Human Factors Psychology Lab,
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Working memory, negative affect and personal assets: How do they relate to mathematics and reading literacy?

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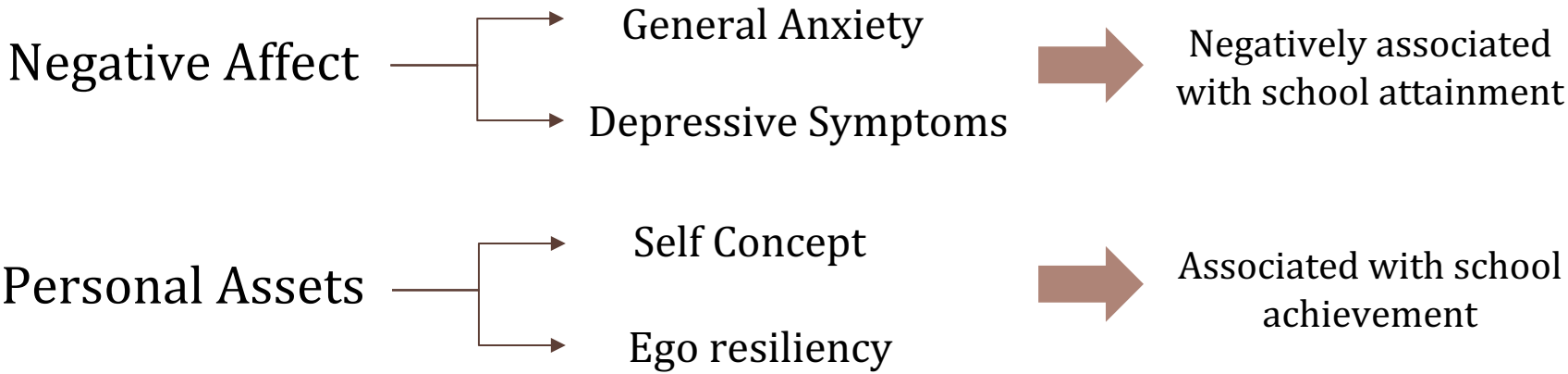
1. Introduction

Working Memory



1. Introduction

- Purpose

  Specific contributions of 1) Working Memory, 2) Negative Affect, and 3) Personal Assets to mathematics and reading literacy

- Rationale for participants

  early adolescence is an important stage of life

  more likely to face emotional difficulties

  a decrease in self-concept

2. Hypothesis

Working Memory → Would explain a large and consistent, unique variance in both MT and RD

Negative Affect

Personal Assets → Would explain a unique portion of variance in both MT and RD

2. Hypothesis

Paucity of studies directly comparing MT with RD literacy

the overall variance would be **consistent** for **both** academic domains

while **possible differences** might be related to **WM**

3. Methods

1. Confirmatory factor analyses (CFAs)

   test the structure of variables considered.

2. Decomposition Analysis

   examine the unique and shared contribution of Negative affect, WM and Personal assets to MATH and Reading literacy

3. Methods

- Participants
  - 143 schoolchildren
  - in grades 6 to 8
  - were attending schools in an urban area or north-east Italy
  - were fluent in Italy
  - came from middle class families

3. Methods/ Materials

1. Negative affect

The Revised Children's Manifest Anxiety Scale: Second Edition (RCMAS-2)	→	General Anxiety
The Children's Depression Inventory (CDI)	→	Depressive symptoms
The Questionnaire for the Assessment of Psychopathology in Adolescence (Q-PAD)	→	Behavioral and emotional problems

3. Methods/ Materials

2. Personal Assets

The Ego-resiliency Scale (ER)	→	Resilience
Multidimensional Self-Concept Scale (MSC)	→	Self concept

3. Working Memory

Verbal WM	Visuospatial WM
Word span—Backward (WS-B)	Matrices span—Backward (MS-B)
Verbal dual tasks (DT-V)	Visuospatial dual tasks (DT-VS)
Listening span test (LST)	Dot matrix task (DOT)

3. Methods/ Materials

4. Mathematics and Reading Literacy

The INVALSI (Italian Institute for the Assessment of the Education System)

- Math
  - **space and figures (MATH-SF)**
    geometry-related tasks
  - **numbers (MATH-N)**
    measures number operations
  - **relations and functions (MATH-RF)**
    equivalences or algebraic expressions
  - **data and prediction (MATH-DP)**
    calculation of simple statistics measures
- Reading
  - **reading comprehension (READ-RC)**
  - **grammar (READ-G)**

4. Procedure

a) Self-report measures were administered
in a group session
lasting approximately 1 hour

b) WM was assessed
in individual sessions in a quite room
lasting approximately 30

c) test mathematics and reading literacy.
in two group sessions
lasting 75 minutes each

5. Result

the unique and shared contributions of these variables to mathematics and reading literacy

Negative Affect

- Small, but not negligible

WM

- A lager portion of unique variance than PA and NA
- In both mathematics and reading literacy

6. Conclusion

- Implication

a) build a positive overall and academic self-concept
    - by reducing the link between test results and worthiness as a person

b) develop a positive approach to problem-solving
    - to cope with difficulties and worries

c) be aware that poor performance can be part of the learning process

5. Conclusion

- Future Research
  - the importance of considering cognitive and individual factors jointly
    - better understand schoolchildren’s academic success

Thank You for Listening