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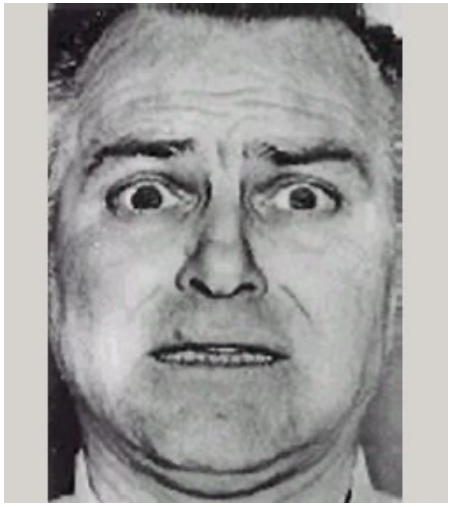

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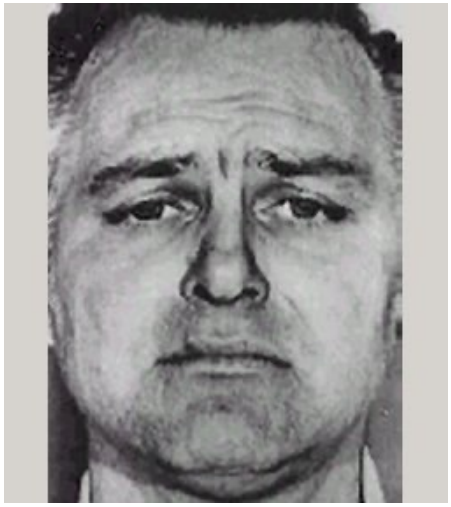

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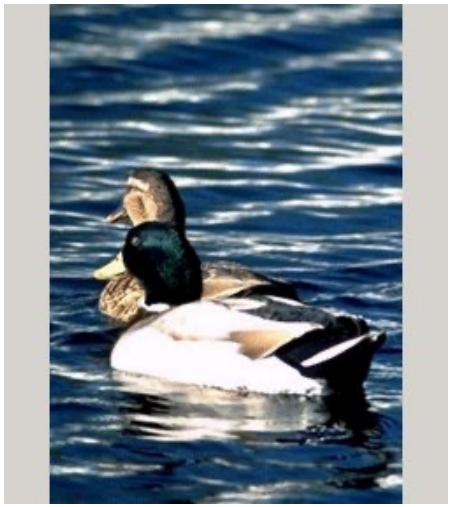

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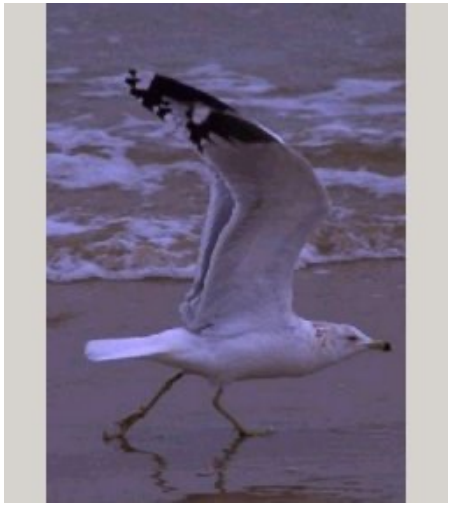

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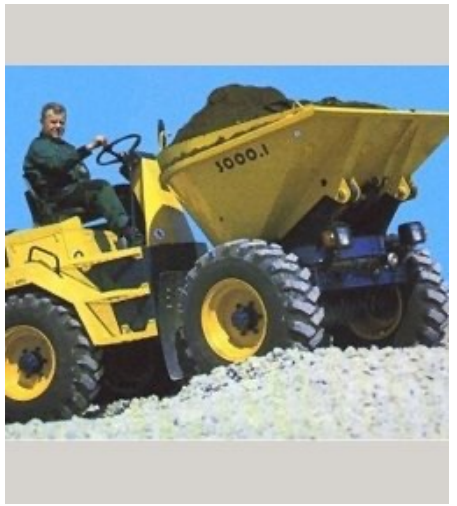

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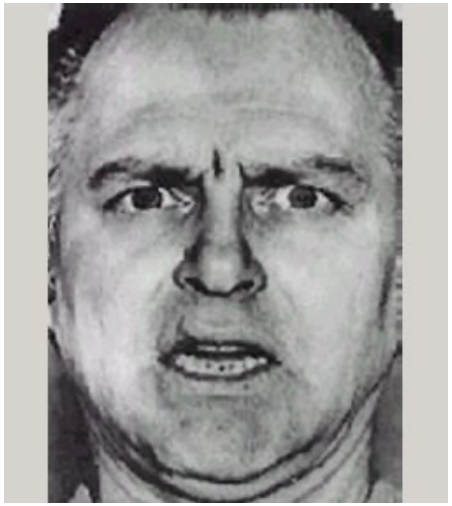

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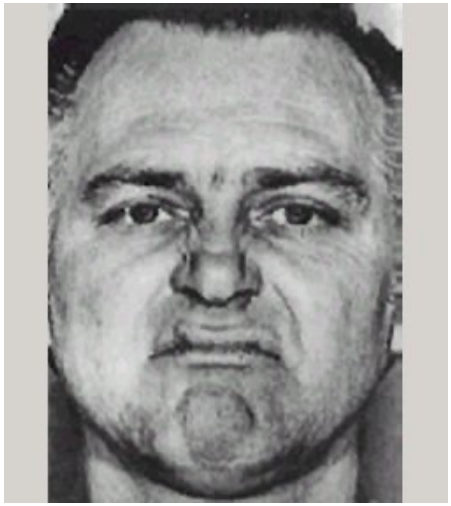

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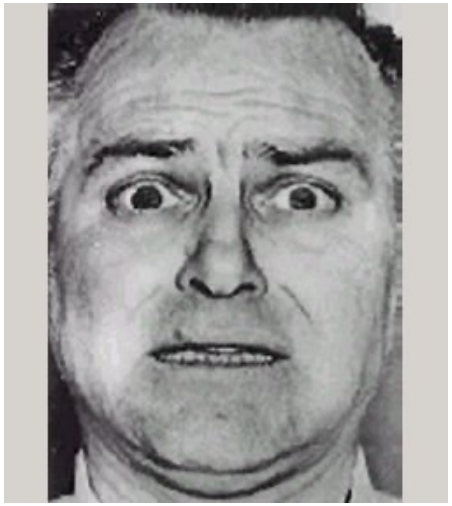

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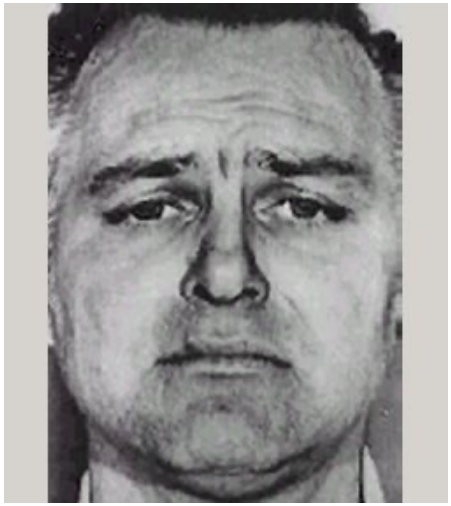

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Role of theory of mind and executive function in explaining social intelligence: A structural equation modeling approach

Zai-Ting Yeh

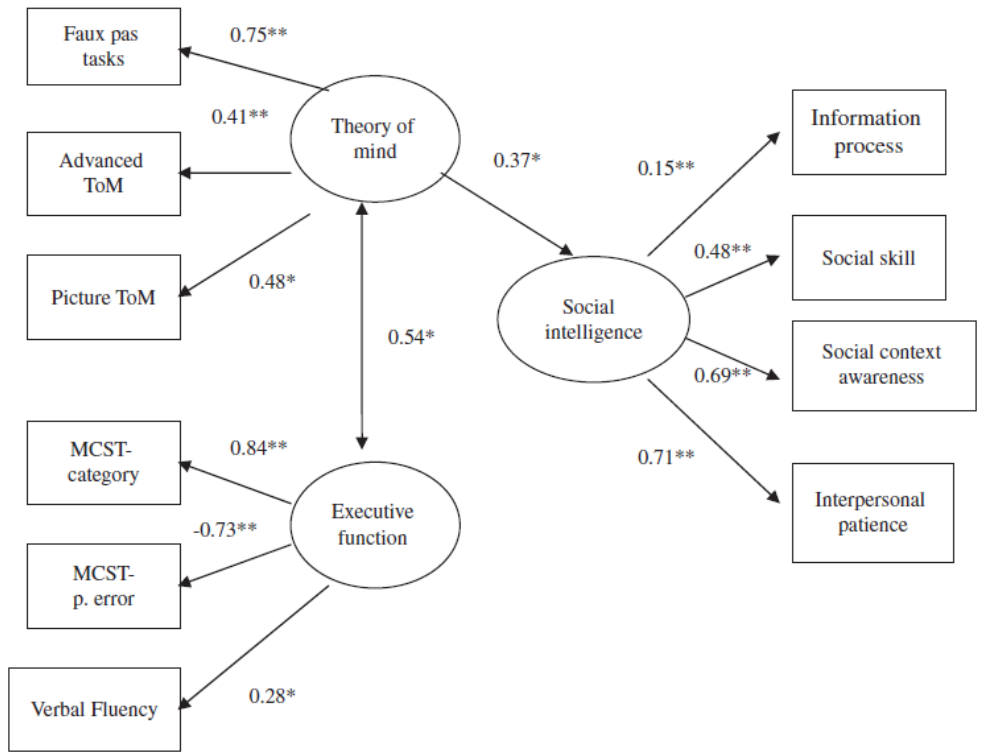

Figure 1. Structural model of the relations among social intelligence and neuropsychological ability in aging. MCST – p. error = MCST – perseverative error.
Note: $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

Theory of Mind and social relationships in older adults: the role of social motivation

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Aging & Mental Health

Objectives: Previous research has shown that individual differences in Theory of Mind (ToM) are crucial for people's social relationships. However, very few studies have investigated this issue in ageing. The present study was designed to fill this gap and examine the associations between ToM and social relationships in elderly adults. In doing so, this study considered people's relationships with their relatives and friends, and examined the possible moderating role of social motivation.
Method: The study involved 53 healthy older adults (age: $M = 67.91$; $SD = 6.93$; range: 60–85 years). All participants were tested collectively during a 2-hr session and completed a demographic questionnaire as well as a battery of tests assessing verbal ability (vocabulary and word fluency), ToM and social relationships. They also answered a social motivation question.
Results: Results showed that individual differences in older people's ToM were overall significantly associated with those in relationships with friends, but not relatives. In addition, the Hayes moderating procedure showed that individual differences in ToM were related to those in friendships only for those people who had a high or medium level of social motivation.
Conclusion: These findings underline the importance of motivation in guiding the use of ToM in everyday social interactions.

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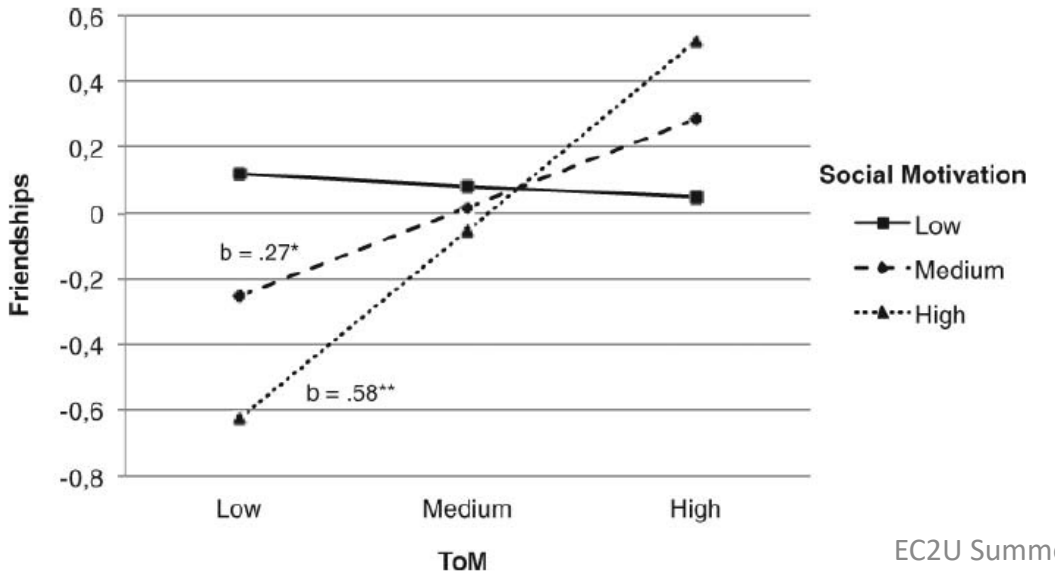
KEYWORDS
Theory of Mind; social relationships; ageing; social motivation



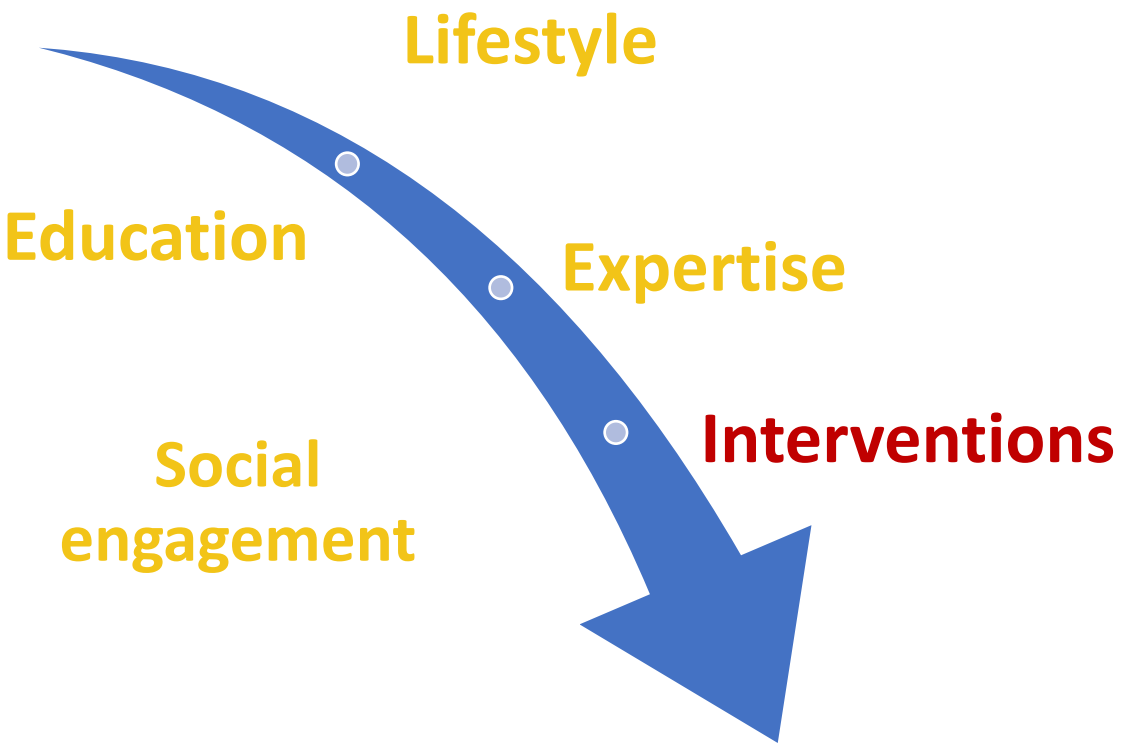
Aging changes

Positive changes:

- **Alterations in emotion regulation that can increase happiness** (Charles, 2010).
- Increased wisdom (Ardelt, 2010).
- Enhancements in aspects of work performance (Ng and Feldman, 2008).

Negative changes:

- Increased risk of developing diseases.
- Neurological and mental disorders, of which the most common are dementia, depression and anxiety (World Health Organization, 2017).
- **Declines in cognitive functioning, especially 'fluid' (speeded/processing intensive) functioning (Reuter-Lorenz and Lustig, 2016).**
- **Ageist attitudes from others, or negative attitudes about ageing themselves**, that can negatively affect their physical and mental health (Bryant et al., 2012; Levy, 2009).
- **Loneliness or isolation** (Bodner and Bergman, 2016; Colon-Emeric ´ et al., 2013; Finlay and Kobayashi, 2018).



- **Cognitive abilities**
- **Socio-cognitive abilities**

Cognitive and mental health

How to promote healthy aging through active aging?

Knowledge/information about aging

Activities/facilities

Knowledge about aging

UNITRE

CON IL PATROCINIO DI
COMUNE DI PAVIA

UNIVERSITÀ DI PAVIA

LabPsI
Laboratorio di Psicologia dell'Invecchiamento

CONFERENZA

Invecchiare attivamente per invecchiare in salute

Active aging, healthy aging

13 maggio 2022

Aula Disegno,
Piazza Leonardo da Vinci 5,
Palazzo Centrale
dell'Università degli Studi di Pavia
Ore 15.00

La partecipazione è gratuita e non è necessaria l'iscrizione

In diretta Zoom ID: 865 3793 0350
Password: 670160

Per info:
lab.invecchiamento@unipv.it
0382-986132

PROGRAMMA

15.00 Saluto delle Autorità:
Tomaso Vecchi
Prorettore, Università degli Studi di Pavia
Ambrogio Robecchi Majnardi
Presidente UNITRE Pavia
Anna Zucconi
Assessore con delega ai Servizi Sociali Comune di Pavia

15.20 **Iniziative sul territorio: UNITRE e COMUNE**
Garcia y de La Cruz Felisa
Coordinatrice didattica UNITRE Pavia
Barbara Longo
Assessore con delega alle Pari Opportunità Comune di Pavia
Anna Zucconi
Assessore con delega ai Servizi Sociali Comune di Pavia

15.40 **Ricerca e territorio: 20 anni di collaborazione tra Università degli Studi di Pavia e UNITRE**
Elena Cavallini, *Università degli Studi di Pavia*

16.00 **Allena la mente e socializza per invecchiare attivamente**
Alessia Rosi, *Università degli Studi di Pavia*

16.20 **Il piacere del cibo per il benessere psicologico dell'anziano**
Martine Vallarino, *Università degli Studi di Pavia*

16.40 **Dormi bene e invecchia in salute**
Raffaele Manni
già Responsabile Unità Medicina del Sonno Fondazione Mondino

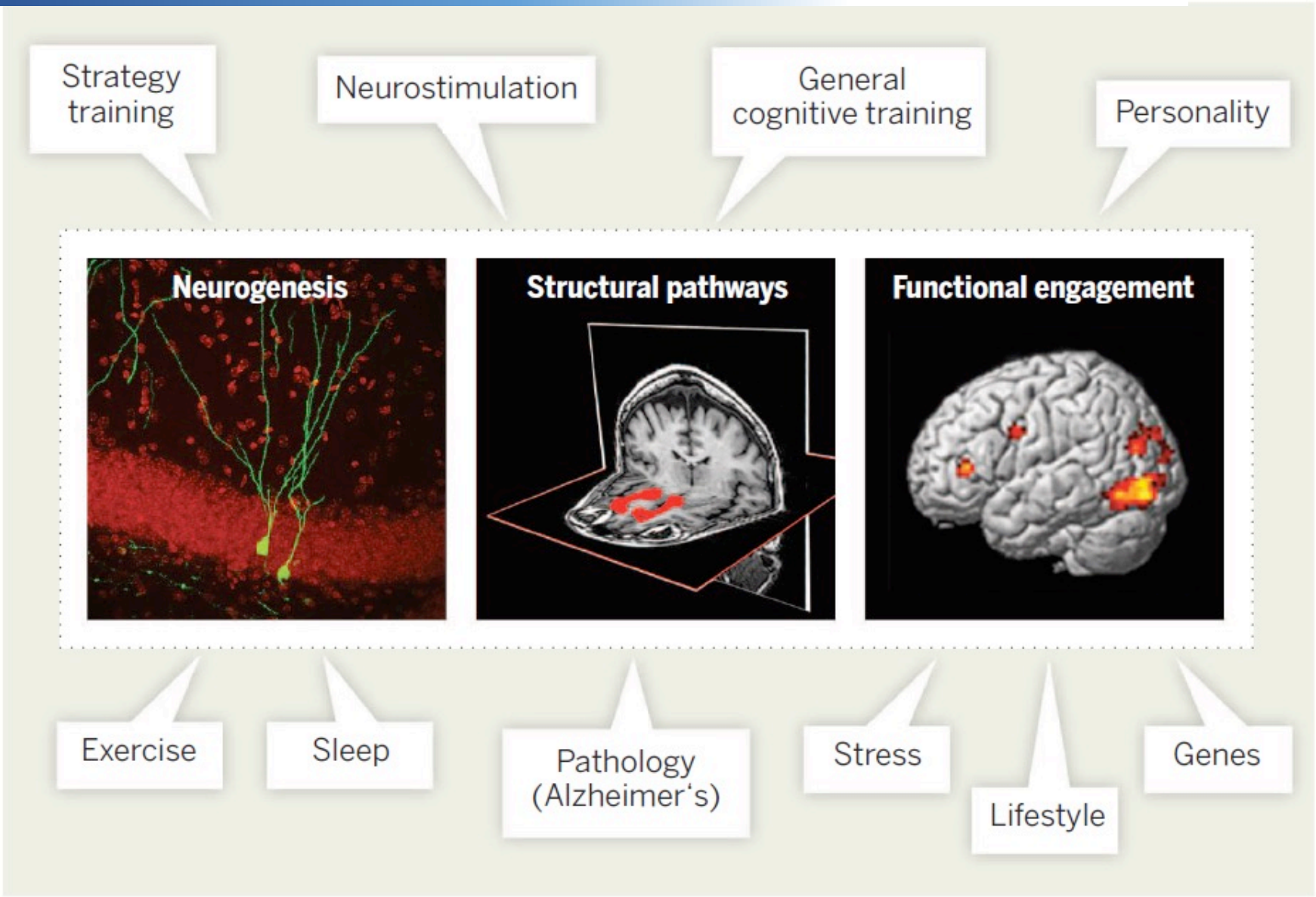
17.00 **Quale attività fisica per il benessere degli anziani?**
Mariano Casali
Cardiologo e Medico dello Sport, Istituto di Cura Città di Pavia e Medica Sport Minerva

17.20 **Q.A. - Conclusioni**
Elena Cavallini, Alessia Rosi

Segreteria scientifica e coordinatrice:
Elena Cavallini, Università degli Studi di Pavia
Segreteria organizzativa:
Alessia Rosi, Università degli Studi di Pavia

Activities/facilities

Plasticity in aging



Scaffolding Theory of Aging and Cognition

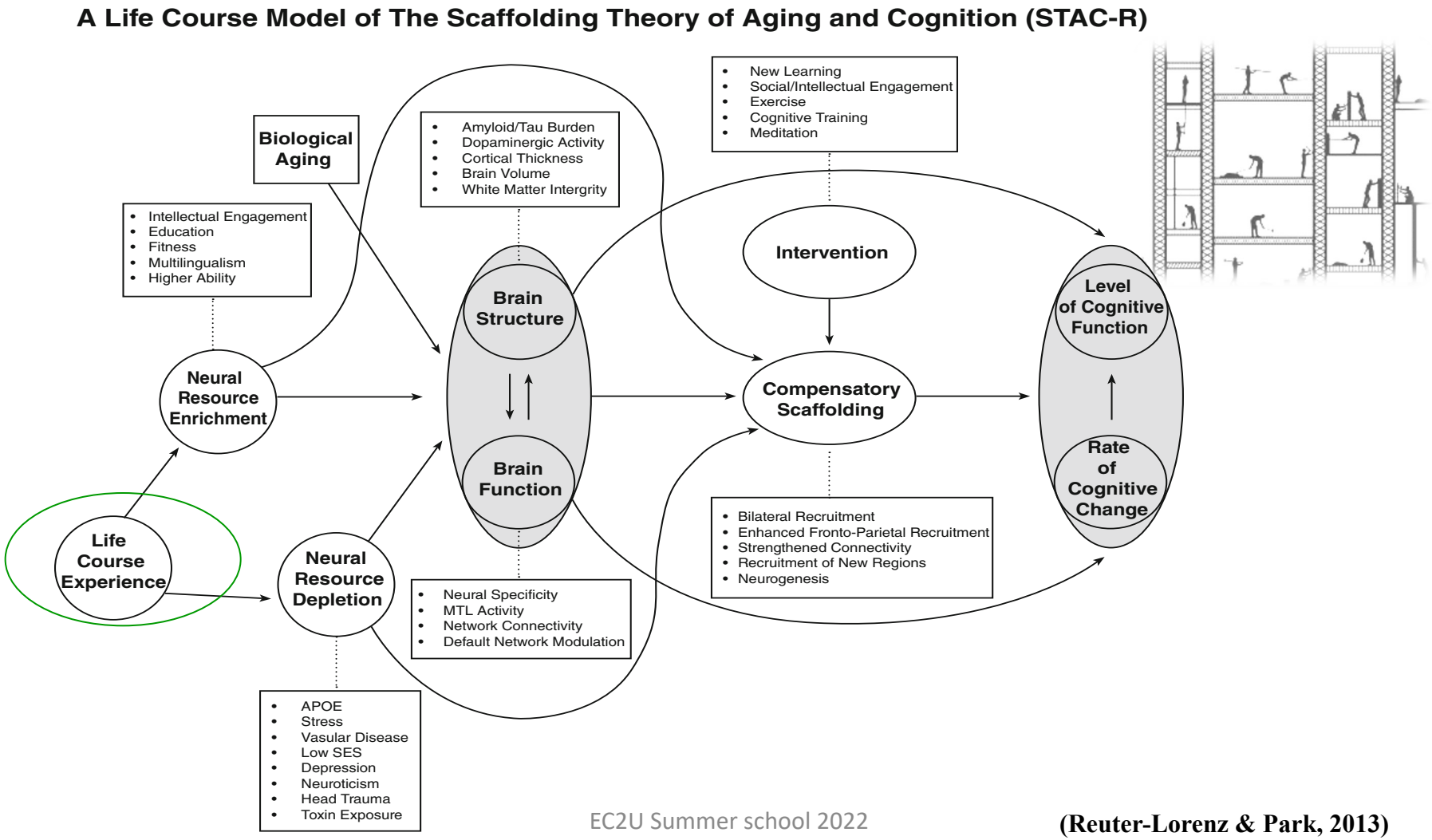
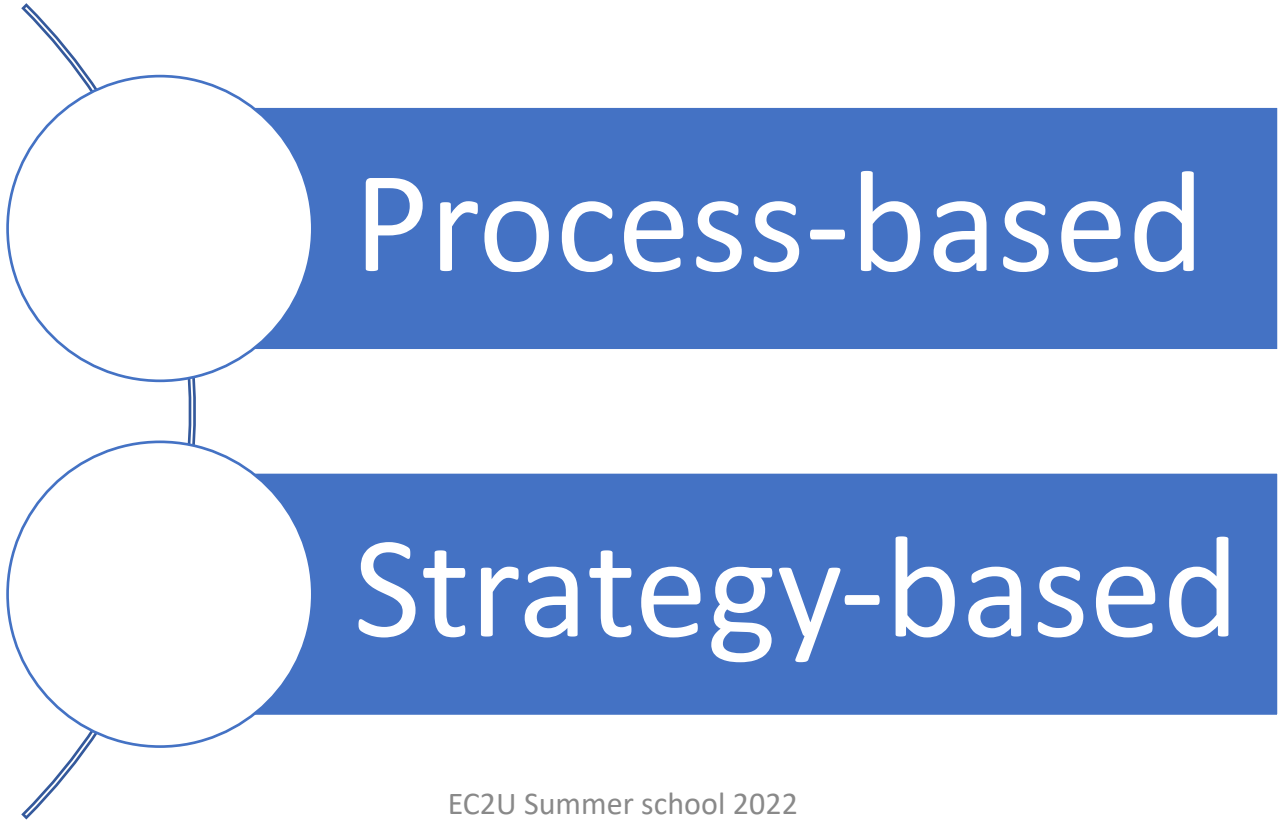


Fig. 2 A conceptual model of the scaffolding theory of aging and cognition-revised (STAC-r)

(Reuter-Lorenz & Park, 2013)

Cognitive training

one of the most prominent interventions aimed at combating age-related cognitive decline.



Strategy-based training

Journal of Experimental Psychology: Applied
2013, Vol. 19, No. 3, 205–218

1076-898X/13/$12.00 DOI: 10.1037/a0034078

The Importance of Training Strategy Adaptation: A Learner-Oriented Approach for Improving Older Adults' Memory and Transfer

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Elena Cavallini
University of Pavia

John Dunlosky
Kent State University

Tomaso Vecchi
Brain Connectivity Center, National Neurological Institute C. Mondino, Pavia, Italy and University of Pavia

Christopher Hertzog
Georgia Institute of Technology

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journal homepage: www.elsevier.com/locate/archger

Self-guided strategy-adaption training for older adults: Transfer effects to everyday tasks

Sara Bottiroli[a,*], Elena Cavallini[b], John Dunlosky[c], Tomaso Vecchi[a,b], Christopher Hertzog[d]

[a] C. Mondino National Neurological Institute, Pavia, Italy
[b] University of Pavia, Pavia, Italy
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[d] Georgia Institute of Technology, Atlanta, USA

RESEARCH ARTICLE

International Journal of Geriatric Psychiatry

Self-help memory training for healthy older adults in a residential care center: specific and transfer effects on performance and beliefs

Elena Cavallini[1], Sara Bottiroli[2], Emanuela Capotosto[3], Rossana De Beni[3], Giorgio Pavan[4], Tomaso Vecchi[1,2] and Erika Borella[3]

[1]Department of Brain and Behavioral Sciences, University of Pavia, Pavia, Italy
[2]Brain Connectivity Center, National Neurological Institute C. Mondino, Pavia, Italy
[3]Department of General Psychology, University of Padua, Padua, Italy
[4]ISRAA, Treviso, Italy

Research Article

Alessia Rosi*, Tomaso Vecchi, Elena Cavallini

Metacognitive-strategy training promotes decision-making ability in older adults

Table 1. Metacognitive-strategic questions.

1. Did I understand the decision problem I have to face? *(If not, I review or reevaluate the decision problem until I fully understand the situation)*
2. What is the main information of the decision problem?
3. Do I have all the information necessary to make a decision? (*If not, what additional information do I need to make a decision?)*
4. Who will be affected by my decision?
5. Who can help me with this decision?
6. What are the possible choices for this decision problem? (*describe each choice*) For each choice, how will I feel 10 minutes after I make this choice?
7. Which strategies can I apply in order to decide?
8. What is the final decision?

Table 4. Mean and (standard error of the mean) of performance (expressed in percentage of correct responses) for practiced and non-practiced decision-making tasks as a function of group (decision-making training and active control training groups), and time (pre- and post-test).

	Decision-making training group		Active control training group	
	Pre-test	Post-test	Pre-test	Post-test
Practiced tasks				
EDMC task experiential-based problem	54.52	77.44	51.94	59.03
	(1.98)	(1.57)	(2.24)	(2.25)
EDMC task analytical-based problem	74.77	79.80	75.97	68.61
	(10.01)	(8.07)	(2.01)	(2.32)
EDMC task - daily	63.55	76.05	62.30	58.96
	(1.72)	(1.72)	(2.18)	(2.34)
EDMC task - economic	60.94	80.56	59.17	66.87
	(2.28)	(2.28)	(2.10)	(3.03)
EDMC task - health care	69.44	79.00	70.42	65.62
	(2.38)	(2.16)	(2.66)	(2.64)
Non-practiced task				
ADR task	47.50	64.17	37.67	39.00
	(3.44)	(3.32)	(3.98)	(3.34)

Note. EDMC = Everyday Decision Making Competence task; ADR = Applying Decision Rule task

Associative Learning

- How do people learn new associations?
- Basic type of learning common to all organisms
- Can be incidental – done without intention or awareness
- In humans, it can be intentional memorization (associating a name with a face by using a strategy)

Mediators in Associative Learning

- Task: learn to associate 2 words (like Clown and Spoon)
- Mediators: intentional use of a technique like imagery or sentence generation, create new association between the 2 words
- Using mediators is highly effective, relative to simply attending to information or repeating it over and over

Mediators

- Presented with item: Dog-Spoon, individual could:
  - image a dog sitting up, begging for food, with a spoon in its mouth
  - Generate a sentence: The dog ate his kibble with a spoon.
  - Use an existing idiosyncratic association: My neighbor's dog was named "Spoon"!!!

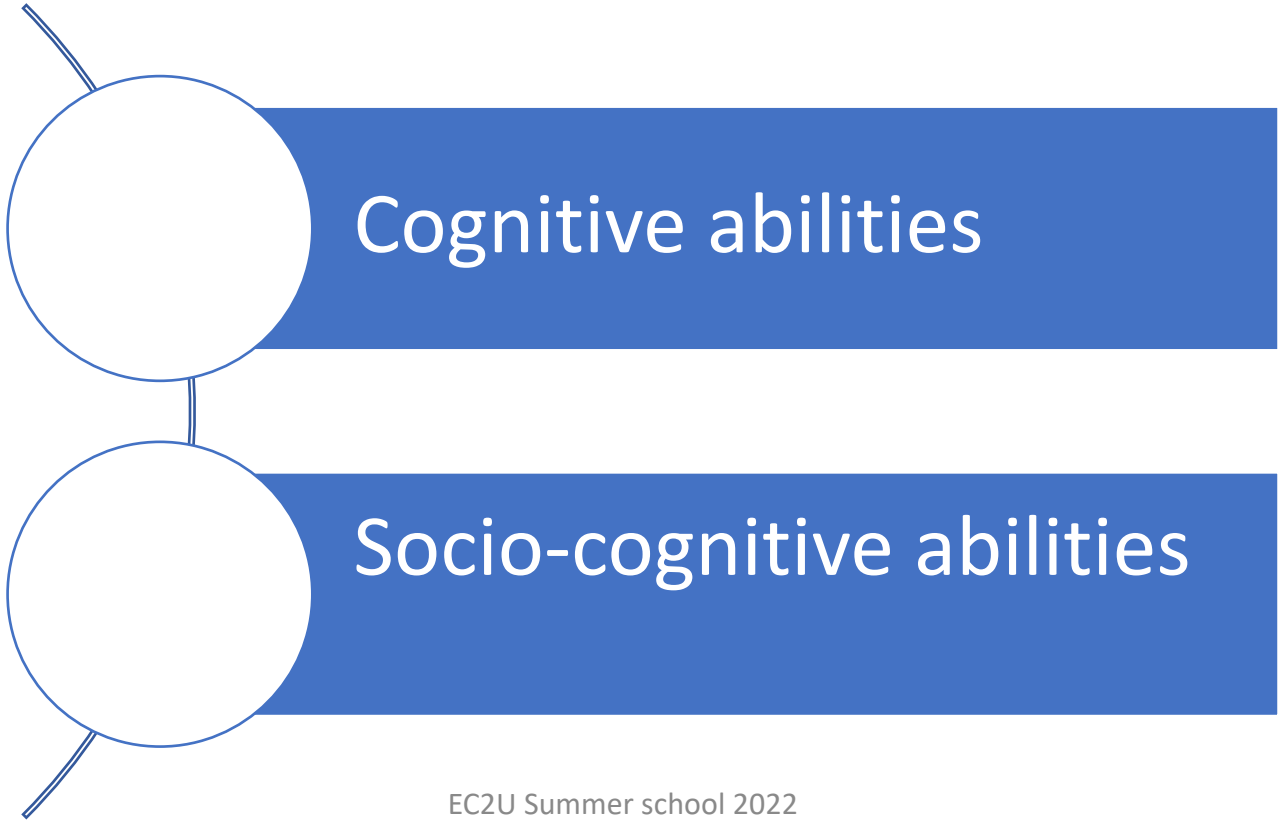
Mediators Requiring Relational Processing are Optimal

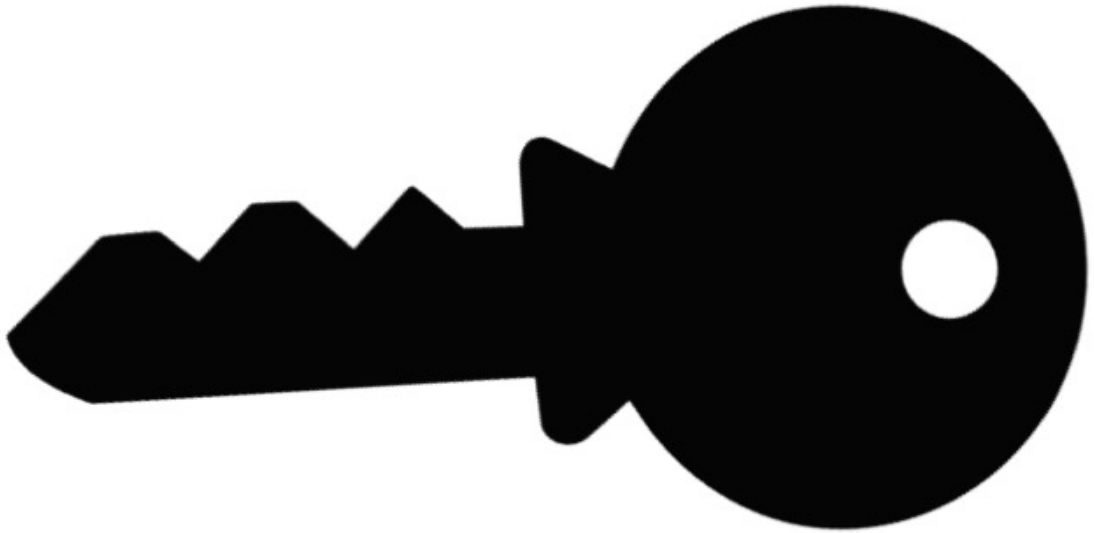
- With imagery, the two concepts should be integrated and interactive, as opposed to forming two isolated or separate images, even if side-by-side
- With sentences, integration through an active predicate
  - (EAT: DOG, SPOON)

  is more effective than using connectives or separate phrases
  - (EAT: DOG; & EAT: SPOON)

CLOWN – SPOON
Interactive Imagery is Optimal

Socio-cognitive training interventions





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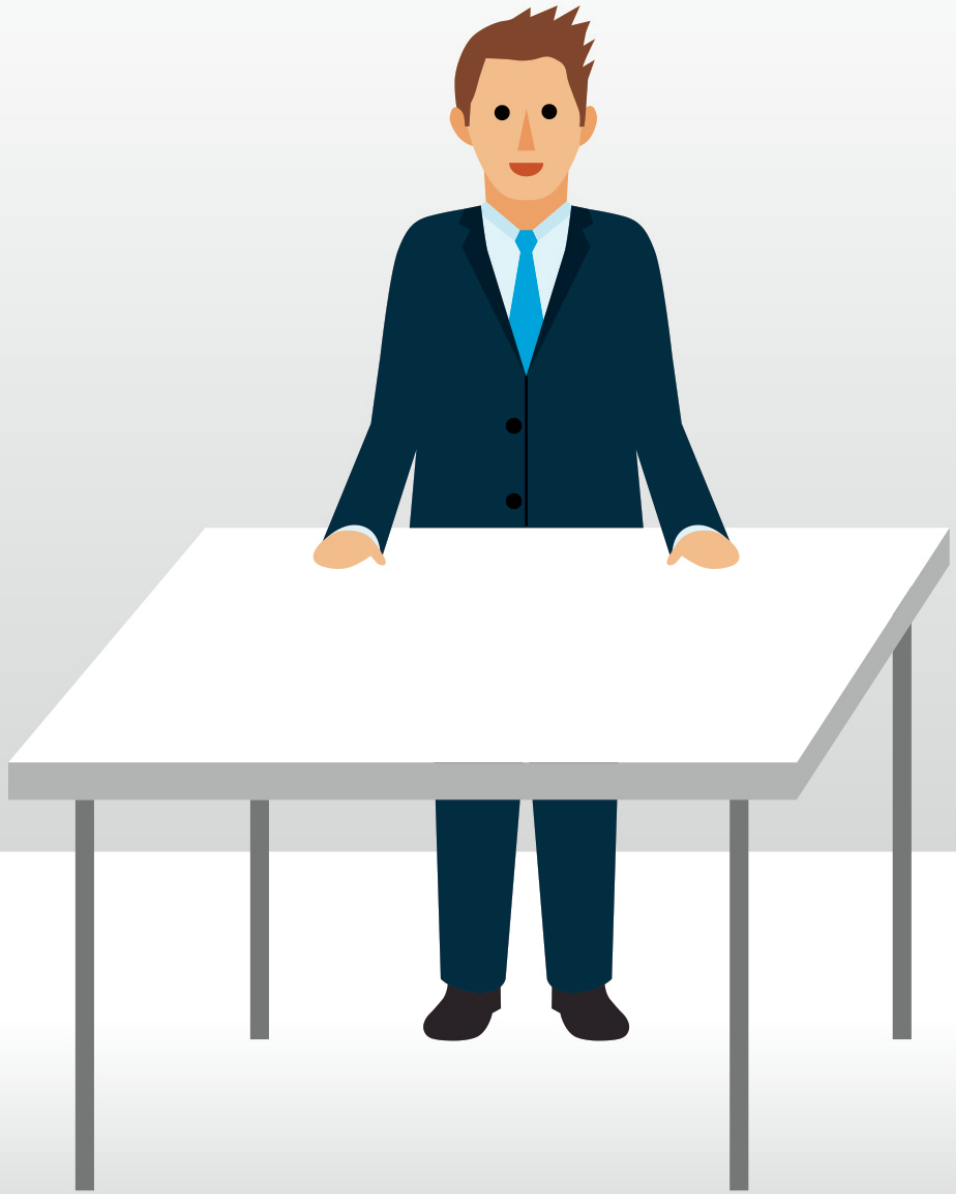

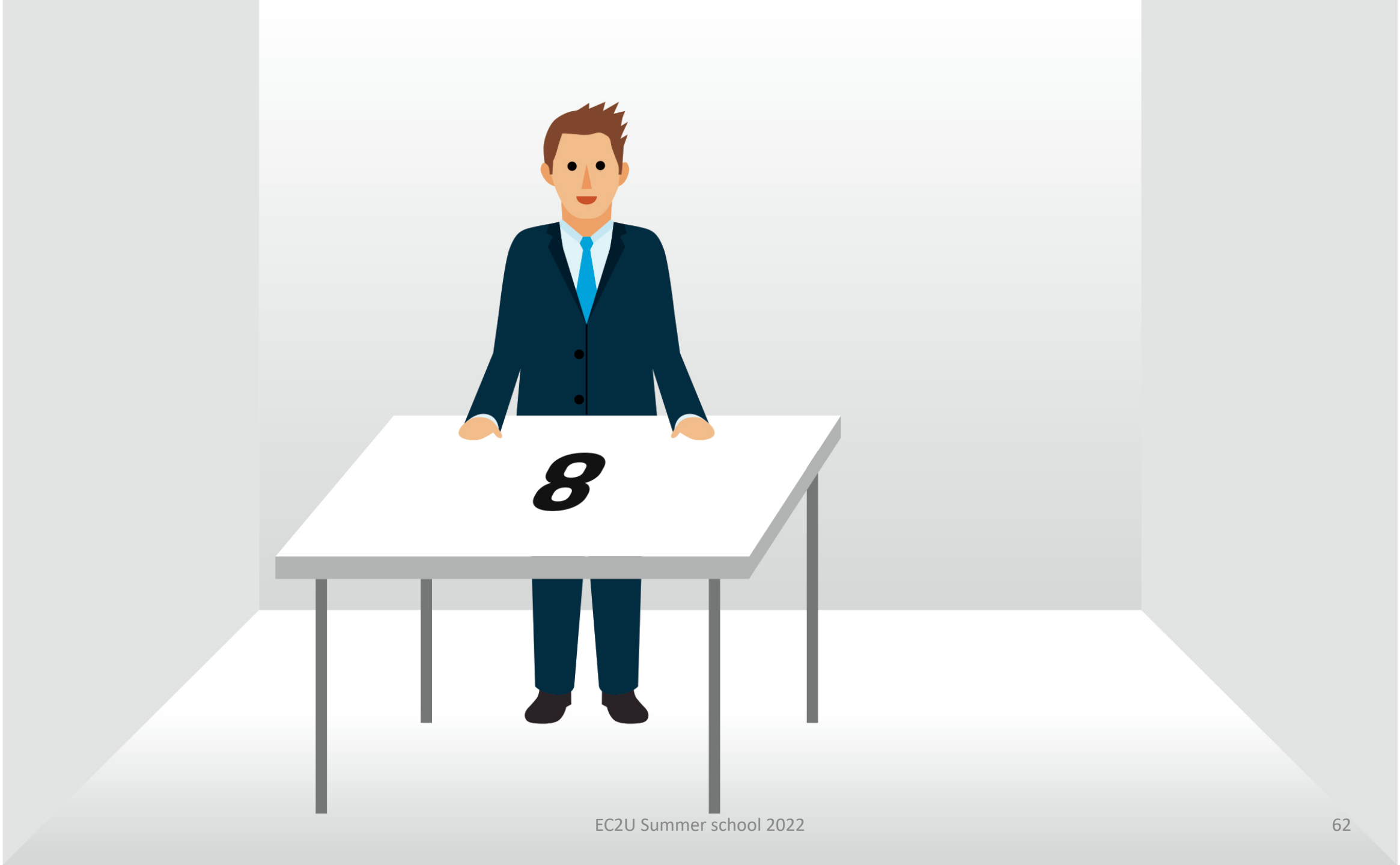
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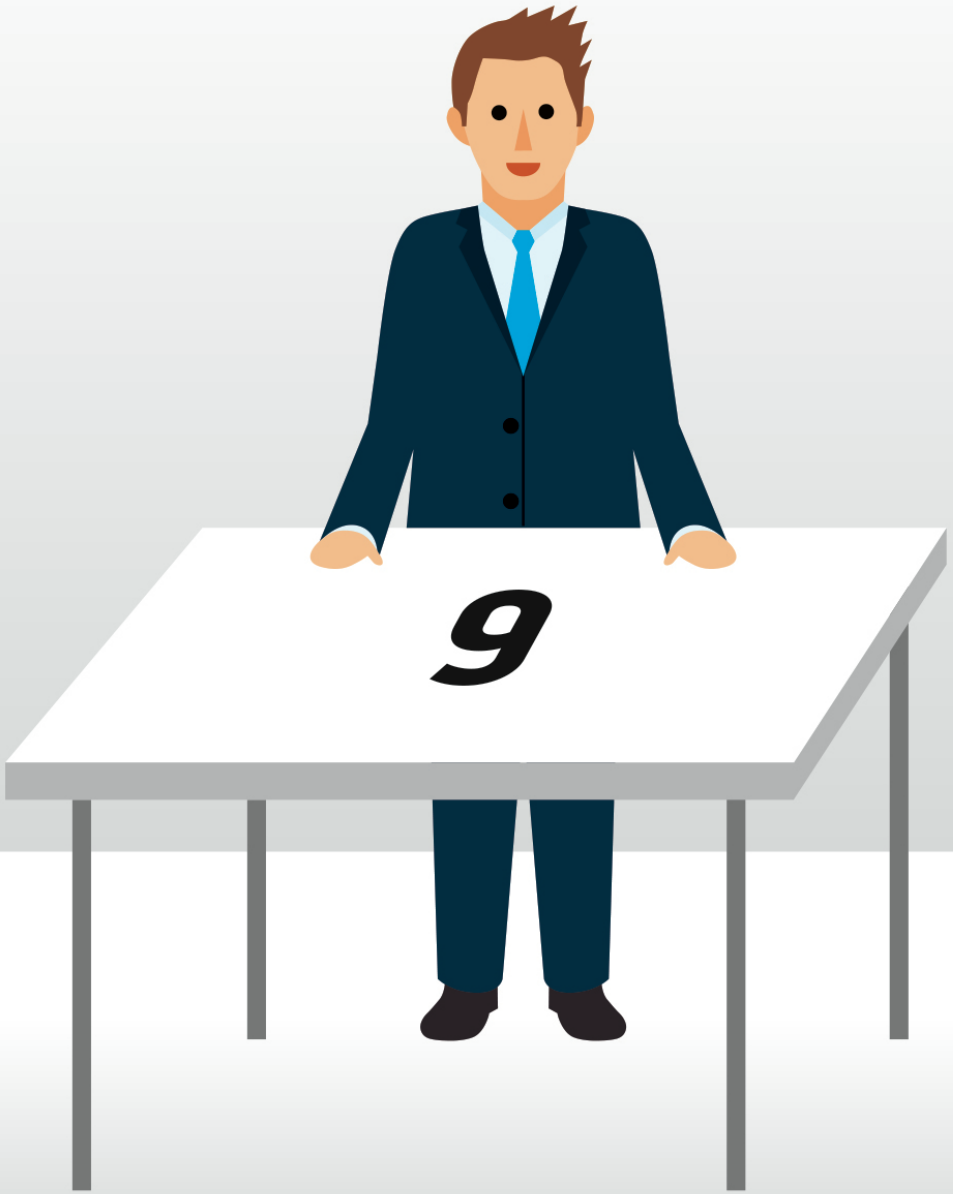
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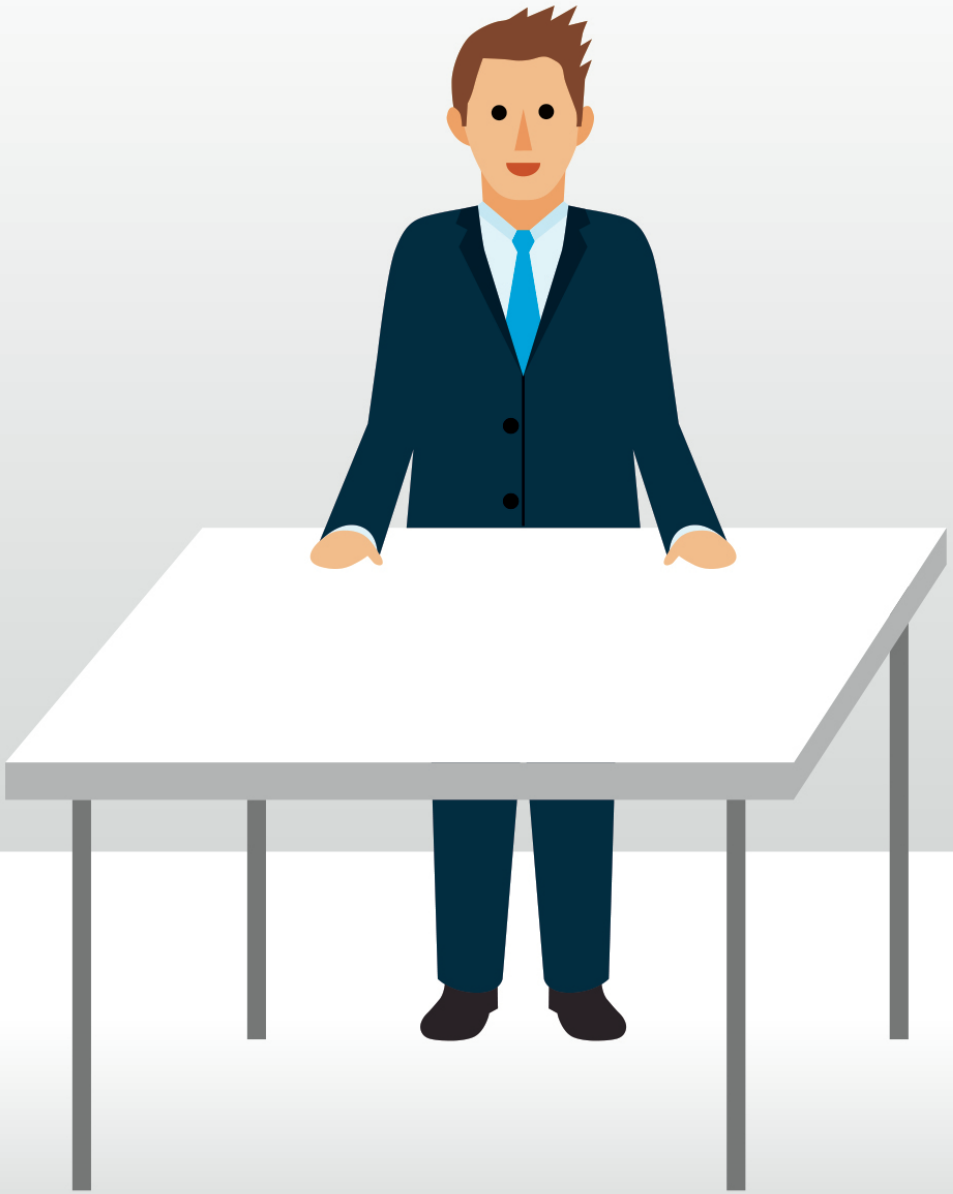

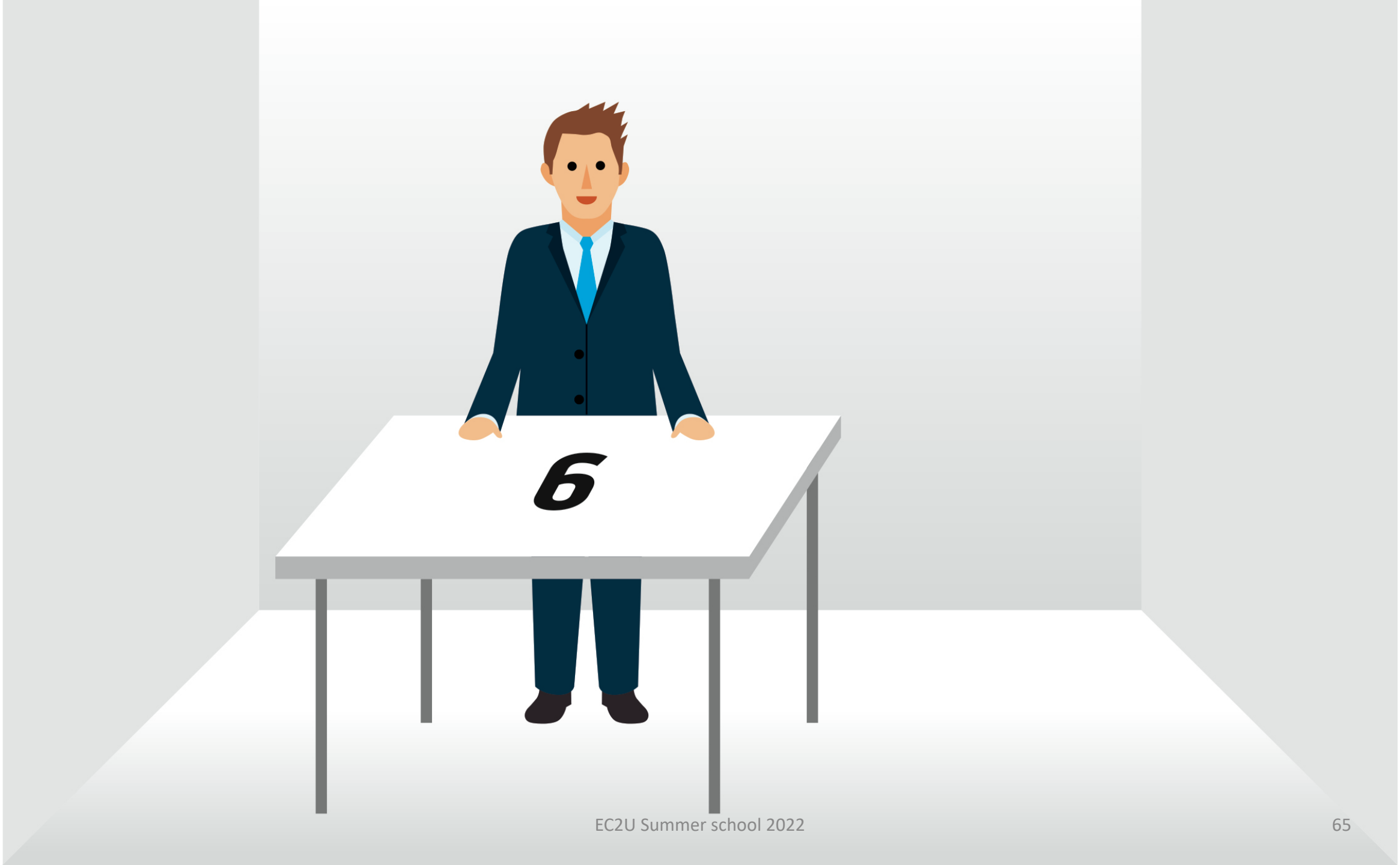
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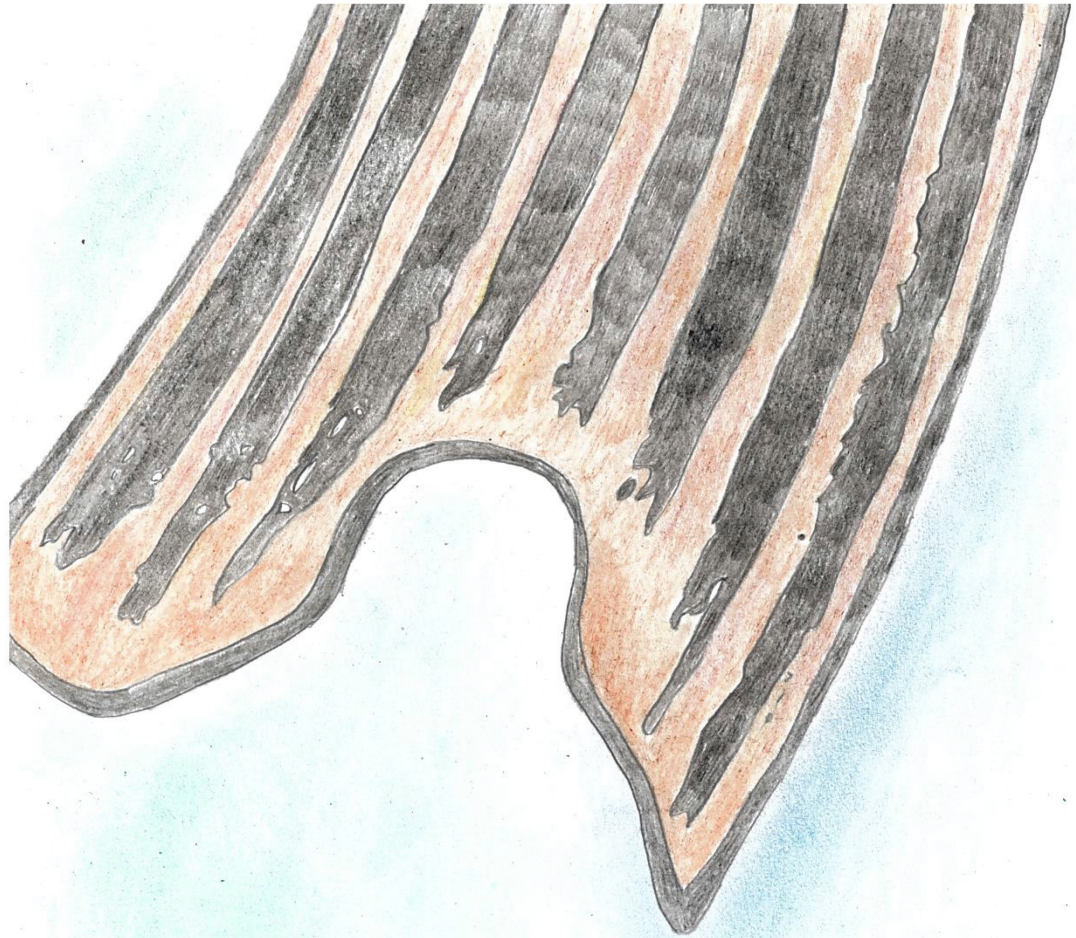
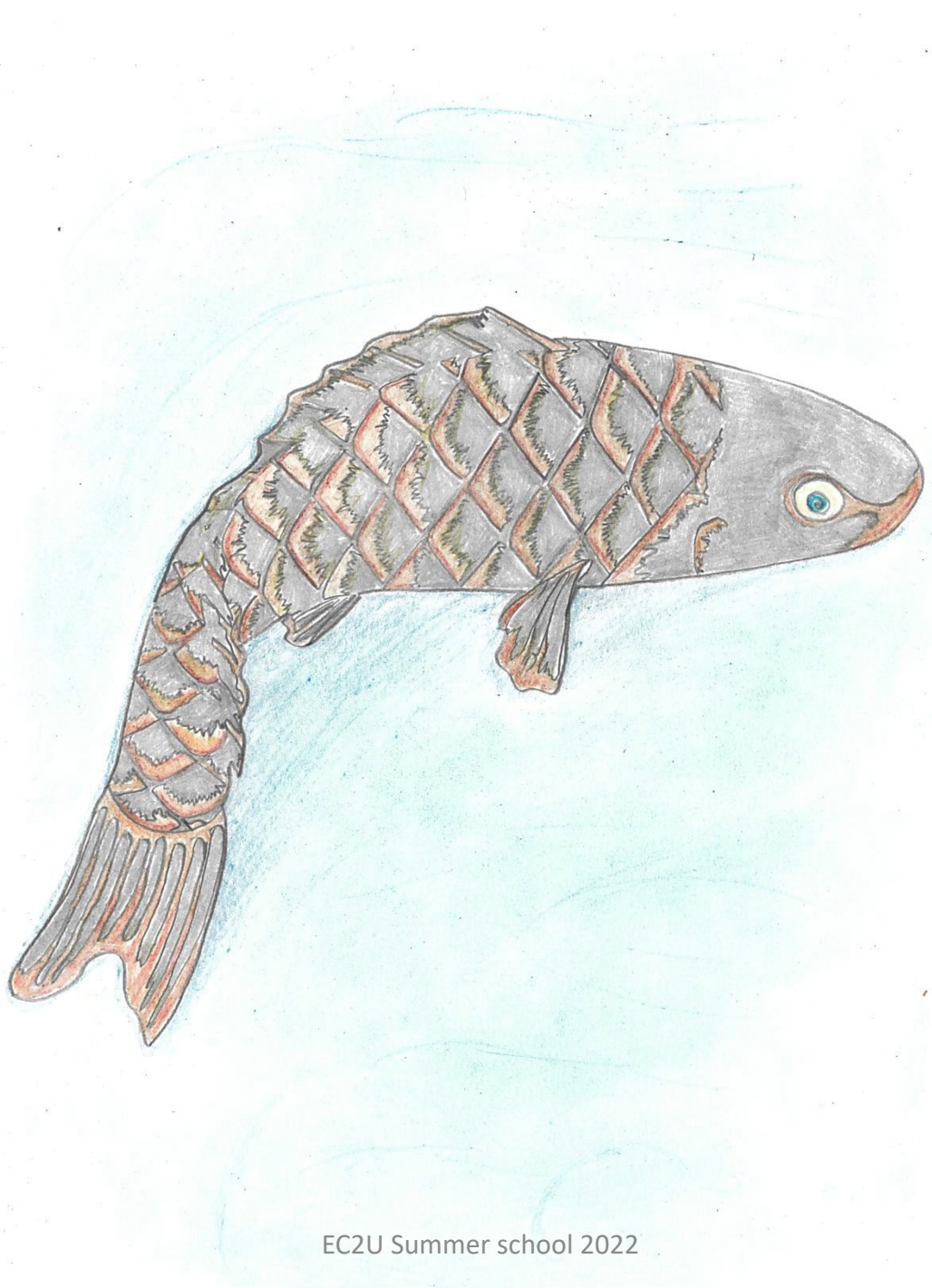
Silent book





Colorare da piccini ma anche da grandi ha un impatto sulla **mente** e può influenzare le **emozioni**. L'atto di colorare è sempre stato associato all'infanzia e crescendo ci dimentichiamo quanto possa essere rilassante concederci una mezzora per esprimere la nostra creatività all'interno di un disegno. Studi in

Non solo, **disegnare e colorare è una terapia e un modo per stare insieme alle altre persone.** I colori esprimono il nostro stato d'animo e con il disegno aumentiamo la creatività e le capacità cognitive di **ragionamento**, permette di migliorare la **coordinazione e le abilità motorie.**

Silent movie

Why did the men hide?

What does the woman think?

		Examples
Fail	0	<u>No Mentalizing:</u> Mildred was tired/hot. The room was too hot. He worked for Mildred/It was his job. <u>Inappropriate mentalizing/over-interpretation:</u> Mildred wanted to rest. Mildred is pretending to faint/be hot. Harold is trying to get attention.
Partial	1	<u>Refers to mental state/mind but does not offer appropriate explanation/interpretation:</u> Harold was surprised/shocked to see the man come in. To hide that he likes/fancies Mildred. He loves/likes her.
Pass	2	<u>Refers to mental state/mind and offers appropriate explanation/interpretation:</u> Harold wants the man to think Mildred fainted. Harold is trying to trick the man. So that the man doesn't know what they are doing/that they are together. To trick the man coming in.

Cognitive *PERSPECTIVE TAKING*

Thought: focus on what the characters are ***thinking***.

A burglar who has just robbed a shop is making his getaway. As he is running away, a policeman sees him drop a glove. He wants to tell him he dropped his glove. When the policeman shouts out to the burglar, “Hey, you! Stop!” the burglar turns round, sees the policeman and gives himself up.

Why did the burglar give himself up?

Emotional *PERSPECTIVE TAKING*

Emotion: focus on what the characters are ***feeling***.

Ruth is driving away from Debbie’s place when Debbie’s cat runs suddenly into the road. She hits the brakes, but feels her car go over something. She stops and checks to see whether she has killed the cat. She finds that she ran over a bump in the road, and that the cat is safely on the other side of the road.

How does Ruth feel?

frontiers in Psychology

Training for generalization in Theory of Mind: a study with older adults

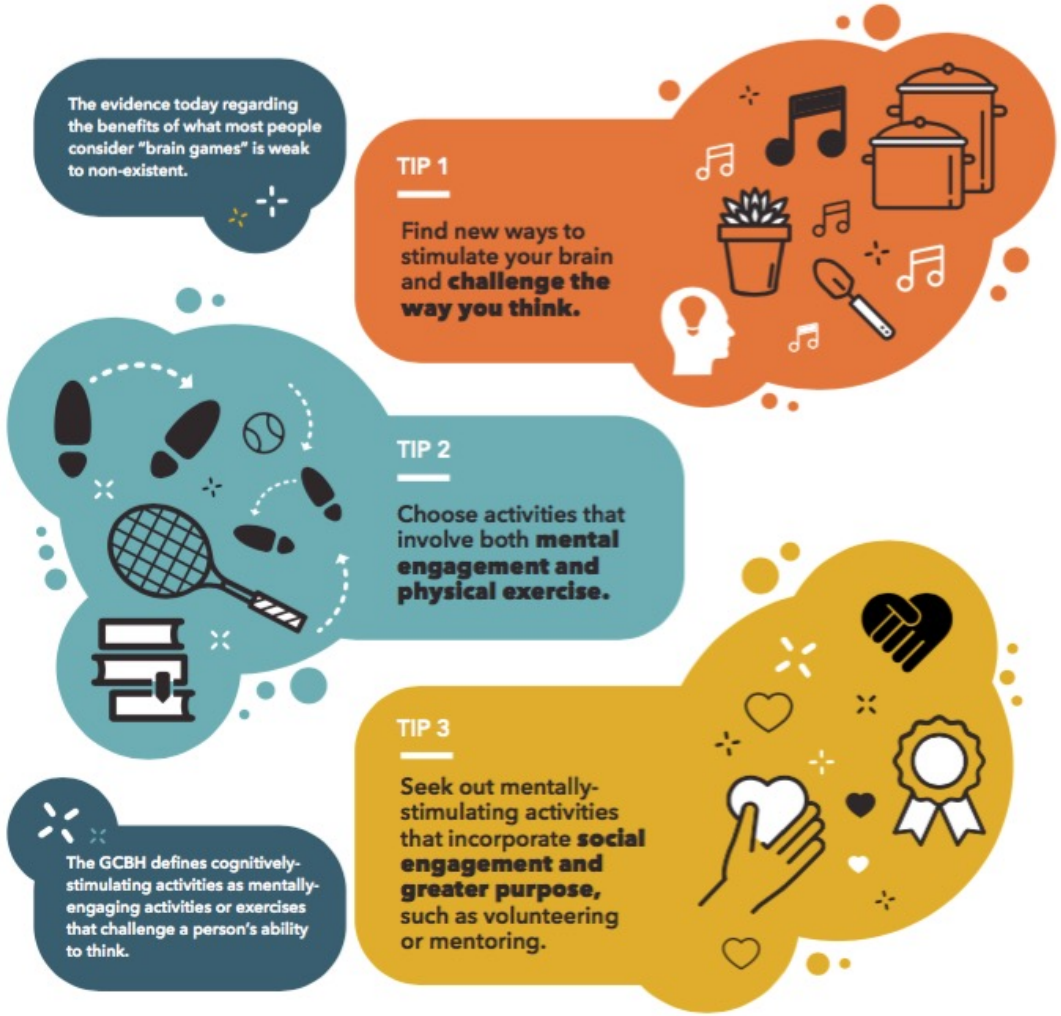
Elena Cavallini[1], Federica Bianco[1], Sara Bottiroli[2], Alessia Rosi[1], Tomaso Vecchi[1,2] and Serena Lecce[1]*

TABLE 3 | Means value and standard deviations for ToM task performance as a function of Group condition (ToM and physical-conversation groups) and Time (pre- and post-test).

	ToM training		Physical-conversation training	
	Pre	**Post**	**Pre**	**Post**
Strange stories	59.42 (14.89)	79.62 (12.70)	63.60 (13.11)	75.56 (17.03)
Physical stories	65.62 (16.48)	68.05 (19.24)	65.86 (13.94)	67.79 (20.36)
ToM animation				
Intentionality	56.49 (12.68)	64.00 (12.17)	50.38 (17.88)	54.00 (14.36)
Action descriptions	0.24 (0.49)	0.17 (0.57)	0.73 (1.18)	0.36 (0.86)
Interaction descriptions	2.67 (0.91)	2.28 (1.07)	2.46 (1.03)	2.68 (0.90)
Mentalizing descriptions	1.08 (1.01)	1.54 (1.07)	0.77 (0.76)	0.96 (0.67)
Goal-directed animation				
Intentionality	43.51 (10.46)	45.75 (10.38)	42.31 (14.85)	44.20 (12.72)

Healthy Aging Requires You To Challenge Your Brain

Don't let age limit you. You have the ability to change your brain at any age.



Global Council on Brain Health
A COLLABORATIVE FROM AARP

Global Council on Brain Health (2017). Engage Your Brain: GCBH Recomendation on Cognitively Stimulating Activities

Thank you for your attention

ecava@unipv.it