Title: Working memory, negative affect and personal assets: How do they relate to mathematics and reading literacy?

Author(s): Enrica Donolato, David Giofrè, Irene C. Mammarella

Summary:
  The main purpose of this study was to investigate specific contributions of
1. negative affect (i.e., general anxiety and depressive symptoms)
2. working memory (WM)
3. personal assets (i.e., self-concept, academic and competence dimensions, and ego-resiliency)
to mathematics and reading literacy in middle school students.
It was hypothesized that negative affect and personal assets would explain a unique portion of variance in both mathematics and reading literacy; WM would explain a large and consistent unique variance. Despite of the paucity of research comparing mathematics and reading literacy, the overall variance would be consistent for both academic domains while possible differences might lie on working memory capacity.
  With Confirmatory factor analyses (CFAs) and Decomposition Analysis, different materials were used in order to examine negative affect, personal assets, WM, and mathematics and reading literacy.

  1) For negative affect

Material	Reference	To test
The Revised Children's Manifest Anxiety Scale: Second Edition (RCMAS-2)	Reynolds C, Richmond B., 2012	General Anxiety
The Children's Depression Inventory (CDI)	Kovacs, M., Camuffo, M., Cerutti, R., Lucarelli, L., Mayer R., 1998	Depressive Symptoms
The Questionnaire for the Assessment of Psychopathology in Adolescence (Q-PAD)	Sica C., Chiri L. R., Favilli R., Marchetti I., 2011	Behavioral and emotional problems

  2) For personal assets

Material	Reference	To test
The Ego-resiliency Scale (ER)	Block J, Kremen A., 1996 & Block, J. H., & Block J., 1980	Resilience
Multidimensional Self-Concept Scale (MSC)	Bracken BA., 2003	Self-concept

  3) For working memory

For verbal WM	Reference	For visuospatial WM	Reference
Word span—Backward (WS-B)	Cornoldi C, Vecchi T., 2003	Matrices span—Backward (MS-B)	Cornoldi C, Vecchi T., 2003
Verbal dual tasks (DT-V)	De Beni R., Palladino P., Pazzaglia F., Cornoldi C, 1998	Visuospatial dual tasks (DT-VS)	Mammarella I. C., Cornoldi C., 2005
Listening span test (LST)	Daneman M., Carpenter PA., 1980	Dot matrix task (DOT)	Miyake A, Friedman NP, Rettinger DA, Shah P, Hegarty M., 2001

  4) For mathematics and reading literacy, The INVALSI (Italian Institute for the Assessment of the Education System) was used.
Self-report measures were administered in a group session lasting approximately 1hour; WM was assessed in individual sessions in a quiet room for 30 minutes; mathematics and reading literacy tests were taken in two group sessions lasting 75 minutes each.

The research showed the unique and shared contributions of these variables to mathematics and reading literacy as expected. The impact of negative affect was small, but not negligible. In addition, it was found that WM had a larger portion of unique variance than negative affect and personal assets in both mathematics and reading literacy.