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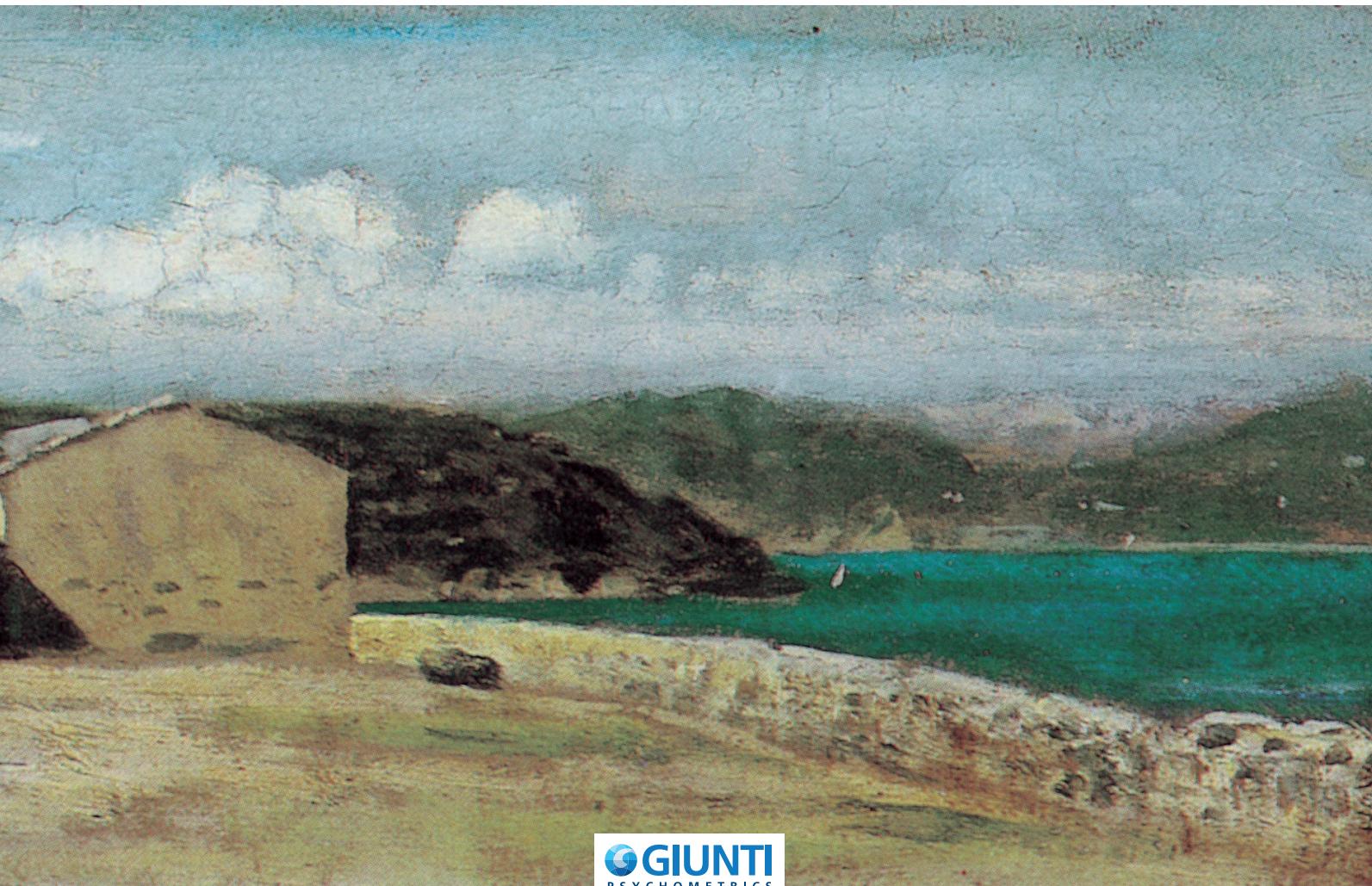
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PSYCHOMETRICS

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Psychopathological symptoms in Italian children and adolescents with Specific Learning Disorder: What do mothers and fathers report about?

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ABSTRACT. Bambini con Disturbo Specifico dell'Apprendimento (DSA) mostrano più frequentemente di bambini a sviluppo tipico (ST) sintomi psicopatologici, quali ansia e depressione. La maggior parte degli studi ha rivolto l'attenzione a bambini alle prese con ortografie opache, quali l'inglese, o trasparenti ma complesse, quali il norvegese. Questi studi sono poco generalizzabili al contesto italiano in cui apprendere a leggere e scrivere appare più facile e in cui gli interventi forniti a bambini con DSA appaiono differenti. Primo obiettivo è quello di confrontare le risposte fornite nelle sottoscale della *Child Behavioral Checklist* (CBCL) dalle madri di 22 bambini con DSA (età media = 12.31, DS = 2.88) con quelle di madri di 29 bambini a ST (età media = 10.96, DS = 2.74). Secondo obiettivo è quello di confrontare le risposte delle madri dei due gruppi con quelle fornite dai padri. Dai test Mann-Whitney emerge nei bambini con DSA un livello significativamente più alto di sintomi internalizzanti ed esternalizzanti totali. Si sottolinea l'importanza di individuare precocemente bambini con DSA per contrastare altrettanto precocemente l'insorgere di problemi psicopatologici e la necessità di approfondire l'accordo madre-padre in prove come la CBCL.

SUMMARY. International literature provides evidence that Specific Learning Disorders (SLD) may be associated with multiple dimensions of psychopathology. In contrast, only a small number of studies have focused on emotional and behavioral problems in Italian children and adolescents with SLD. The Child Behavioral Checklist (CBCL) is a measure of psychopathological symptoms widely-used in the clinical contexts in Italy. We therefore conducted a preliminary study examining mothers' and fathers' reports on all of the eight CBCL syndrome subscales. First aim was to examine the mothers' ratings on CBCL in a group of 22 Italian children and adolescents with SLD (mean age = 12.31, SD = 2.88) and 29 peers without SLD (mean age = 10.96, SD = 2.74). Second, concordances and differences between mothers and fathers of these children on CBCL were investigated. The children and adolescents with SLD obtained significantly higher Internalizing and Externalizing Total Scores, compared to peers without SLD. We discussed the relevance of early identifying Italian children with SLD to early contrast the risk of emotional and behavioral problems in these children. These findings underscore the need for further examination of the mother-father agreement on measures of psychopathological problems.

Keywords: Specific Learning Disorder, Psychopathological symptoms, Mother-father discrepancy

INTRODUCTION

The main goal of the present study was to obtain more in-depth knowledge of emotional and behavioral features in Italian children and adolescents with Specific Learning Disorders (SLD). SLDs are classified by the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* among the neurodevelopmental disorders that involve difficulties in reading, written expression, and/or mathematics and that are not primarily due to more general learning difficulty, such as intellectual disability or global developmental delay, nor to external factors (DSM-5; American Psychiatric Association, 2013).

Despite the specific nature of the SLDs, numerous studies have found that these disorders can co-occur with other neurodevelopmental or mental disorders. For example, the most frequent comorbid disorder in groups with reading disability (RD) is the attention-deficit/hyperactivity disorder (ADHD), and particularly the inattentive and combined subtypes of ADHD that are characterized by significant inattention (e.g., Knivsberg & Andreassen, 2008). Children and adolescents with RD are at higher risk for externalizing disorders, such as oppositional defiant disorder (ODD) and conduct disorder (CD), and show rule-breaking behaviors (e.g., Dahle, Knivsberg & Andreassen, 2011; Knivsberg & Andreassen, 2008; Maughan, Rowe, Loeber, & Stouthamer-Loeber, 2003; Willcutt & Pennington, 2000). Children and adolescents with dyslexia are also at higher risk for an internalizing, anxious and depressive symptomatology (e.g., Dahle et al., 2011; Knivsberg & Andreassen, 2008; Maughan et al., 2003; for a review, see Mugnaini, Lassi, La Malfa & Albertini, 2009) and for psychosocial problems (Biotteau, Albaret, Lelong & Chaix, 2016).

The most of these studies has focused on children with dyslexia. The few studies on children and adolescents with comorbid learning disorders (e.g., dyslexia associated with math disability) demonstrated the vulnerability of this clinical population to higher rates of externalizing behaviors such as aggressive behaviors, delinquency, and risk-taking behaviors (e.g., McNamara, Vervaeke & Willoughby, 2008), as well as higher levels of loneliness, stress, anxiety and depression (e.g., Al-Yagon, 2012; Feurer & Andrews, 2009; Nelson & Harwood, 2011; Wilson, Armstrong, Furrie & Walcot, 2009). Willcutt and colleagues (2013) found that the group with RD and math disability (MD) was more impaired than the groups with RD and MD alone on measures

of internalizing psychopathology. Overall, the existing international literature provides evidence that SLDs may be associated with multiple dimensions of psychopathology.

In contrast, to date only a small number of studies have focused on the psychopathological symptoms in Italian children and adolescents with SLD. It is known that SLDs are pretty much incident and severe in countries characterized by orthographically deep (e.g., English, French) as opposed to shallow (e.g., Italian, German, Norwegian) languages (Brunswick, McDougall & De Mornay Davies, 2010; Zonno, Scorza, Morlini & Stella, 2016). There are also potential differences between countries like Italy and United States in the type of specialist provision for students with SLD at school. In the light of these considerations, it is hard to generalize results of the existing international literature concerning the psychological problems of SLD students to Italian children and adolescents with SLD (Ghisi, Bottesi, Re, Cerea & Mammarella, 2016).

To our knowledge, few studies have investigated anxiety and depressive symptoms in Italian children and adolescents with LD. Margari and colleagues (2013) identified differences between children and adolescents with SLD and with learning disorder not otherwise specified (LD NOS), with a higher comorbidity with ADHD and with mood and anxiety disorder, using the Child Behavioral Checklist (CBCL; Achenbach, 1991; Achenbach & Rescorla, 2001), in the former than in the latter. Mammarella and colleagues (2016), comparing Italian children with nonverbal learning disabilities (NLD), with RD and typically developing children (TD), aged between 8 and 11, found that the NLD children reported more severe anxiety about school and separation than TD, and children with RD had worse depressive symptoms than those with NLD or TD, using the *Self-Administered Psychiatric Scales for Children and Adolescents* (SAFA; Cianchetti & Fancello, 2001) and the *Children's Depression Inventory* (CDI; Kovacs, 1982; Italian validation by Camuffo, Cerutti, Lucarelli & Mayer, 1988). Chiappedi and Baschenis (2016) found that children with SLD aged between 8 and 13, compared with TD peers, more often had a clinically significant level of anxiety using SAFA. Bonifacci, Storti, Tobia and Suardi (2016), evaluating the psychological profiles of Italian children with SLD, aged between 9 and 12, found that these children had lower scholastic and interpersonal self-esteem than TD children, using the *Self-Esteem Multidimensional Test* (TMA; Bracken, 2003); the parents of the SLD group also rated their children as more anxious and depressed, relative to parents of

control group, using the *Test of Anxiety and Depression* (*TAD*; Newcomer, Barenbaum & Bryant, 1995).

The national literature reviewed here reveals some important gaps calling for additional exploration. In effects, none to date has extended the investigation to other dimensions of psychopathology, such as somatic complaints, social and thought problems and rule-breaking and aggressive behaviors, in Italian children and adolescents with SLD. The CBCL is a measure of psychopathological symptoms, as those described above, and it is widely-used in the clinical contexts in Italy. It is therefore surprising that relatively little research has compared Italian SLD and TD groups on all of the CBCL syndrome subscales. To our knowledge, only one study (Ghisi et al., 2016) has used all of the CBCL - Youth Self-Report syndrome subscales (CBCL-YSR, Achenbach & Rescorla, 2001) to investigate differences between a group of Italian university students with dyslexia and control group. The authors found higher levels of somatic complaints, social and attentional problems in university students with dyslexia than controls, using this measure. The question of whether such differences exist even earlier in development in Italian population remains open. Thus, additional research is needed to determine which psychological consequences may affect children and adolescents with SLD in a context like the Italian one.

In addition to exploring more in-depth psychological features of Italian children and adolescents with SLD, it may be important to analyze whether mothers and fathers of these patients are equivalent in their reports. Previous investigations both in TD and clinical populations have evaluated the agreement between parents and teachers or have involved comparisons between adolescents' self-reported behavior ratings versus information provided by parents or teachers on the same behaviors. Cross-informant agreement tended to be lower for internalizing problems than for externalizing problems (Achenbach, McConaughy & Howell, 1987; Dahle et al., 2011; Stanger & Lewis, 1993; Youngstrom, Loeber & Stouthamer-Loeber, 2000), and particularly low for depressive disorders (Cantwell, Lewinsohn, Rohde & Seeley, 1997). Results of a recent meta-analysis by Nelson and Harwood (2011) indicated that parents and teachers of children and adolescents with learning disability (LD) were generally equivalent in their reports, whereas they reported greater depressive symptomatology for students with LD than these students reported for themselves. Studies concerning the agreement between mothers and fathers on child's psychopathological symptoms measures are very rare

both in TD (Achenbach et al., 1987; Duhig, Renk, Epstein & Phares, 2000; Grietens et al., 2004) and clinical populations (Achenbach et al., 1987; Treutler & Epkins, 2003). For example, a meta-analysis conducted by Duhig and colleagues (2000) showed moderate correspondence between mothers and fathers in ratings of internalizing behavior and large correspondence in ratings of externalizing behavior. To our knowledge, none has investigated agreement between mothers and fathers of children and adolescents with SLD on the CBCL. In clinical practice, the CBCL is filled in by the mother or father, according to parent that is present at the child assessment. Thus, the knowledge of this aspect is important from a clinical perspective.

AIMS

We conducted a preliminary study examining mothers' and fathers' reports on all of the eight CBCL syndrome subscales. First aim of the present study was to gain more in-depth knowledge about emotional and behavioral problems in Italian children and adolescents with SLD. In this study, we used the CBCL, a standardized and widely used measure to assess the psychopathology problems (i.e., anxious/depressed, withdrawal/depression, somatic complaints, social problems, thought problems, attention problems, rule-breaking behaviors, and aggressive behaviors) of Italian children and adolescents. We compared the mothers' ratings of the SLD group with those of control group. In line with the literature reviewed above, we expected that the SLD group would exhibit significantly higher scores on the CBCL, both on the internalizing problems and externalizing problems subscales, relative to group without SLD.

Second aim was to examine if mothers and fathers of the children and adolescents with and without SLD reported the same kind and strength of psychological problems. The CBCL is a very useful clinical tool for identifying emotional and behavioral problems in populations with atypical development since it considers parental observation in daily contexts (Achenbach & Rescorla, 2007). Since both mothers and fathers know the child best, we hypothesized large correspondence between mothers and fathers in ratings of their children/adolescents' behaviors; in other words, we expected that the fathers could be likewise reliable in describing problem behaviors in their children/adolescents with and without SLD.

METHODS

Participants

This study involved a total of 51 monolingual Italian children and adolescents: 22 children and adolescents with SLD and 29 children and adolescents without SLD.

Children and adolescents with SLD were recruited at the Center for the diagnosis and rehabilitation of learning disorders (SOS Dyslexia Center) at Modena, Italy; children and adolescents without SLD were recruited by families of the Northern and Southern Italy that voluntarily participated in the study.

The mean age of the SLD group was 12.31 ($SD = 2.88$) and the group included 12 males and 10 females. The mean age of the comparison group was 10.96 ($SD = 2.74$) and included 14 males and 15 females. The two groups did not differ significantly on age [$t(49) = 1.705; p = .094$] and gender [$\chi^2(1, N = 51) = .20, p = .657$]. All children had no history of major cerebral damage, congenital malformations, or visual or hearing impairments.

With regard to children/adolescents with SLD, their diagnosis met the requirements of the DSM-4 (American Psychiatric Association, 2000) complied with the guidelines typically adopted by Italian clinical services (Panel, D.A.E.R.D. Consensus Conference, 2007), namely: they had an adequate IQ level (IQ above 85), but scored substantially lower on standardized tests (in reading, writing, and /or mathematics) than expected for their age, schooling, and level of intelligence. Each participant had a moderate SLD and the diagnoses were distributed as follows: 1 (5%) dyslexia, 3 (13%) dysorthography, 1 (5%) dyscalculia and 17 (77%) mixed disorders.

The study met ethical guidelines for human subject protections, including adherence to the legal requirements of the study country. Parents gave informed written consent for participation in the study, data analysis, and data publication.

Procedure

The CBCL was completed by all mothers of the children and adolescents with SLD and without SLD. In the SLD group, 11 fathers completed the CBCL; in the control group, the fathers that completed the CBCL were 18.

To all of the children and adolescents with SLD were administered tests for assessing cognitive level, reading,

writing and math abilities. All of them were assessed in a quiet room of the SOS Dyslexia Center by a trained psychologist. Prior to the assessment, the child/adolescent was introduced to the room with his/her mother such he/she became familiar with the environment and the psychologist. During the child/adolescent's assessment, the mother and father was told to fill in the CBCL outside the room.

The cognitive level of the children and adolescents with SLD was measured with the *Raven's Coloured Progressive Matrices* (CPM; Raven, 1958) for the children 7 to 11.50 years old, and with the *Wechsler's Intelligence Scale for Children - Fourth Edition* (WISC-IV; Wechsler, 2003a, 2003b) for the adolescent 11.58 to 16.92 years old.

The reading, writing and math abilities of the children and adolescents with SLD were measured using standardized diagnostic tests, typically used in Italy to assess children with SLD, namely: words and non-words reading tests from the *Battery for the Evaluation of Developmental Dyslexia and Dysorthography* (DDE-2; Sartori, Job & Tressoldi, 1995, 2007); the *MT reading text* (Cornoldi & Colpo, 1998, 2012); the *Battery for the Assessment of Writing Skills* (BVSCO-2; Tressoldi, Cornoldi & Re, 2013); the *Battery for the Developmental Dyscalculia* (BDE-2; Biancardi, Bachmann & Nicoletti, 2016).

Materials

- *Child Behavior Checklist* (CBCL; Achenbach, 1991; Achenbach & Rescorla, 2001). The CBCL is a well-validated standardized measure of emotional, social and behavioral problems in children and adolescents between the ages of 6 and 18. Parents is asked to rate 113 items describing whether the child/adolescent is currently exhibiting, or had exhibited within the past 6 months, specific emotional and behavioral problems. Items are rated on a scale of 0 (not true), 1 (somewhat true), or 2 (very true). The CBCL includes eight "syndrome subscales": Anxious/Depressed; Withdrawal/Depression; Somatic Complaint; Social Problem; Thought Problem; Attention Problem; Rule-Breaking Behavior; Aggressive Behavior. In the present study, all of the syndrome subscales were used. The CBCL also provides an internalizing total score and externalizing total score. The CBCL demonstrates good psychometric properties (Achenbach & Rescorla, 2001). Italian translation/adaptation and standardization was by Frigerio and colleagues (2004).

- *Battery for the evaluation of developmental dyslexia and dysorthography (DDE-2; Sartori et al., 1995, 2007)*. This tool is a widely used diagnostic test in Italy. It consists of five subtests for the evaluation of oral reading (single grapheme identification, lexical decision task, words reading, nonwords reading, and identification of homophones) and three subtests for the evaluation of writing (words dictation, nonwords dictation, and sentences with homophone words dictation). The subtests selected for the present study were words reading and nonwords reading. In the first one, the child is asked to read a list of words and in the second subtest a list of nonwords. Each child is asked to read aloud as quickly and accurately as possible. The procedure requires the examiner to time the performance and make note of the mistakes without interrupting the child. For each subtest, the time (in seconds) and the number of incorrect pronunciations (errors) in reading the list of stimuli are scored.
- *MT reading text* (Cornoldi & Colpo, 1998, 2012). The MT test is a psychometrically valid Italian instrument that measures oral reading speed and accuracy and consists of a series of texts for all of the school grades. The child is asked to read aloud as quickly and accurately as possible the text chosen according to his or her school grade. The examiner is not allowed to intervene when the child made a mistake, but only if he or she skips a line. During the test, the examiner times the reading and makes note of the mistakes. Number of syllables per second (speed) and number of word misread (errors) in reading the text are scored.
- *Text dictation - Battery for the Assessment of Writing Skills (BVSCO-2; Tressoldi et al., 2013)*. This test is a standardized and widely used Italian test that consists of writing a text read aloud by the examiner. The test includes a series of texts for all of the school grades. Number and quality of errors are considered.
- *Battery for the Developmental Dyscalculia (BDE-2; Biancardi et al., 2016)*. BDE-2 is a standardized battery that explores several aspects of math with several different timed tasks in which accuracy is recorded. The tasks include: counting, Arabic numbers reading, Arabic numbers writing, multiplication tables, mental addition and subtraction operations, written operations, triplets (the child/adolescent chooses the largest number among a set of three Arabic numbers), insertions (the child/adolescent places a number in one of four possible positions among three other numbers), and approximate

calculation. Three partial quotients (Number Quotient-NQ, Count Quotient-CQ, Number Sense Quotient-NSQ) and a global quotient (TQ) are calculated.

Statistical analyses

All statistical analyses were carried out using SPSS 21.0 for Windows with an alpha level of .05. Prior to conducting analyses, data were checked for violation of assumptions using the Kolmogorov-Smirnov test. Because distributions for some of the dependent variables were not normal, Mann-Whitney tests were conducted to assess potential differences in the eight CBCL syndrome subscales and in the internalizing/externalizing total scores between the mothers' reports of the SLD group and control group. Effect sizes (r) for Mann-Whitney U tests were calculated using the formula $r = \frac{Z}{\sqrt{N}}$ where N is the total number of participants in the whole sample; the standard values of r for small, medium, and large effect sizes are .1, .3, and .5 respectively (Field, 2009, p. 550).

We also conducted a series of Mann-Whitney tests to evaluate potential differences in the eight CBCL syndrome subscales and in the internalizing/externalizing total scores between the fathers' reports of the SLD group and control group.

A series of preliminary paired-samples t -tests were performed to compare mothers and fathers of children/adolescents with and without SLD and thus evaluated whether there were or not differences between the mothers' and fathers' ratings on the CBCL syndrome subscales.

RESULTS

Descriptive data on all of the eight CBCL syndrome subscales, according to the mothers' reports, and results of statistical comparisons using Mann-Whitney tests are presented in Table 1.

Relative to control group, the children and adolescents with SLD obtained significantly higher internalizing total scores and externalizing total scores. Analyses of the syndrome subscales revealed that the scores on the Anxious/Depressed, Withdrawal/Depression, Social Problem and Attention Problem subscales were significantly higher for SLD group compared to non-SLD group. However, no significant differences were found between the two groups

Table 1 – Behaviors reported from the mothers of children and adolescents with SLD and without SLD

CBCL syndrome subscales	SLD group (n = 22)			Control group (n = 29)			Mann-Whitney test		
	M	SD	range	M	SD	range	U	p	r
Anxious/Depressed	6.18	3.66	0-14	3.86	2.68	0-10	198	.021	.32
Withdrawal/Depression	9.36	4.26	1-17	5.45	3.46	0-14	150.5	.001	.45
Somatic Complaint	2.73	2.60	0-9	1.76	1.38	0-5	272	.359	.13
Social Problem	3.64	2.48	0-11	2.31	1.75	0-6	212	.039	.29
Thought Problem	3.36	2.70	0-11	2.52	1.96	0-8	264.5	.295	.15
Attention Problem	7.00	3.57	0-14	2.66	2.61	0-9	109.5	<.001	.56
Rule-Breaking Behavior	2.59	2.38	0-7	1.41	1.32	0-4	237	.111	.22
Aggressive Behavior	4.45	2.70	0-10	3.14	2.22	0-9	226.5	.075	.25
Internalizing Total Score	18.27	9.13	1-36	11.07	6.47	1-26	164	.003	.41
Externalizing Total Score	7.05	4.49	0-16	4.55	3.15	0-13	211.5	.040	.29

Note. Mean, standard deviation (SD), range, and differences (Mann-Whitney test) between the two groups expressed as p-values and effect sizes are reported.

Significant results are in bold.

on the Somatic Complaint, Thought Problem, Rule-Breaking Behavior and Aggressive Behavior subscales.

Examination of the number of children/adolescents who fell within clinical range (defined as score below the 5th percentile) on CBCL total internalizing behaviors, total externalizing behaviors, and eight syndrome subscales is presented in Table 2. A higher number of children/adolescent with SLD fell within clinical range on almost all the CBCL subscales (i.e., Anxious/Depressed, Withdrawal/Depression, Somatic Complaint, Social Problem, Thought Problem, Attention Problem) and for total internalizing and externalizing behaviors.

Descriptive data on all of the eight CBCL syndrome subscales, according to the fathers' reports, and results of statistical comparisons using Mann-Whitney tests are presented in Table 3.

No significant differences were found on CBCL between the two groups of fathers.

Paired-samples t-tests indicated that the mothers (N = 29) reported significantly more anxious/depressed ($M = 4.97$,

$SD = 2.91$), withdrawal/depression ($M = 7.48$, $SD = 4.17$) and somatic complaint ($M = 2.14$, $SD = 1.94$) problems, relative to the fathers (anxious/depressed, $M = 3.69$, $SD = 3.36$; withdrawal/depression, $M = 5.21$, $SD = 4.73$; somatic complaint, $M = 1.31$, $SD = 1.42$) [anxious/depressed, $t(28) = 2.093$, $p = .046$, $r = .38$; withdrawal/depression, $t(28) = 2.648$, $p = .013$, $r = .48$; somatic complaint, $t(28) = 2.333$, $p = .027$, $r = .42$]. The mothers also reported more total internalizing behaviors ($M = 14.59$, $SD = 7.48$) than the fathers ($M = 10.21$, $SD = 8.72$) [$t(28) = 2.710$, $p = .011$, $r = .49$].

There were no significant differences between mothers' and fathers' ratings regarding the child's social (mothers, $M = 2.97$, $SD = 1.82$; fathers, $M = 2.83$, $SD = 2.47$), thought (mothers, $M = 2.97$, $SD = 1.99$; fathers, $M = 2.66$, $SD = 2.22$), attention problems (mothers, $M = 4.21$, $SD = 3.74$; fathers, $M = 4.21$, $SD = 3.49$), rule-breaking (mothers, $M = 1.72$, $SD = 1.79$; fathers, $M = 1.34$, $SD = 1.72$), aggressive (mothers, $M = 3.41$, $SD = 2.11$; fathers, $M = 3.24$, $SD = 2.46$) and externalizing behaviors (mothers, $M = 5.14$, $SD = 3.45$; fathers, $M = 4.59$, $SD = 3.64$).

Table 2 – Number and percentage of children/adolescents with scores on the CBCL syndrome subscales below the 5th percentile (CBCL clinical range) as reported from mothers in the SLD and control groups

CBCL syndrome subscales	SLD group (n = 22)		Control group (n = 29)	
	N	(%)	N	(%)
Anxious/Depressed	3	(14)	-	-
Withdrawal/Depression	15	(68)	10	(35)
Somatic Complaint	3	(13)	-	-
Social Problem	1	(5)	-	-
Thought Problem	2	(9)	1	(3)
Attention Problem	1	(5)	-	-
Rule-Breaking Behavior	-	-	-	-
Aggressive Behavior	-	-	-	-
Internalizing Total Score	15	(68)	9	(31)
Externalizing Total Score	1	(5)	-	-

Table 3 – Behaviors reported from the fathers of children and adolescents with SLD and without SLD

CBCL syndrome subscales	SLD group (n = 11)			Control group (n = 18)			Mann-Whitney test		
	M	SD	range	M	SD	range	U	p	r
Anxious/Depressed	4.73	4.08	0-12	3.06	2.78	0-10	76.5	.317	.14
Withdrawal/Depression	6.64	5.66	0-19	4.33	3.99	0-15	75.5	.296	.15
Somatic Complaint	1.91	1.76	0-6	.94	1.06	0-3	65.5	.134	.22
Social Problem	3.64	2.29	1-7	2.33	2.50	0-10	65.5	.134	.21
Thought Problem	3.36	2.16	1-7	2.22	2.21	0-8	68	.173	.20
Attention Problem	5.45	3.47	0-11	3.44	3.36	0-10	69.5	.188	.19
Rule-Breaking Behavior	1.45	1.75	0-6	1.28	1.74	0-5	84.5	.521	.10
Aggressive Behavior	3.45	2.21	0-7	3.11	2.65	0-9	87	.611	.08
Internalizing Total Score	13.27	10.53	1-37	8.33	7.08	0-25	72.5	.238	.17
Externalizing Total Score	4.91	2.98	1-11	4.39	4.06	0-14	81	.438	.11

Note. Mean, standard deviation (SD), range, and differences (Mann-Whitney test) between the two groups expressed as p-values and effect sizes are reported.

DISCUSSION

Although psychological consequences affecting children and adolescents with SLD were well documented in countries with opaque orthography (Biotteau et al., 2016; Maughan et al., 2003; McNamara et al., 2008; Nelson & Harwood, 2011; Willcutt et al., 2013; Wilson et al., 2009) and in countries with transparent but complex orthography, such as Norway (Dahle et al., 2011; Knivsberg & Andreassen, 2008), we thought it was hard to generalize the results of this international literature to Italian children and adolescents with SLD. The acquisition of academic skills varies considerably in languages with opaque orthography, such as English and French, and in languages with more transparent orthography, such as Italian (Morlini, Stella & Scorza, 2014). For example, it is known that learning to read in English is characterized by a slower increase in accuracy, relative to learning of transparent orthographies; many errors in reading and writing words can still be expected even after several years of schooling (e.g., Coltheart & Leahy, 1996). Instead, the regular orthographic system of the Italian language makes it relatively easy to learn to read and write. By the end of the first year of primary school 90% of the Italian children are able to read (Cossu, 1999; Goswami, Gombert & De Barrera, 1998) and reading/writing skills are consolidated at the end of primary education (Scorza et al., 2015; Zoccolotti, De Luca, Di Filippo, Judica & Martelli, 2009). Thus, Italian children with SLD have soon to face the gap between them and their peers and this environmental condition may soon impact on the psychological development of these children. Nevertheless, to date, psychopathological symptoms in Italian children and adolescents with SLD were inadequately investigated.

The few studies that have examined the emotional and behavioral features of Italian children and adolescents with SLD have mainly focused on anxiety and mood disorders (Bonifacci et al., 2016; Chiappedi & Baschenis, 2016; Mammarella et al., 2016; Margari et al., 2013). We therefore had a specific focus on all of the eight CBCL syndrome subscales to evaluate not only anxious and depressive symptoms, but also somatic complaints, social, thought and attention problems, rule-breaking and aggressive behaviors. Despite the CBCL is a widely used tool in Italian clinical practice, at our knowledge only Ghisi and colleagues (2016) examined multiple psychopathological symptoms in Italian university students with dyslexia on CBCL-YSR. They found higher levels of somatic complaints, social and attentional

problems in the group with dyslexia, relative to controls. Less is known about the presence of these emotional problems at earlier ages in Italian individuals with SLD. Thus, the main goal of the current study was to analyze whether mothers of children and adolescents with SLD reported more psychopathological problems in their sons/daughters on CBCL, relative to mothers of TD children and adolescents.

Overall, our results appear consistent with the international literature thus substantially confirming our hypothesis. Our preliminary findings indicated significant differences between the SLD group and control group, with more psychopathological symptoms in the SLD group.

The mothers of children and adolescents with SLD involved in the present study reported significantly higher levels of attention problems than controls. Specifically, the mothers of the SLD group mentioned more often than the control group that their sons/daughters had difficulty concentrating and sustaining their attention, and suffered from mental confusion or daydreaming. The examination of the number of children/adolescents that fell within the clinical range, revealed that only one children with SLD showed an attention deficit. Thus, our findings corroborate other authors' reports of children and adolescents with SLD having attention problems, even when no attention disorders or ADHD have been diagnosed (Heiervang, Stevenson, Lund & Hugdahl, 2001).

The mothers of the children and adolescents with SLD involved in the present study also reported significantly higher levels of anxiety and withdrawal/depression in their sons/daughters than controls. The CBCL internalizing total score was significantly higher in the SLD group than control group. As reviewed above, anxious and depressive symptoms were found to be more common in children and adolescents with dyslexia and with comorbid learning disorders. These young students may encounter several difficulties when their academic work demands good reading and writing skills; in addition, school-level variables (e.g., the negative teacher-child relationship) might reduce the confidence and diligence with which they approach their school work (Hornstra, Denessen, Bakker, Bergh & Voeten, 2010) and enhance their loneliness (Majorano, Brondino, Morelli & Maes, 2017). This condition may thus generate negative cascading effects on the child emotional development, such as low self-esteem and self-confidence, that may later result in a genuine anxious/depressive disorder. In our study, the percentage of children and adolescents with SLD that scored below the 5th percentile

was very high for the Withdrawal/Depression subscale and total internalizing problems (about 68% for both) and almost twice as high for anxious/depressed + withdrawal/depression symptoms and for total internalizing symptoms than that of TD children and adolescents. These results extend previous findings showing that the SLD might be a risk factor that concurring in determining internalizing disorders in Italian children and adolescents.

An interesting finding from this study has to do with the social problems that we found to be more frequently reported by the mothers of children/adolescents with SLD than in the control group. The social problems reported by the mothers of SLD group mainly included difficult relationships with peers and dependence on adults. To date, few studies highlighted social problems in this specific population of children and adolescents. For instance, some authors (Forness & Kavale, 1996; Nabuzoka & Smith, 1993) found that children with LD were often ejected and few popular among their peers, they were seen to be shyer, more help-seeking and liable to bullying than TD children. Dahle and colleagues (2011) found that parents of Norwegian adolescents reported participants with severe dyslexia to display significantly more social problems than controls on CBCL. The Italian study conducted by Bonifacci and colleagues (2016) highlighted in children with SLD a higher degree of social maladjustment than controls, reported by the parents on TAD questionnaire. Our results seem to bring new evidence in favor of high risk of social problems in Italian children and adolescents with SLD.

No significant differences emerged between our two groups in terms of somatic complaints and thought problems. These data are in line with the study conducted by Biotteau and colleagues (2016) but in contrast with other studies that showed higher scores on the CBCL somatic complaint and thought problem subscales in children and adolescents with dyslexia, relative to TD peers (Dahle et al., 2011; Willcutt & Pennington, 2000). These conflicting findings may be due to differences in sample size and simple criteria selection. For example, Dahle and colleague (2011) specifically focused on children with severe dyslexia, while our SLD group is more heterogeneous. However, examination of the number of children/adolescents showing deficits on CBCL revealed that among children/adolescents with SLD three fell within clinical range on the Somatic Complaint subscale and two on the Thought Problem subscale, while among the children/adolescents without SLD only one children scored below the 5th percentile on the Thought Problem subscale. Further

research may clarify whether Italian children and adolescents with SLD are at risk for somatic and thought disorders.

With regard to externalizing behaviors, the CBCL externalizing total score was significantly higher in the SLD group than control group, though the two groups did not significantly differ on the Rule-Breaking and Aggressive Behavior subscales alone. These findings are consistent with previous reports by other authors on children with dyslexia (Heiervang et al., 2001; Knivsberg & Andreassen, 2008; Willcutt & Pennington, 2000; Willcutt et al., 2013) and RD associated with MD (Willcutt et al., 2013) and suggest that having SLD might represent a specific risk factor for externalizing psychopathology.

Second aim of the present study was to examine if mothers and fathers of children and adolescents with and without SLD reported the same kind and strength of emotional and behavioral problems on their sons/daughters. Considering the fathers' evaluation on the CBCL, data revealed that fathers of children and adolescents with SLD and fathers of TD peers did not differ in their ratings. This was an unexpected result, since we hypothesized to find differences similar to those found in the comparison between the mothers of the two groups. In TD populations, studies reported that there was low agreement on standardized measures of problem behaviors between informants from different settings (e.g., between parents and teachers, between parents and children; for instance, see Grietens et al., 2004) and moderate or high agreement between informants from similar settings, such as between mothers and fathers (e.g., Grietens et al., 2004; Seiffge-Krenke & Kollmar, 1998). The meta-analysis by Duhig and colleagues (2000) showed moderate correspondence between mothers and fathers in ratings of internalizing behavior and large correspondence in ratings of externalizing behavior. With regard to children or adolescents with SLD, most of the studies has evaluated the agreement between parents and teachers on standardized measures of emotional and behavioral problems. Some authors found that parents and teachers were generally equivalent in their reports (e.g., Nelson & Harwood, 2011). By contrast, other authors found that teachers reported fewer psychological problems than parents on the CBCL, especially internalizing problems (e.g., Knivsberg & Andreassen, 2008). In these studies mothers and fathers were part of the same group, even if correspondences and/or disagreements between mothers and fathers on the CBCL in this clinical population have never been investigated in detail. The present study is a first step in this direction. Comparing mothers' and fathers'

ratings, our preliminary analyses showed that mothers and fathers reported significantly different ratings on the CBCL Anxious/Depressed, Withdrawal/Depression, Somatic Complaint subscales and on the internalizing total score, with higher scores reported by the mothers. No differences were found between mothers and fathers on social, thought, and attention problems, and rule-breaking and aggressive behaviors. In general, our preliminary analysis suggests that the agreement between mothers and fathers tend to be low for the main internalizing problems and higher for externalizing behaviors.

These results partially contrast with the studies on TD populations reviewed above, but they are in line with the study conducted by Seiffge-Krenke and Kollmar (1998) and with the meta-analysis conducted by Achenbach and colleagues (1987) including clinical and non-clinical samples. These authors found that the agreement tended to be higher for externalizing than for internalizing problems, with mothers reporting more internalizing problems in their children than fathers. Phares (1997) suggested that the mothers appeared to be more accurate in reporting internalizing problems as compared to other informants, such as fathers. Having more contact with a child can increase the parent's awareness of problems (van der Ende, 1999). Because mothers used to have more contact with the child than fathers, they may become more aware of the child's problems. As suggested by Treutler and Epkins (2003), this might explain why the mothers involved in the present study reported more internalizing problems than fathers. A second possible reason for this discrepancy between the two parents is the differential psychological profile of mothers and fathers of children with SLD. Compared to mothers, fathers of children with LD have been found to show higher avoidant attachment, lower attachment anxiety, and lower use of active coping strategies (Al-Yagon, 2014). However, Bonifacci and colleagues (2014) did not find differences between mothers and fathers of children with dyslexia in terms of parental distress or anxiety and depression symptoms.

These results do not support our hypothesis that mothers and fathers of children/adolescents with SLD agree in the description of their children's emotional and behavioral problems on CBCL. The differences that we highlighted between mothers and fathers on CBCL call into question the reliability of the fathers in describing internalizing problems in their children and adolescents. However, since few fathers accepted to participate in the study, our findings should be considered as preliminary results.

Limitations and future research

Limitations of this work should be noted. First, the sample size utilized in the present study was small, the number of fathers in particular. Thus, the generalizability of our findings should be carefully considered. The limited sample size may have impacted the ability to detect differences on some CBCL subscales between SLD group and control group. It is also possible that differences or concordances between mothers and fathers for some variables were not detected due to the limited sample size. Replication of the present findings with larger samples is clearly needed in the future. More research in clinical and nonclinical samples of children and adolescents is also needed to test the hypotheses on the low mother-father agreement with regard to internalizing problems.

Second, our SLD group was heterogeneous in terms of the characteristics of the disorder and age. The association with MD seems to be an additional risk factor for lower global self-esteem, experience or perception of a lower social support (by the classroom, parents and friends), higher attention deficit, higher emotional and depression symptoms, and higher school maladjustment (Willcutt et al., 2013). Future research should replicate the current study considering type and severity of the SLD to examine if development for participants with both reading/writing difficulties and MD is more hampered by internalizing and externalizing problems than what is the case of participants with reading/writing difficulties only. Moreover, it would be interesting to specifically focus on psychopathological symptoms of Italian adolescents with SLD. A sharp increase has been well documented during adolescence in the vulnerability associated with various emotional, social, and behavioral problems (e.g., Dahl, 2004; Lee & Hankin, 2009); in contrast, less research has investigated the pervasiveness of such difficulties among adolescents with SLD.

Third, although this study has contributed to our understanding of the psychopathological problems in Italian children and adolescents with SLD, it does not clarify whether these problems co-occur with the SLD or they are consequence of these learning difficulties. There is a need for longitudinal studies aimed to understand the extent to which SLDs contribute to the prediction of emotional and behavioral outcomes and provide useful information regarding their value as indices of risk for future psychopathological disorders.

CONCLUSION

The current study extends previous research by examining what mothers and fathers report about internalizing and externalizing behaviors in their children and adolescents with SLD. Overall, our preliminary results seem to show that the mothers of children and adolescents with SLD report more anxious, depressive, social and attentional problems in their sons/daughters, relative to mothers of TD peers. Thus, this specific clinical population might be at greater risk the development both internalizing and externalizing disorders. Our findings confirm the clinical need to early identify Italian children with SLD (Morlini, Stella & Scorza, 2015) to early contrast additional risk factors that may increase

the probability of psychopathological problems in these children.

Our results call attention to the importance of separately considering mothers' and fathers' ratings on clinical measures of problem behaviors. CBCL filled in by mothers might be more reliable in describing emotional and behavioral problems of the child/adolescent with SLD, than questionnaires filled in by fathers. It is now widely accepted by researchers and clinicians that reports by multiple informants are needed to provide information on children's problems (van der Ende, 1999; Nelson & Harwood, 2011). However, our findings seem to suggest that mother reports are to be preferred to father reports. Further research on larger samples is needed to shed light on these rating differences.

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Teachers' sense of responsibility for educational outcomes. A study on the measurement properties of the teacher responsibility scale in Italian primary and secondary school teachers

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ABSTRACT. Lo studio presenta la traduzione italiana della Scala di Responsabilità dell'Insegnante (*Teacher Responsibility Scale, TRS*) in un campione di insegnanti di scuola primaria e secondaria (N = 506). Lo strumento, basato su un modello multidimensionale di responsabilità dell'insegnante, comprende quattro sottoscale che valutano la responsabilità per la motivazione degli studenti, per i risultati degli studenti, per i rapporti con gli studenti e per l'insegnamento. I risultati delle Analisi Fattoriali Confirmatorie (CFA Confirmatory Factor Analysis) supportano la struttura a quattro fattori della versione tradotta del TRS, con un'adeguata affidabilità per tutte le sottoscale e invarianza metrica del TRS per insegnanti di scuola primaria e media rispetto a insegnanti di scuola superiore. Il TRS italiano risulta quindi essere uno strumento affidabile e valido per valutare la responsabilità personale degli insegnanti per i risultati educativi.

SUMMARY. The study explored the measurement properties of an Italian translation of the Teacher Responsibility Scale (TRS) in a sample of primary and secondary school teachers (N = 506). The instrument, based on a multidimensional model of teacher's responsibility, includes four subscales assessing responsibility for student motivation, student achievement, relationships with students, and teaching. Results from a series of Confirmatory Factor Analyses (CFA) support the hypothesized four-factor structure of the back-translated version of the TRS, with adequate reliability for all subscales, and the metric invariance of the TRS for primary and middle school teachers compared to high school teachers. The Italian TRS appears to be a reliable and valid instrument to assess teachers' personal responsibility for educational outcomes, both in basic and applied research in teacher evaluation, as well as in the internal school evaluation processes.

Keywords: Teacher responsibility, Validation, Responsibility

INTRODUCTION

The topic of teacher responsibility is directly consequent to the personal responsibility construct, which has been studied from different perspectives and has been object of several theories from the origins of psychology (Fincham & Jaspars, 1980; Hamilton, 1978). In educational literature, the extant research focuses on two sides of the responsibility construct: teachers' collective responsibility for students' outcomes – i.e., school-level teachers' expectations and beliefs about their shared responsibility (Halvorsen, Lee & Andrade, 2009; Lee & Smith, 1996), and teachers' personal sense of responsibility, i.e., teacher's self-ascriptions of responsibility for a broad range of student needs and outcomes.

As for teacher's personal feelings of responsibility, the focus of this study, two recent contributions (Lauermann & Karabenick, 2011, 2013) concluded that the extant research was biased by conceptual ambiguity, as teacher responsibility was conceptualised as strictly intertwined with the locus of control and the self-efficacy theories. According to Lauermann and Karabenick (2013), existing empirical studies on teacher responsibility have also severe methodological limitations, as several measures of teacher responsibility have been therefore applied (e.g. measures of generic responsibility vs domain specific responsibility). As a result, the same authors have outlined the rationale for, and developed a new scale to measure how teachers view their responsibilities for educational outcomes: the *Teacher Responsibility Scale (TRS)*. To date, this new scale has been developed and validated with American and European (i.e. German) pre-service and in-service teachers (Lauermann & Karabenick, 2013). Following the development of the TRS, teachers' personal sense of responsibility has been identified as an influencing variable in teachers' motivation and engagement and also in teaching strategies, such as instructional practices. Specifically, teacher responsibility has been identified as a key characteristic of effective teachers, with critical implications for effective instruction practices (Daniels, Radil & Wagner, 2016). Recent findings also suggest that personal responsibility predicts interest in professional development, personal time investment and work engagement (Lauermann et al., in press; Matteucci, Guglielmi & Lauermann, 2017).

The main purpose of the present work is to contribute to the Italian adaptation and validation of the TRS developed by Lauermann and Karabenick (2013). Accordingly, we will briefly outline the conceptual development of the

responsibility topic in literature, mostly in relation to teachers and the educational context, subsequently, we will present an empirical investigation aiming at studying (a) reliability, (b) factorial validity, and (c) measurement invariance of the Italian version of the TRS in a sample of Italian teachers.

Theoretical perspectives on responsibility: from origins to recent educational research

From the origins of psychology, responsibility has been the focus of several theoretical perspectives which have distinguished - theoretically and empirically- causality from responsibility, and both of those concepts from blame (Shaver, 1985). Other authors (Harmon, 1995; Witt, 2001), have recognized multiple dimensions of responsibility, i.e.: agency, accountability and obligation. A multidimensional model of responsibility was developed by Lenk (Lenk & Maring, 2001) to study responsibility distribution with respect to the use of expert and information systems. According to Lenk's model, someone is responsible for something, in view of an addressee, under supervision or judgment of a judging or sanctioning instance, in relation to a criterion of attribution of accountability, within a specific realm of responsibility and action. Lauermann and Karabenick (2011) have extended this definition to education and psychological realms, by transforming it into six questions on each component of responsibility cited in this definition and discussing each of them in relation to the teaching profession and the educational context: (a) Who is responsible?, (b) For what?, (c) For/to whom?, (d) Who is the judge?, (e) In relation to what criteria of responsibility? and (f) in what realm of responsibility?. The meticulous analysis of the authors led them to phrase a definition of teacher personal responsibility as "a sense of internal obligation or commitment to produce or prevent designated outcomes or that these outcomes should have been produced or prevented" (2011, p. 15). With this original definition the authors clearly differentiated personal responsibility (a) from formal accountability, which refers to compliance with regulations, adherence to professional norms, and attainment of outcomes (Anderson & International Institute for Educational Planning, 2005), (b) from causality, which refers to the actor's causal contribution to the production of an effect or an outcome (Shaver, 1985; Lagnado & Channon, 2008), and (c) from agency, defined as

"the experience of being in control both of one's own actions and, through them, of events in the external world" (Haggard & Tsakiris, 2009, p. 52). Moreover, the Lauermann's and Karabenick's definition describes responsibility as a feeling which may both anticipate or follow a specific outcome, thus merging the sense of responsibility (Shaver, 1985) and the sense of obligation (Witt, 2001) in a unique definition.

Empirical research on teacher responsibility has mainly focused on teachers' responsibility for their students' school outcomes (Guskey, 1981, 1982; Matteucci, Tomasetto, Selleri & Carugati, 2008), however, teaching is a complex and challenging endeavour which requires professional skills and abilities and has direct implications on students (Matteucci, Carugati, Selleri, Mazzoni & Tomasetto, 2008). In this vein, a recent study (Lauermann, 2014) with elementary and high school teachers identified seven general areas of teacher responsibility, i.e.: teaching-related activities (e.g., prepare high quality lessons), student outcome (e.g., student learning and engagement), interaction with students (e.g., fairness, being a role model), positive classroom climate (e.g., create a comfortable and orderly classroom environment), interactions with others involved in students' education (e.g., parents, administration, and other teachers), school policies and external regulations (e.g., following state and district standards), as well as other general responsibilities (e.g., punctuality).

The increasing focus on teacher responsibility and the relevance of the topic is also recognizable in the latest European guidelines concerning teachers, which claims that "promoting teacher agency, empowerment and responsibility" (European Commission, 2013, p. 26) is a feasible way in the direction of strengthening the profile of the teaching profession and, therefore, supporting them to deliver higher quality teaching and to deal with complex classroom realities.

Before and besides the conceptual clarification offered by Lauermann and Karabenick (2011, 2013, 2014), educational research has linked teachers' sense of their own professional responsibility - collective and personal - to desirable and relevant outcomes. For example, teachers' collective responsibility for student learning has been associated with high student achievement gains (Lee & Smith, 1996). Therefore, responsible teachers have shown to have high expectations for all their students' learning, encouraging students and focusing mainly on positive versus negative aspects of their students (i.e. on the knowledge and skills children brought to school, rather than what they were lacking).

Teachers who ascribe themselves more responsibility for academic achievement also consider themselves as more able to influence antecedents of academic failure (Matteucci, 2007, 2008), manifest positive affect toward teaching (Guskey, 1984), and are more likely to implement new instructional practices (Guskey, 1988). Moreover, experienced responsibility for work outcomes has been found to also contribute to the explanation of teacher job satisfaction (Winter, Brenner & Petrosko, 2006) and to contribute to the feeling of work engagement (Guglielmi, Bruni, Simbula, Fraccaroli & Depolo, 2015).

To date teachers' sense of internal obligation - measured by the TRS - has proved to have critical implications for teacher motivation and psychological wellbeing (Eren, 2014; Lauermann & Karabenick, 2014; Matteucci et al., 2017; Richardson, Karabenick & Watt, 2014). For example, prospective teachers' career choice satisfaction and sense of personal responsibility were found to be positively and significantly related to each other (Eren, 2015) and teachers' sense of personal responsibility for educational outcomes contributes to the prediction of teachers' work engagement and professional commitment (Matteucci et al., 2017). Personal responsibility predicts higher interest in professional development and willingness to invest personal time in teaching-related tasks (Lauermann et al., in press).

Recently, initial evidence of implications emerged not only for teachers, but also for their students, as teacher responsibility was found to be positively related to mastery-oriented instructional practices (Kumar, Karabenick & Burgoon, 2015), and negatively to performance-oriented practices (Daniels et al., 2016).

On the whole, the above-mentioned research contributions, by showing several relevant implications of teacher responsibility, support the importance to deepen the knowledge on this topic and, therefore, suggest the need to develop and validate specific instruments to measure it.

Measures of teacher responsibility and the TRS

Before the development of the TRS, a vast array of operationalization of the teacher's responsibility concept had been employed, and five different typologies of measures were traced in literature (for a review, see Lauermann & Karabenick, 2013): (a) locus of control scales to assess teacher's assignment of responsibility for the successes or failures (e.g., Teacher

Locus of Control Scale; Rose & Medway, 1981), (b) single-item measures of responsibility (e.g. Matteucci & Gosling, 2004), (c) multi-item measures of responsibility for specific educational outcomes (Matteucci & Helker, 2018; Silverman, 2010), (d) generic measures of responsibility (e.g. *Teacher Job Satisfaction Questionnaire*; Lester, 1987), and (e) collective teacher responsibility measures (e.g. Lee & Smith, 1996). According to Lauermann and Karabenick (2013), the main limits of the above-mentioned scales relate to theoretical and methodological aspects. Firstly, responsibility is conceptually different from locus of control (LOC) as internal control does not automatically entail the sense of personal responsibility to implement actions, thus, scales which assess responsibility through LOC measures (a) are not appropriate. Similarly, other instruments are conceived to assess teachers' sense of responsibility for specific purposes (e.g. working with students with special needs; providing education on diversity) (c), and therefore are not appropriate to study teacher responsibility concerning their profession and everyday practices. Other instruments are conceived to assess different constructs (e.g. job satisfaction) and include only a few items to measure teacher responsibility as a sub-dimension (d). Similarly, from the methodological point of view, as responsibility is acknowledged to be a multi-dimensional construct, single-item measures (b) are not considered appropriate to assess it.

The review of these measures led Lauermann and Karabenick (2013) to conclude the need of a specific instrument to assess to what extent teachers feel responsible for specific aspects related to their profession. The preliminary scale items were developed through a conceptually- and empirically-driven procedure which led the authors to focus on outcome-based key responsibilities with which most teachers could identify (i.e. students' achievement, students' motivation, having positive relationships with students and teaching quality). According to a general process that, over the past century, gradually assigned the responsibility for students' academic success from students and their families to educators (Coleman, 1968), the scale assesses teachers' sense of personal responsibility for providing educational services (e.g., preparing engaging lessons in order to increase student interest), as well as for outcomes (e.g., students' low achievement, lack of interest, etc.). Accordingly, items were formulated to assess teachers' willingness to assume personal responsibility for several negative educational outcomes that they should have prevented. The design and validation procedure led to a multidimensional scale with

four subscales to assess teachers' willingness to assume personal responsibility for negative hypothetical educational outcomes that can occur in any classroom at any time (see "Translation procedure" section for details about items and sub-scales and Appendix for the original scale).

The validation study of the TRS (Lauermann & Karabenick, 2013) provided evidence that the scale is applicable to both pre-service and in-service teachers, and its validity has been confirmed across the US and the German educational systems. To date, validation studies assessing the metric properties of the TRS in diverse cultural and educational settings are still limited. Translated versions of the TRS have been employed but not validated with a sample of French-speaking Swiss vocational teachers (Berger, Girardet & Aprea, 2013), German university teachers (Wosnitza, Helker & Lohbeck, 2014), and a Turkish version, which obtained good internal validity and reliability indexes with a sample of prospective teachers (Eren, 2014).

THE PRESENT STUDY

The main purpose of the present work is to contribute to the Italian adaptation and validation of the TRS developed by Lauermann and Karabenick (2013) by investigating (a) reliability, (b) factorial validity, and (c) measurement invariance of the Italian version of the TRS in a sample of Italian teachers.

METHODS

Translation procedure

The original English version of the TRS includes 12 items designed to represent the following four areas of responsibility: responsibility for student motivation; (e.g., "I would feel personally responsible if a student of mine was not interested in the subject I teach"); student achievement (e.g., "I would feel personally responsible if a student of mine had very low achievement"); relationships with students (e.g., "I would feel personally responsible if a student of mine did not think that he/she can trust me with his/her problems in or outside of school"); and teaching. (e.g., "I would feel personally responsible if a lesson I taught failed to reflect my highest ability as a teacher"). The items are preceded by the

following statement: "Imagine that the following situations would occur when you have classes of your own. To what extent would you feel personally responsible that you should have prevented each of the following?". The items are rated on a seven-point Likert scale, ranging from 0 (not at all) to 6 (completely). The original TRS was translated into Italian by means of a forward-backward-forward approach, in order to ensure the linguistic equivalence between the Italian and the original English version of the instrument.

Two independent researchers translated the original scale in Italian. The divergences emerged when the first independent steps of work were discussed, and the reconciled translation was backwardly translated in to English by a mother tongue-language expert, in order to detect possible mismatches. As no relevant problems emerged at the end of the whole procedure, the resulting Italian version of the TRS (presented in Appendix) and the English version of the TRS contain the same item and scale formatting.

Participants and procedure

The data were collected from 219 public primary (61%) and middle (39%) school teachers aged between 25 and 70 years ($M = 48.86$; $SD = 8.36$; 90.4% women) and 287 high school teachers aged between 27 and 64 years ($M = 49.92$; $SD = 7.10$; 63.5% women). The average level of teaching experience was 17.25 ($SD = 11.20$) for secondary school teachers and 16.09 ($SD = 10.49$) for primary and middle school teachers. The schools were selected across three regions in North, Centre and South of Italy. High schools were: 29.4% lyceum; 66.7% technical institutes and 3.9% professional institutes. A researcher visited each school in the three regions and presented the survey to the school principal or assistant principal. A request to fill an online questionnaire was sent to teachers of the schools who had agreed to participate via the school email system. Teachers' participation was voluntary and informed consent was obtained from each participant.

Data analyses

Internal consistency was assessed by means of Cronbach's α coefficients, zero-order inter-item correlation, and item-total correlation coefficients.

To assess the fit between the hypothesized four-dimensional structure and the observed data for the Italian version of the TRS, we conducted a Confirmatory Factor Analysis (CFA) based on a Maximum Likelihood estimation procedure, using AMOS 22 (Arbuckle, 2013). To assess the overall adequacy of the model we examined the ratio of chi-square to its degrees of freedom (χ^2/df), the Comparative Fit Index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), and the Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980). Values of $\chi^2/df \leq 2$, CFI and TLI $> .95$, and RMSEA $< .06$ were assumed as representing good fit; values of $\chi^2/df \leq 3$, CFI and TLI $> .90$, and RMSEA $< .08$ were deemed as reflecting acceptable fit (see Hooper, Coughlan & Mullen, 2008; Schermelleh-Engel, Moosbrugger & Muller, 2003; Schreiber, Nora, Stage, Barlow & King, 2006). We also ran a supplementary CFA with a unique latent factor representing the overall construct of teachers' responsibility to assess whether a simpler factorial structure may provide a more parsimonious representation of the Italian version of the TRS.

Measurement invariance across school level-groups was examined by testing and comparing four nested models (Model 1 to Model 4) using Multi-group Confirmatory Factor Analyses (Byrne, 2004; Vandenberg & Lance, 2000). As a prerequisite for assessing the measurement equivalence of the Italian version of the TRS across school levels, the fit of the hypothesized model was established for primary and middle school teachers and high school teachers separately. Each successive model included the previous model restrictions plus additional constraints (Meredith & Teresi, 2006). We decided to compare primary and middle school teachers, on the one hand, with high school teachers, on the other, as in the Italian Education system after successful completion of primary school (level 1, according to the 2011 International Standard Classification of Education [ISCED], cfr. Schneider, 2013), all students progress to a common-track middle school (the lower secondary level, or ISCED level 2). Differently from these two levels of education, where students follow the same general common core curriculum, students alternatively enrol in secondary general or vocational education (ISCED level 3), in preparation for tertiary education or to acquire skills relevant to employment, or both (European Commission, 2014). Thus, the transition from middle school to a secondary education program marks the beginning of a completely different learning experience, and it is at that point that Italian students choose distinct educational or vocational pathways.

RESULTS

The proportion of missing item responses for each scale ranged from .9% to 4.7% and the Little's MCAR test confirmed that data were missing at random. Therefore, missing data were imputed by means of a maximum likelihood approach with the Expectation-Maximization (EM) algorithm (single imputation) (Allison, 2002; McLachlan & Krishnan, 2007).

Item means, standard deviations, and zero-order correlations among observed variables are presented in Table 1. Bivariate correlations show that, within each subscale, items are highly and positively correlated (RSM, *range*: .66-.74; RSA, *range*: .66-.74; RRS, *range*: .80-.84; RTE, *range*: .73-.90), as well as each item with the total score of the scale (*range*: .68-.84). Moderate negative correlations indexes emerged concerning the teachers' age, suggesting that teachers' sense of personal responsibility decreases gradually with age. Scale scores distributions and reliability are reported in Table 2. Cronbach's α for each of the four subscales range from .87 to .92, indicating good internal consistency.

Factorial structure of the Italian version of the TRS

To assess the fit between the hypothesized four-factor structure and the observed data for the Italian version of the TRS we conducted a Confirmatory Factor Analysis (CFA) based on Maximum Likelihood estimation procedure.

Results of the CFA revealed that the model had a good fit according to the CFI and TLI indices (.98 and .97, respectively), an acceptable fit according to the RMSEA (.06), and an inadequate fit according to the χ^2/df index (3.19). However, the inspection of modification indices suggested that the adequacy of the model could be further improved by relaxing the assumption of independence of measurement errors between some of the items. In particular, the most substantial improvement could be obtained by admitting a co-variation between the measurement errors of the RRS_1 and RRS_2 items (i.e., "A student of mine thought he/she could not count on me when he/she needed help with something", and "A student of mine did not think that he/she could trust me with his/her problems in or outside of school"). As both the items were assumed to load on the same latent factor (i.e., Responsibility for Relationships with students), and the content of the two items was strikingly similar, we decided to repeat the analysis

by admitting the residuals of the two items to co-vary. Results of the CFA reveal that the modified model had a good fit to the data ($\chi^2/df = 2.78$, CFI = .98, TLI = .97, RMSEA = .05), and should therefore be retained as a valid representation of the factorial structure of the scale (see Figure 1).

As the correlations among the four latent variables were fairly high (*range*: .62-.82), we also tested the fit of a more parsimonious model in which all the observed items were forced to load onto a unique factor (i.e., overall teacher's responsibility). However, the fit of the unique-factor alternative model was poor ($\chi^2/df = 23.37$, CFI = .74, TLI = .68, RMSEA = .22), and did not support the existence of a single latent dimension accounting for different facets of teachers' responsibility, as measured by the TRS.

Measurement invariance across school grades

As a prerequisite for assessing the measurement equivalence of the Italian version of the TRS across school levels, the fit of the hypothesized four-factor model was established for primary and middle school teachers, and for high school teachers separately. Results confirmed that fit indexed were adequate for both groups ($\chi^2/df = 2.51$, CFI = .97, TLI = .96, RMSEA = .07 and $\chi^2/df = 2.50$, CFI = .97, TLI = .96, RMSEA = .07 for primary and middle school and for high school teachers, respectively).

Then, to establish the equivalence of different measurement properties across the two groups, we conducted a series of Multigroup Confirmatory Factor Analysis in which we compared a series of nested models with increasing constraints (Meredith & Teresi, 2006). In Model 1 we evaluated the fit of the baseline model, in which only the factor structure (the number of factors and the paths admitted from observed indicators to latent variables) was fixed to be equal across the two groups (*configural invariance*). In Model 2 we assessed the equivalence of the relations between each item and the corresponding latent construct by constraining all factor loadings to be equal across groups (*metric invariance*). In Model 3 we assessed the equivalence of the items' means by forcing all observed indicators' means to be equal across groups (*scalar invariance*). Finally, in Model 4 we tested whether measurement error residuals were the same for each item across groups (*measurement error invariance*). Overall fit indices were examined separately for each model. The

Table 1 – Descriptive statistics, internal reliabilities, and zero-order correlations for all measured variables (N = 506)

	M	SD	Item-subscale correlation	α	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	
1. RSM 1	4.71	1.26	.74	.87	.74**	.66**	.62**	.59**	.60**	.40**	.46**	.49	.52**	.54**	.44**	.74**	-.11*	
2. RSM 2	4.33	1.32	.76		-.67**	.59**	.51**	.55**	.34**	.41**	.43**	.42**	.42**	.43**	.36**	.68	-.11*	
3. RSM 3	4.38	1.35	.70			-.56**	.54**	.57**	.48**	.52**	.53**	.52**	.52**	.48**	.44**	.73**	-.13**	
4. RSA 1	4.51	1.26	.68				-.66**	.66**	.44**	.47**	.52**	.50**	.50**	.51**	.45**	.75**	-.12**	
5. RSA 2	4.25	1.18	.75					-.74**	.45**	.42**	.48**	.45**	.45**	.46**	.39**	.70**	-.12**	
6. RSA 3	4.18	1.22	.74						-.47**	.45**	.42**	.47**	.49**	.47**	.39**	.71**	-.09†	
7. RRS 1	5.06	1.54	.85							-.83**	.80**	.64**	.64**	.62**	.55**	.55**	.78**	-.14**
8. RRS 2	4.99	1.53	.88								-.84**	.65**	.65**	.65**	.59**	.59**	.81**	-.13**
9. RRS 3	5.02	1.52	.85									-.73**	.73**	.64**	.64**	.84**	.84**	-.12**
10. RTE 1	5.25	1.36	.85										-.90**	.73**	.73**	.81**	.81**	-.15**
11. RTE 2	5.25	1.29	.88											-.76**	.81**	.81**	.81**	-.14**
12. RTE 3	5.15	1.31	.75												-.71**	-.71**	-.11*	
13. TRS tot	4.82	1.03														-	-.15**	
14. Age	49.48	7.67														-		

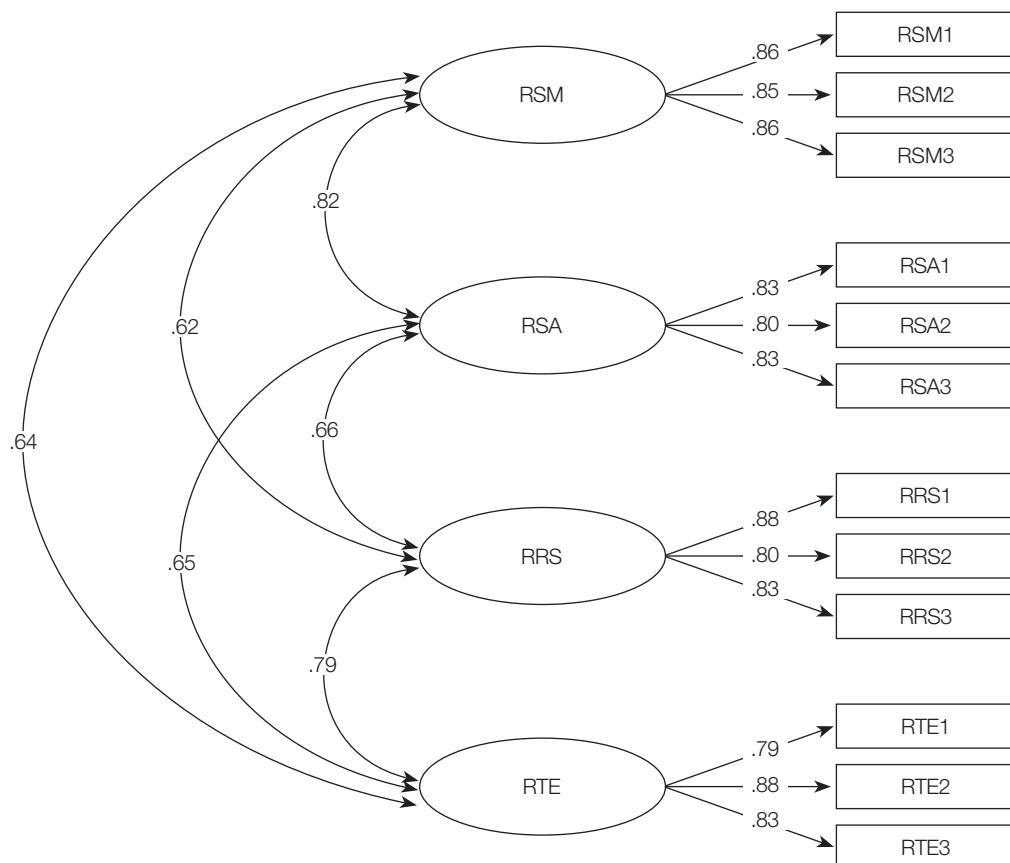
Note. p<.10; *p<.05; **p<.01 (two tailed).

Legenda. RSM = Responsibility for Student Achievement; RSA = Responsibility for Relationships with Students; RTE = Responsibility for Teaching; TRS response scale: range 1-7

Table 2 – Descriptive statistics, symmetry, kurtosis and Cronbach's alpha for each size of the TRS scale

TRS dimensions	M (SD)	Min-Max	Symmetry	Kurtosis	α
RSM	4.53 (1.11)	1-7	-.31	.17	.87
RSA	4.36 (1.03)	1-7	-.07	.10	.87
RRS	5.12 (1.35)	1-7	-.81	.22	.93
RTE	5.32 (1.09)	2-7	-.62	.09	.92

Legenda. RSM = Responsibility for Student Motivation; RSA = Responsibility for Student Achievement; RRS = Responsibility for Relationships with Students; RTE = Responsibility for Teaching; TRS response scale: range 1-7.

Figure 1 – Factorial structure of the Italian version of the Teacher Responsibility Scale

Note. Standardized coefficients are reported. All coefficients are significant at the $p<.001$ level. Residual terms are not shown in the figure. Correlation between residual terms is admitted between items RRS1 and RRS2 ($r = .32$).

criteria for assessing the difference between the competing models was the chi-square test difference, and the difference in the CFIs between competing models. A non-significant chi-square test difference, and a difference of CFI values

smaller than .01(Cheung & Rensvold, 2002), were deemed as supporting the more constrained of the competing models. The overall and comparative fit statistics of invariance models are reported in Table 3.

Table 3 – Fit indices and comparison between invariant models across school grades (primary/middle schools vs high school)

	χ^2 (df)	χ^2/df	CFI	TLI	RMSEA	Model comparison	$\Delta\chi^2$	Δdf	p	CFI
Model 1	194.40 (94)	2.06	.97	.97	.04	-	-	-	-	-
Model 2	200.78 (102)	1.96	.98	.97	.04	Model 1	6.38	8	.60	.01
Model 3	271.11 (114)	2.37	.96	.96	.05	Model 2	70.32	12	< .001	-.01
Model 4	456.03 (137)	3.32	.93	.93	.06	Model 3	184.92	23	< .001	-.03

Legenda. χ^2 = chi square; df = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; Δdf = difference in degrees of freedom between nested models; $\Delta\chi^2$ = difference between χ^2 of nested models; p = probability value of $\Delta\chi^2$ test; ΔCFI = difference between CFIs of nested models; Model 1 = equality of factor structure (baseline); Model 2 = Model 1 + equality of factor loadings; Model 3 = Model 2 + equality of items means; Model 4 = Model 3 + equality of error variances.

Results showed an adequate fit of Model 1, thus indicating that observed indicators reflect the same underlying constructs across the two school levels. As the chi-square test difference between Model 2 and Model 1 was not significant, and the CFI difference was lower than 1, equivalence in factor loadings was also established. Conversely, although the CFI difference was small (<.01), the chi-square test difference between Model 2 and Model 1 was significant, thus indicating that item intercepts were not equivalent across groups, and scalar invariance of the TRS for middle school and college teachers was therefore not supported. As seen in Table 4, univariate tests confirm that mean scores of middle-school teachers are systematically higher than those of college teachers on all the items. In sum, results indicated that configural and metric invariance across school levels was supported, whereas scalar and measurement error invariance were not.

DISCUSSION

The main purpose of the present work was to present the translated version of the TRS and to study (a) reliability, (b) factorial validity, and (c) measurement invariance of the Italian version of the TR in a sample of Italian teachers. The results indicate an appropriate internal consistency of the Italian version of the TRS since Cronbach's α coefficients are excellent or good and comparable with those obtained in the

validation study (Lauermann & Karabenick, 2013).

Regarding factorial validity, the results support the hypothesized four-factor structure of the Italian version of the TRS, confirming the presence of four interrelated but separate dimensions, that assess responsibility for student motivation, student achievement, relationships with students and responsibility for teaching. The findings are consistent with the hypothesized structure resulting from the original validation study of the TRS with American and German teachers (Lauermann & Karabenick, 2013).

Results of the measurement invariance analysis showed an adequate fit of the baseline model (Model 1), in which only the factor structure (the number of factors and the paths admitted from observed indicators to latent variables) was fixed to be equal across the two groups (configural invariance), thus indicating that observed indicators reflected the same underlying constructs across the two school levels. Results also supported the metric invariance of the tool, confirming that the relations between each item and the corresponding latent construct was equal for teachers in different school levels. However, the scalar invariance of the TRS for primary and middle school teachers and for high-school teachers was not supported, as mean scores of primary and middle school teachers were systematically higher than those of high-school teachers on all the items.

These findings add new insight and expand prior knowledge concerning teachers' acceptance of personal

Table 4 – Mean differences between primary/middle school vs. high school teachers on TRS items (N = 495)

	Primary/middle school		High school		<i>t</i> value	Cohen's <i>d</i>
	M	SD	M	SD		
1. RSM 1	5.11	.98	4.49	1.29	5.84**	.52
2. RSM 2	4.68	1.21	4.13	1.32	4.87**	.43
3. RSM 3	4.74	1.08	4.22	1.39	4.53**	.40
4. RSA 1	4.87	1.01	4.31	1.29	5.28**	.47
5. RSA 2	4.55	1.01	4.10	1.87	4.49**	.40
6. RSA 3	4.63	1.04	3.91	1.17	7.12**	.64
7. RRS 1	5.44	1.19	4.90	1.59	4.19**	.37
8. RRS 2	5.33	1.21	4.88	1.59	3.44**	.30
9. RRS 3	5.41	1.14	4.90	1.57	4.01**	.36
10. RTE 1	5.55	1.04	5.19	1.34	3.24**	.29
11. RTE 2	5.55	1.01	5.17	1.23	3.69**	.33
12. RTE 3	5.35	1.04	5.19	1.23	1.58 ^{ns}	.14

Note. ns = non significant; ***p*<.01 (two tailed).

Legenda. RSM = Responsibility for Student Motivation; RSA = Responsibility for Student Achievement; RRS = Responsibility for Relationships with Students; RTE = Responsibility for Teaching; TRS response scale: range 1-7.

responsibility for educational outcomes. In past works (Lauermann & Karabenick, 2013) the scale was tested with a sample of kindergarten through 12th grade (K-12) regular in-service teachers, and with secondary-level pre-service teachers. To date, this is the first time the TRS has been tested with secondary-level regular in-service teachers. The lower level of responsibility that secondary-level (high school) teachers accept to hold, might, therefore be determined by the students' age: as it is compulsory to attend school until age 16, teachers of the secondary schools involved in this study work have a curriculum aimed at graduating students at age 18 (high school diploma) preparing them for a job or for master degree programs or other post-secondary education programs. As a consequence, teachers in secondary school, when answering the scale, may refer to students who take charge of their academic success, who are held accountable for achieving learning goals. In secondary education learners are expected to fulfil their responsibilities as students, and the school requires

students to become responsible and accountable for their own academic success, thus shifting responsibility - at least in part - from teachers to students.

Moreover, it is to note that configurable and metric invariance are strictly necessary for basic research purposes, as they establish the fact that manifest indicators assess the same underlying construct across groups (Meredith & Teresi, 2006). Conversely, strong and strict invariance are of less substantive importance, as group differences in observed scores may reflect meaningful underlying group differences, whereas differences in residual variances may reflect differences in measurement reliability rather than in the scale validity (Vandenberg & Lance, 2000).

In conclusion, the Italian version of the TRS appears to be a reliable and valid instrument to assess teachers' personal responsibility for educational outcomes, applicable across different educational contexts, both for basic and applied research in educational psychology, as well as for intervention programs with teacher.

Limitations

In addition to our main findings, it is important to acknowledge a set of limitations and directions for future research. From the statistical point of view, the main limit concerns the scalar invariance of the TRS for primary and middle school teachers and for high-school teachers, which was not supported. However, as explained in the results discussion, strong and strict invariance may be less important in the context of research in which group differences in specific factors are indicative of individual differences.

Similarly to the original scale, probably the main limits of the scale are firstly directly linked to survey methodology based on self-report measures, which imply a certain risk that the findings may be biased by the influence of social desirability. Moreover, questionnaire-based measures - like the TRS- present a set of standard items and respondents' answers are limited to a fixed set of responses, which may prejudice the possibility to capture further dimensions of responsibility or differences in the amount of responsibility perceived by the teachers.

Secondly, as the TRS's authors acknowledged:

"it is critical to recognize that teachers' professional responsibility is embedded in a variety of contexts; teachers may feel different degrees of responsibility depending on the characteristics of their teacher education program, their students' characteristics, school characteristics, and characteristics of the education system" (Lauermann & Karabenick, 2013, p. 24).

Further research should therefore study differences in teacher responsibility at school level (organizational culture), as well as the role of personal and contextual influences, such as, for example the role of school principal and of school collective responsibility as a whole. Longitudinal modifications on teachers' personal sense of responsibility during their careers, and cross-sectional changes in perceived responsibility according to student or classroom characteristics may also be further investigated. Finally, the use of a mixed-methods methodology, integrating quantitative and qualitative data, could help overcome the weakness of a questionnaire-based survey.

CONCLUSIONS

To date the research has provided initial evidence that personal responsibility may be a pivotal variable in order to strengthen the profile of the teaching profession. For example, the European Commission claims that promoting teacher agency, empowerment and responsibility might be an effective way to develop teacher competence (European Commission, 2013). Moreover, in order to establish positive and effective school-family relationships, a shared viewpoint on reciprocal and mutual responsibilities among teachers, as well as with parents and students, needs to be established. Therefore, the existence of a scale aiming at examining and monitoring the teachers' sense of personal responsibility is a pre-requisite to realize interventions and professional development activities aimed at promoting teachers' personal responsibility and, finally, to ameliorate learning/teaching conditions.

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APPENDIX

Teacher Responsibility Scale (TRS) and corresponding Italian version

Imagine that the following situations would occur when you have classes of your own. To what extent would you feel <u>PERSONALLY</u> responsible that you should have prevented each of the following?	Immagini che le seguenti situazioni si verificassero nella Sua classe. In che misura si sentirebbe <u>PERSONALMENTE</u> responsabile e/o si sentirebbe di aver dovuto impedire ciascuna delle seguenti situazioni?
I would feel PERSONALLY responsible if...	Mi sentirei PERSONALMENTE responsabile se
...a student of mine was not interested in the subject I teach (RSM1)	...un mio studente non fosse interessato alla materia che insegno (RSM1)
...a student of mine did not like the subject I teach (RSM2)	...un mio studente non amasse la materia che insegno (RSM2)
...a student of mine did not value learning the subject I teach (RSM3)	...un mio studente non considerasse importante l'apprendimento della materia che insegno (RSM3)
...a student of mine failed to make excellent progress throughout the school year (RSA1)	...un mio studente non riuscisse a fare eccellenti progressi durante l'anno scolastico (RSA1)
...a student of mine failed to learn the required material (RSA2)	...un mio studente non riuscisse ad imparare il materiale richiesto (RSA2)
...a student of mine had very low achievement (RSA3)	...un mio studente ottenesse risultati molto scarsi (RSA3)
...a student of mine thought he/she could not count on me when he/she needed help (RRS1)	...un mio studente avesse pensato di non poter contare su di me quando aveva bisogno di aiuto (RRS1)
...a student of mine did not think that he/she could trust me with his/her problems in or outside of school (RRS2)	...un mio studente pensasse di non potersi fidare di me se ha dei problemi all'interno o all'esterno della scuola (RRS2)
...a student of mine did not believe that I truly cared about him/her (RRS3)	...un mio studente non credesse che io veramente mi interesso a lui / lei (RRS3)
...a lesson I taught was not as effective for student learning as I could have possibly made it (RTE1)	...una lezione che ho svolto non fosse stata, per l'apprendimento degli studenti, così efficace quanto invece avrei potuto fare (RTE1)
...a lesson I taught was not as engaging for students as I could have possibly made it (RTE2)	...una lezione che ho svolto non fosse stata così coinvolgente come invece avrei potuto fare (RTE2)
...a lesson I taught failed to reflect my highest ability as a teacher (RTE3)	...una mia lezione non riflettesse le mie più alte capacità come insegnante (RTE3)

Note. All items were rated on a 7 point Likert scale from 0 = Not at all responsible to 6 = Completely responsible.

Legenda. RSM = Responsibility for Student Motivation; RSA = Responsibility for Student Achievement; RRS = Responsibility for Relationships with Students; RTE = Responsibility for Teaching.

An Italian validation of the Narcissistic Admiration and Rivalry Questionnaire (NARQ): Further evidence for a two-dimensional model of grandiose narcissism

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ABSTRACT. Lo studio si propone di fornire un contributo alla validazione italiana del *Narcissistic Admiration and Rivalry Questionnaire* (NARQ), uno strumento self-report che consente di operazionalizzare il modello bidimensionale proposto da Back e colleghi (2013). Tale modello differenzia gli aspetti agentici ed assertivi del narcisismo “grandioso” (*Admiration*), da quelli che hanno origine dalla tendenza all’antagonismo nelle relazioni interpersonali (*Rivalry*). I risultati dello studio, condotto su 300 partecipanti (età media = 31.20, *DS* = 11.6, 30% maschi) supportano la validità e l’attendibilità della versione italiana del NARQ.

SUMMARY. The present study aims to validate an Italian version of the *Narcissistic Admiration and Rivalry Questionnaire* (NARQ), which operationalizes the two-dimensional model of grandiose narcissism recently proposed by Back et al. (2013). The model differentiates between *Admiration* and *Rivalry*, two dimensions that entail the agentic and antagonistic aspects of narcissism, respectively. Three hundred individuals participated in the study (mean age = 31.20, *SD* = 11.6, 30% males). A confirmatory factor analysis supported the expected two-factor structure. Adequate levels of internal consistency were found for the overall NARQ scores, as well as for the *Admiration* and *Rivalry* scale scores. Although *Admiration* and *Rivalry* were positively correlated, they showed a distinctive pattern of correlations with the *Narcissistic Personality Inventory*, the Rosenberg self-esteem scale, and the *Big Five Inventory*. These results replicate Back et al.’s (2013) original findings and thus provide support for the validity and reliability of the Italian version of the NARQ.

Keywords: Narcissism, Admiration, Rivalry, Assessment

INTRODUCTION

Narcissism is among the most important constructs in psychology, but also among the most controversial ones. From early psychoanalytic theories (e.g., Freud, 1914) to current conceptualizations of clinical and social-personality psychologists (e.g., Campbell & Campbell, 2009), narcissism has been described in terms of contradictory processes and consequences. Typically, narcissists exhibit charisma and self-confidence, which tend to fascinate and attract others. At the same time, they show aggressiveness and lack empathy, which often leads to unpopularity and social conflict.

Back et al. (2013) have recently highlighted that many of the apparent contradictions related to narcissism can be resolved by adopting the *Narcissistic Admiration and Rivalry Concept (NARC)*, a two-dimensional process-oriented model of the personality trait grandiose narcissism. The basic idea is that narcissistic self-regulatory processes include two related but distinct dimensions, Admiration and Rivalry, which entail assertive and antagonistic aspects, respectively.

As Back et al. (2013) wrote, "the narcissist's overarching goal to maintain a grandiose self can be achieved by two separate social strategies: the tendency to approach social admiration by means of self-promotion (assertive self-enhancement) and the tendency to avoid social failure by means of self-defence (antagonistic self-protection). These two strategies are conceptualized as activating distinct affective-motivational, cognitive, and behavioral pathways: admiration and rivalry" (p. 1015). According to the authors, failing to differentiate these two aspects does not permit a full understanding of the manifestations of narcissism and its underlying dynamics.

Reporting results from seven studies, the authors proposed and validated the NARC, by developing and using the *Narcissistic Admiration and Rivalry Questionnaire (NARQ)*, a new self-report instrument aimed at assessing the two hypothesized dimensions of narcissism. The NARQ comprises 18 items, with half of them assessing the dimension of Admiration and the other half assessing the dimension of Rivalry. Each dimension includes three facets, which capture different cognitive, affective-motivational, and behavioral aspects of the respective dimension (Back et al., 2013). The facets of narcissistic admiration include the tendencies to have a grandiose view of the self, to strive for uniqueness, and to exhibit charming behavior. The facets of narcissistic rivalry include the tendencies to devalue others, to affirm one's own superiority, and to display aggressive behaviour toward others (see Back et al., 2013, for a more detailed review).

Exploratory (pre-test, $N = 158$) and confirmatory factor analysis (Study 1, $N = 953$) supported the expected two-factor structure. Internal consistencies were adequate (Study 1, $N = 953$). Cronbach's alpha reliability coefficients were .88 for the overall NARQ score, .87 for Admiration and .83 for Rivalry. Alphas for the six facets ranged from .66 to .83, which is still acceptable given that these facets were measured with only three items. Test-retest reliabilities were also adequate. Correlation coefficients were .79 for Admiration and .76 for Rivalry, and ranged from .62 to .79 for the six facets (Study 2, $N = 93$).

A significant degree of self-other agreement was found for the NARQ scores (.51 for Admiration, and .27 for Rivalry), quite similar in magnitude to that observed in the literature for the Big Five personality traits (Study 3, $N = 96$). This seems to suggest that Admiration and Rivalry are observable characteristics that can be rated by acquainted informants.

Importantly, although Admiration and Rivalry were positively correlated, they had a differentiated pattern of relations with the *Narcissistic Personality Inventory (NPI)*; Raskin & Hall, 1979), the Big Five, self-esteem, and other traits related to narcissism, such as Machiavellianism, psychopathy, self-enhancement, and impulsivity (Study 4, $N = 510 - 1814$). Specifically, Admiration was more strongly correlated than Rivalry with the leadership/authority NPI facet (enjoying being seen as a leader and an authority), whereas Rivalry was more strongly correlated with the exploitativeness/entitlement NPI facet (manipulating and exploiting others, expecting favors from others). Admiration was positively related to extraversion, openness, self-esteem, and agentic self-enhancement, and negatively related to neuroticism. Rivalry was positively related to neuroticism and impulsivity, and negatively related to agreeableness, conscientiousness, self-esteem, and communal self-enhancement. The two narcissistic dimensions were similarly related to psychopathy, but rivalry showed a stronger association with Machiavellianism.

Furthermore, Admiration and Rivalry have shown distinct effects on several social and interpersonal outcome variables. It has been found that the negative consequences of narcissism on close relationships were mostly due to rivalry (Study 5, $N = 854$), that the two dimensions have unique and independent effects on perceiving and being perceived as narcissistic in group interactions (Study 6, $N = 202$), and that admiration predicted agentic behaviors, such as the use of self-assured facial expressions, whereas rivalry predicted a lack of communal behaviors, such as the use of authentic smiling (Study 7, $N = 96$).

A growing number of studies support the usefulness and the validity of the two-dimensional conceptualization of grandiose narcissism proposed by the NARC (e.g., Dufner et al., 2015; Leckelt, Kühner, Nestler & Back, 2015; Wetzel, Leckelt, Gerlach & Back, 2016). Moreover, the corresponding questionnaire, the NARQ, has been translated into various languages, including English, Polish, Dutch, Danish, Chinese, and Turkish (e.g., Back et al., 2013; Rogoza, Źemojtel-Piotrowska, Rogoza, Piotrowski & Wyszyńska, 2016; Zhang, Zhang & Li, 2017).

The present study provides the first validation of an Italian version of the NARQ, by examining its psychometric properties. We first examined the factor structure of the instrument using a Confirmatory Factor Analysis (CFA). We expected to replicate the two-factor structure observed in the original validation study (Back et al., 2013). The posited model, represented in Figure 1, consists of two correlated second-order dimensions, Admiration and Rivalry, each with three first-order variables representing the facets of the NARQ. We then examined the reliability of the scale scores in terms of internal consistency.

We investigated the construct validity of the NARQ by calculating Pearson correlations with the NPI, a well-established measure of narcissism, as well as with several variables conceptually related to narcissism. Specifically, we examined a number of variables included in the original validation study (the Big Five and self-esteem) and derived a

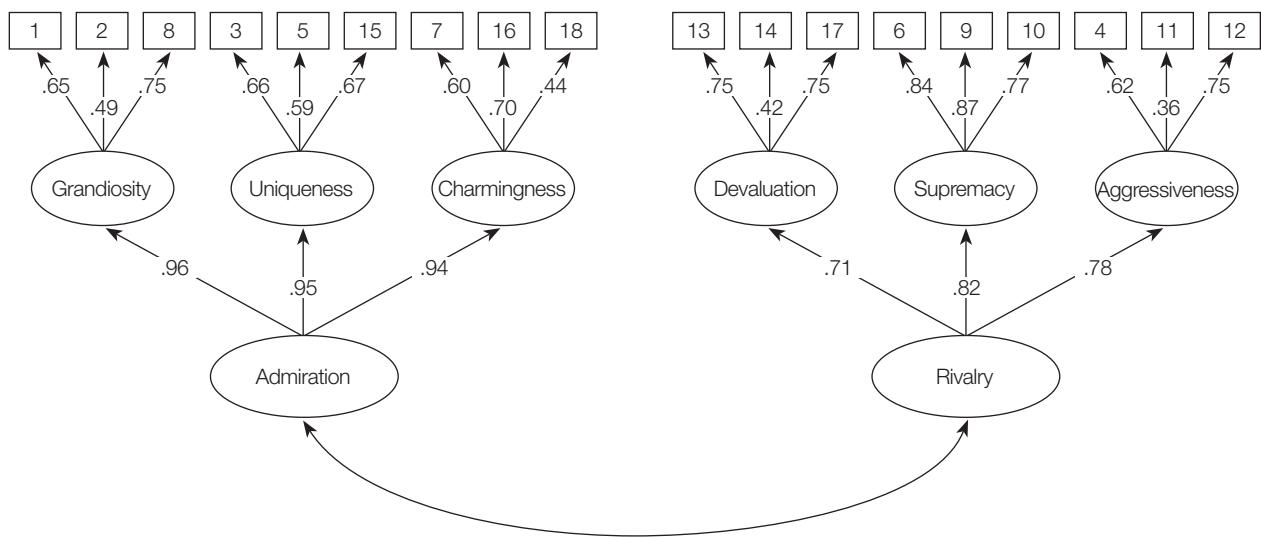
number of hypotheses from this study. We expected to replicate the pattern of results reported by Back et al. (2013). Most importantly, in accordance with the agentic and antagonistic aspects of the two dimensions, we expected Admiration to be most strongly related to high extraversion and Rivalry to be most strongly related to low agreeableness (i.e., aggression/hostility). Moreover, we expected self-esteem to be positively related to Admiration and negatively related to Rivalry. As the authors have argued, “admiration is conceptualized as originating from a self-enhancing strategy, it is characterized by self-praise and assertive actions, and it predicts social potency that comes along with ego boosts. By contrast, Rivalry is thought of as being fuelled by a defensive tendency to self-protect; its antagonistic nature leads to social conflict that comes along with ego threats” (Back et al., 2013, p. 1021).

METHODS

Participants

Three hundred individuals participated in the study. Their mean age was 31.20 years ($SD = 11.6$) and 70% were female. Approximately one fourth of the participants (23%) were university students, 50% were employed, and 27% were unemployed. Education levels were: junior high school 6%, high school 47%, and college 47%.

Figure 1 – A CFA model of the Narcissism Admiration and Rivalry Questionnaire



Note. All coefficients shown are standardized.

.40

Procedure

The study was part of a larger project on personality assessment that was conducted at the University of Rome (Italy). Participants individually completed a self-report questionnaire, which included the NARQ, the personality correlates, and other measures that are not relevant to this study. Each participant was informed about the aim of the study and signed an informed consent form. Participation was voluntary, with no compensation.

Measures

- *Narcissistic Admiration and Rivalry Questionnaire.* The NARQ (Back et al., 2013) was developed for the assessment of “normal” narcissism, namely narcissism as a personality trait in the general, nonclinical population. The instrument contains 18 items that are rated on a 6-point Likert scale, ranging from “strongly disagree” to “strongly agree”. Each dimension comprises three facets, with three items per facet. The facets of narcissistic admiration are: *Grandiosity*, *Uniqueness*, and *Charmingness*. The facets of narcissistic rivalry are *Devaluation*, *Supremacy*, and *Aggressiveness*. The instrument was translated from English to Italian following standard procedures for translation and back-translation. The English and Italian versions of the scale are shown in Table 1.
- *Narcissistic Personality Inventory.* The NPI is the most commonly used measure of grandiose narcissism. It contains 40 items with a forced-choice response format which requires respondents to choose between a narcissistic and a non-narcissistic alternative. We used the validated Italian adaptation of the instrument (Fossati, Borroni, Marchione & Maffei, 2011). As Back et al. (2013), we followed the approach by Ackerman et al. (2011) and derived three facets from 25 of the 40 NPI items: leadership/authority was measured by 11 items (e.g., “I have a natural talent for influencing people vs. I am not good at influencing people”); grandiose exhibitionism was measured by ten items (e.g., “I prefer to blend in with the crowd vs. I like to be the center of attention”); entitlement/exploitativeness was measured by 4 items (e.g., “I insist upon getting the respect that is due me vs. I usually get the respect that I deserve”).

Cronbach’s alpha reliability coefficients were adequate for leadership/authority (.70) and grandiose exhibitionism (.77), but remarkably low for the entitlement/exploitativeness dimension (.28). This result replicates Ackerman et al.’s (2011) findings on the problematic internal consistency of the subscale and it is consistent with concerns expressed in the literature about the psychometric properties of the NPI (e.g., Brown, Budzek & Tamborski, 2009).

- *Big Five.* To assess the Big Five, we used a shortened, 15-item version of the *Big Five Inventory* (BFI-S; Lang, John, Lüdtke, Schupp & Wagner, 2011; see also Ubbiali, Chiorri, Hampton & Donati, 2013, for the Italian adaptation of the BFI). The same questionnaire was used in the validation study by Back et al. (2013, Study 4). For each item (e.g., “has an assertive personality”), participants were asked to indicate the extent to which they agree with the statement, using a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.” Cronbach’s reliability coefficients were .53 for scores on extraversion, .58 for agreeableness, .56 for conscientiousness, .59 for neuroticism, and .58 for openness to experience. The relatively low internal consistency of the five factors might be due to the use of a small number of items for measuring rather broad traits.
- *Self-esteem.* Global self-esteem was assessed with the *Rosenberg Self-Esteem Scale* (RSES), a widely used 10-item questionnaire (Rosenberg, 1965). Participants were instructed to respond to each item by indicating how strongly they agree with items like “I feel that I have a number of good qualities”. The response scale ranged from 1 = strongly disagree to 4 = strongly agree. We used the Italian adaptation of the instrument (Prezza, Trombaccia & Armento, 1997). Cronbach’s alpha was .86.

RESULTS

Descriptive statistics

The 18 items of the NARQ, with descriptive statistics (means, standard deviations) are reported in Table 1. Univariate skewness ranged from $-.25$ to 2.31 ($M = .91$, $SD = .89$) and univariate kurtosis ranged from $-.83$ to 5.69 ($M = 1.20$, $SD = 1.97$). This indicates that the normality assumption was moderately violated (West, Finch &

Table 1 – Means and standard deviations for the NARQ items

#	English version	Italian translation	Facet	M	SD
1	I am great	Sono un grande	Grandiosity	3.14	1.31
2	I will someday be famous	Un giorno sarò famoso	Grandiosity	1.91	1.07
8	I deserve to be seen as a great personality	Merito di essere considerato una persona molto importante	Grandiosity	2.82	1.25
3	I show others how special I am	Mostro agli altri quanto sono speciale	Uniqueness	2.90	1.30
5	I enjoy my successes very much	Mi compiaccio molto dei miei successi	Uniqueness	3.48	1.42
15	Being a very special person gives me a lot of strength	Sentirmi una persona speciale mi dà molta forza	Uniqueness	3.67	1.45
7	Most of the time I am able to draw people's attention to myself in conversations	Nella maggior parte delle conversazioni sono in grado di attrarre l'attenzione degli altri	Charmingness	3.42	1.27
16	I manage to be the center of attention with my outstanding contributions	Riesco a pormi al centro dell'attenzione grazie alle mie imprese straordinarie	Charmingness	1.87	1.09
18	Mostly, I am very adept at dealing with other people	Sono in genere molto abile nel trattare con le altre persone	Charmingness	3.98	1.30
13	Most people won't achieve anything	La maggior parte delle persone non realizzerà mai niente di importante	Devaluation	1.85	1.32
14	Other people are worth nothing	Le altre persone non valgono niente	Devaluation	1.40	.79
17	Most people are somehow losers	La maggior parte delle persone è perdente, per un motivo o per l'altro	Devaluation	1.94	1.30
6	I secretly take pleasure in the failure of my rivals	Gioisco segretamente dei fallimenti dei miei rivali	Supremacy	1.98	1.33
9	I want my rivals to fail	Voglio che i miei rivali falliscano	Supremacy	1.86	1.22
10	I enjoy it when another person is inferior to me	Provo piacere quando un'altra persona si dimostra inferiore a me	Supremacy	1.59	1.07
4	I react annoyed if another person steals the show from me	Mi irrito quando un'altra persona mi ruba la scena	Aggressiveness	2.04	1.24
11	I often get annoyed when I am criticized	Spesso mi infastidisco quando vengo criticato	Aggressiveness	3.71	1.34
12	I can barely stand it if another person is at the center of events	Mi è difficile sopportare che un'altra persona sia al centro degli eventi	Aggressiveness	1.83	1.04

Note. Items are numbered in the order of their appearance in the questionnaire. The first nine items (1, 2, 8, 3, 5, 15, 7, 16, and 18) relate to narcissistic admiration. The last nine items (13, 14, 17, 6, 9, 10, 4, 11, 12) relate to narcissistic rivalry.

Curran, 1995). Table 2 reports descriptive statistics, gender differences, and intercorrelations for the NARQ scales. As can be seen, males scored significantly higher than females on both Admiration and Rivalry. This replicates the results of the original validation study performed in Germany (Back et al., 2013, Study 1).

Dimensionality

A second-order CFA was estimated to test the posited model, which is represented in Figure 1. Parameters were estimated by means of robust maximum likelihood estimation (MLR), using Mplus version 7.4 (Muthén & Muthén, 2010). The two-dimensional higher-order model showed close to acceptable fit on all criteria, $\chi^2(130) = 244.59$, $p < .001$, CFI = .906, TLI = .890, RMSEA = .055, 90% CI [.044, .065], SRMR = .067, except for the chi-square statistic, which was significant, and the TLI, which was slightly below the minimum requirement of .90.¹ Two alternative models were also tested: (1) a model with a single higher-order factor, $\chi^2(131) = 326.93$, $p < .001$, CFI = .840, TLI = .813, RMSEA = .072, 90% CI [.062, .081], SRMR = .103; (2) a model with two uncorrelated higher-order factors, $\chi^2(131) = 265.96$, $p < .001$, CFI = .890, TLI = .871, RMSEA = .059, 90% CI [.049, .070], SRMR = .109. These models did not meet the criteria for adequate fit. Moreover, according to the chi-square difference test, the posited model yielded a significantly better fit than both model 1 [$\Delta\chi^2(1) = 82.34$, $p < .001$] and model 2 [$\Delta\chi^2(1) = 21.37$, $p < .001$]. This provides further support for the expected factor structure.

Standardized loadings of items on first-order factors were all significant ($p < .001$) and greater than .35 ($M = .67$). First-order factors had substantial standardized loadings on the respective higher-order factor, ranging from .71 for devaluation to .97 for grandiosity ($M = .86$). The two second-order factors (Admiration and Rivalry) showed a latent correlation of .40 ($p < .001$). This correlation is consistent with the presence of a broad narcissistic trait at the apex of the hierarchy, which reflects a general tendency to create and maintain a grandiose self (Back et al., 2013).

Reliability

Cronbach's alpha for the overall NARQ score was .84, it was .83 for Admiration and .81 for Rivalry. The alphas of the six facet domains are reported on the main diagonal of Table 2. Coefficients are in the range of .58-.86. Corrected item-total correlations ranged from .29 to .79 ($M = .50$; $SD = .14$).

Construct validity

Table 3 reports Pearson correlations between the NARQ and the NPI dimensions. Narcissistic admiration correlated substantially with NPI Leadership/Authority ($r = .56$, $p < .001$) and NPI Grandiose Exhibitionism ($r = .52$, $p < .001$). The correlation with NPI Entitlement/Exploitativeness was smaller ($r = .23$, $p < .001$). Rivalry, by contrast, was moderately correlated with all NPI scales (values of r were in the range of .27-.29, all $p < .001$).

Table 4 reports Pearson correlations of the NARQ with the Big Five and self-esteem. Among the Big Five, narcissistic admiration correlated positively with extraversion, conscientiousness, and openness, and negatively with neuroticism. In contrast, narcissistic rivalry correlated negatively and strongest with agreeableness, and to a lesser extent with conscientiousness and openness. As expected, self-esteem was positively correlated with Admiration, and negatively correlated with Rivalry.

CONCLUSIONS

In the current study, we tested the psychometric properties of an Italian version of the *Narcissistic Admiration and Rivalry Questionnaire* (NARQ). Confirmatory factor analysis supported the proposed factor structure. The model consists of two second-order factors, admiration and rivalry, which reflect two core aspects of narcissism, each encompassing three lower-order facets. Admiration and rivalry were moderately correlated (.40 in the present study, .61 in Back et al.'s study - 2013, in a German sample).

¹ When we ran the model, a negative error variance estimate was observed for the grandiosity first-order factor. The 95% confidence interval around the estimate includes zero (-.253, .184). Moreover, the standard error of this parameter has approximately the same magnitude as that of the other standard errors. Accordingly, this improper solution can be reasonably attributed to the random sampling variability around a population value variance that is close zero (Dillon, Kumar & Mulani, 1987). We therefore re-estimated the model by constraining the error variance of grandiosity to be equal to those of the other first-order factors that loaded on admiration. The model yielded proper estimates and the overall fit was not affected: $\Delta\chi^2(2) = .07$, $p = .97$.

Table 2 – Descriptive statistics, intercorrelations for the NARQ scales, Cronbach's alpha, and gender differences

Descriptive statistics	Total sample									Gender differences					
	Intercorrelations for the NARQ scales									Males	Females	t(df)	t-test		
	M	SD	1	2	3	4	5	6	7	8	9	M	SD	M	SD
1. NARQ	2.52	.64	.84									2.69	.71	2.45	.60
2. Admiration	3.03	.84	.83**	.83								3.19	.91	2.95	.79
3. Grandiosity	2.62	.94	.71**	.85**	.63							2.88	.96	2.51	.91
4. Uniqueness	3.35	1.09	.73**	.87**	.62**	.68						3.38	1.19	3.34	1.05
5. Charmingness	3.10	.94	.66**	.81**	.56**	.53**	.63					3.32	1.12	3.01	.84
6. Rivalry	2.02	.75	.79**	.32**	.28**	.29**	.23**	.81				2.19	.84	1.95	.70
7. Devaluation	1.73	.91	.56**	.19**	.22**	.11	.17**	.75**	.65			2.05	1.05	1.59	.80
8. Aggressiveness	2.53	.89	.66**	.36**	.26**	.41**	.24**	.73**	.28**	.58		2.57	.93	2.51	.87
9. Supremacy	1.80	1.07	.63**	.20**	.18**	.15*	.18**	.15*	.86**	.49**	.86	1.93	1.17	1.75	1.02
												1.36(290)	.17		

Note. Cronbach's alpha reliabilities are on the diagonal of the correlation matrix; t = two-sample t-test for investigating gender differences in the NARQ scales; df = degrees of freedom; d = Cohen's d: positive values indicate higher means for males; * p<.01 ; ** p<.001.

Table 3 – Correlations between NARQ and NPI scales

	NPI Leadership/Authority	NPI Grandiose Exhibitionism	NPI Entitlement/Exploitativeness
NARQ	.52	.51	.32
NARQ Admiration	.56	.52	.23
NARQ Rivalry	.27	.29	.29

Note. All correlations are significant at $p < .001$.

Table 4 – Correlations of NARQ with the Big Five and self-esteem

	NARQ	
	Admiration	Rivalry
Extraversion	.28*	-.09
Agreeableness	-.05	-.45*
Conscientiousness	.26*	-.11*
Neuroticism	-.13*	.08
Openness	.21*	-.16*
Self-esteem	.31*	-.13*

Note. * $p < .01$

Adequate levels of internal consistency were found at each level (i.e., for the overall NARQ score, for the Admiration and Rivalry dimensions, and for the respective subscales). These results suggest that the NARQ can be used as an overall measure of narcissism (i.e., the tendency to create and maintain a grandiose self), or as a measure that differentiates between assertive and antagonistic aspects of narcissism, depending on the aim of the study. Future studies with larger and representative samples are needed to replicate and confirm our results. Moreover, future studies should assess the cross-national invariance properties of the NARQ, examining whether admiration and rivalry have similar meanings across different cultural groups. This would allow to compare across countries the means of both dimensions, as well as their relations with relevant outcomes.

The total NARQ score represents an alternative to the NPI, a widely used instrument that has been subject to criticism regarding its psychometric properties (Grosz

et al., *in press*). Most importantly, Back et al. (2013) have argued that distinguishing between admiration and rivalry instead of using an overall measure permits a more nuanced understanding of narcissism and accumulating evidence backs up this claim (e.g., Dufner et al., 2015; Leckelt et al., 2015). The two dimensions indeed have different correlates. Narcissistic admiration, for example, which seems to encompass the adaptive aspects of narcissism, is mostly related to agentic traits (extraversion and openness), and to high levels of global self-esteem. Narcissistic rivalry, which appears to capture some maladaptive aspects of narcissism, is substantially related to low agreeableness, as well as to low self-esteem. Although the view of narcissism as a combination of high agency and low communion is not novel (e.g., Bradlee & Emmons, 1992), Back et al.'s (2013) findings have the merit to disentangle the mechanisms underlying these relations, providing a valid and reliable multifaceted measure of narcissism.

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The Italian adaptation of the WOrk-reLated Flow inventory (WOLF) to Sport: The I-WOLFS scale

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ABSTRACT. Il *Flow at work*, costrutto collocato all'interno della psicologia positiva, risulta rilevante in ambito sportivo in quanto si tratta di uno stato psicologico capace di influenzare la prestazione di un atleta. Questo studio ha l'obiettivo di adattare allo sport la scala italiana di *Flow at work* (I-WOLF). È stata svolta un'analisi fattoriale esplorativa ($N = 132$) e in seguito confermativa ($N = 161$) su un gruppo di atleti professionisti. Le analisi hanno restituito una scala a 12 item che contiene le tre dimensioni del *Flow at work* (Assorbimento, Piacere lavorativo e Motivazione intrinseca). Lo strumento potrà essere utile per la misurazione del *Flow at work* tra gli atleti, contribuendo alla psicologia del lavoro e dello sport.

SUMMARY. *Flow at work* is a state of consciousness characterized by absorption, enjoyment and intrinsic motivation. Optimal experiences are crucial in sport since athletes link performances and achievement to psychological states. This study aims to adapt to sport the Italian version of the WOrk-reLated Flow inventory (I-WOLF). Factorial validity of the adapted scale was assessed by exploratory factor analysis ($N = 132$) and confirmatory factor analysis ($N = 161$). Participants are professional athletes. The exploratory factor analysis showed a three-factor structure with one item of intrinsic motivation loading on the enjoyment factor. The confirmatory factor analysis finally deleted this item, resulting a 12-item structure which preserves the original 3-factor structure: Absorption, Sport Enjoyment and Intrinsic Motivation. The adaptation of the I-WOLF scale to sport resulted a reliably instrument to measure flow at work among athletes, giving an important empirical contribute to both work and organizational psychology and sport psychology.

Keywords: *Flow at work, Flow sport, Optimal experience, Scale adaptation*

INTRODUCTION

Positive psychology, which particularly focuses on the understanding of positive subjective experiences (Seligman & Csikszentmihalyi, 2000), is more and more capturing the attention of scholars, underlying the importance of understanding human well-being dynamics through the

detection and the improvement of social, cultural and personal factors. Positive and optimal experiences are mostly significant in sport, since athletes link performances and achievement to psychological states (Kennedy, Miele & Metcalfe, 2014). Optimal experience refers to positive states of consciousness and such experience is considered optimal since people can control it, have intrinsic motivation and clear goals, thus living the experience in a positive

way (Csikszentmihalyi, 1990). The most studied optimal experience in sport is flow (Swann et al., 2017a), which is functional to experience optimal performance, since pressure, concentration and focused goals foster the flow experience during sport (Swann, Crust & Vella, 2017). According to Csikszentmihalyi (1990), flow is a state of consciousness generated while participating in an activity which enjoys and absorbs the individual, and which is intrinsically rewarding. Therefore, the flow experience emerges when the individual is focused on an activity with attention on clear but also realistic goals, is intrinsically motivated in doing the activity, since it can control it, experiencing a balance between his/her skills and the challenges of a situation.

The first conceptualization of flow has been used within recreational activities and, in particular, in sport practice to understand psychological states associated to optimal experiences (Csikszentmihalyi, 1990), which is important to identify as it makes people able to develop new skills. Indeed, a recent study by Swann, Crust and Vella (2017b) shows that athletes feel energized by flow states, underlying the positive effect on the individual well-being. In fact, studies highlight that flow in sport is related with higher performance and positive psychological outcomes such as self-esteem, well-being (Jackman, Crust & Swann, 2017), and positive moods which can lead to positive evaluations and to the development of efficacy beliefs (Zumeta, Oriol, Telletxea, Amutio & Basabe, 2016). Therefore, flow is considered a crucial construct to understand positive experience in sport, since flow among athletes is considered characterized by intrinsic rewards, enhanced motivation, and total concentration in the performance. This experience, moreover, excludes thoughts and emotions leading to concentration (absorption), and implicates confidence, enjoyment, satisfaction and control over the performance, with relevant results on professional athletes' success during high level competitions (Swann et al., 2017a; Zumeta et al., 2016). As literature on flow shows, therefore, the main characteristics of flow are common both for general workers and for professional athletes. Such characteristics refers to clear goals and feedback to have information about what to do and progressions, challenge-skills balance to use the right skill in the right situation and, in the light of this balance, refers also to novelty, discovery and experimentation (Swann et al., 2017b) to try and adapt the correct skills in new situations.

Some studies highlighted that people experiences flow during their working time (Bakker, 2008; Csikszentmihalyi & LeFevre, 1989), capturing the attention of work and

organizational psychologist on the issue of flow at work, as a focus for human resources management policies improving motivation, job performance and well-being (Zito, Cortese & Colombo, 2016).

Considering the birth and the applicability of flow to sport, and the relevance of flow at work within organizational studies, this study aims to apply to sport a measure used to detect flow at work. In particular, the Italian version of the Flow at Work scale (Zito, Bakker, Colombo & Cortese, 2015) has been adapted to sport, and administrated to professional athletes in order to measure flow at work in the sport activity. The WOrk-reLated Flow inventory (WOLF), originally operationalized by Bakker (2008), detects the three main dimensions considered in the flow research, which are perfectly in line with the characteristics of flow emerging during sports. In particular, the dimensions refer to: first, Absorption (ABS) that is the immersion and the total concentration in the activity, time flies and people don't care about what is happening around them; second, Work Enjoyment which reflects the happiness and the pleasure experienced during the work activity. Applied to sport, this dimension is named Sport Enjoyment (SE); third, Intrinsic Work Motivation which refers to performing a work activity with the intent to experience pleasure and satisfaction. Applied to sport, this dimension, which recalls the intrinsic rewarding aspect, is named Intrinsic Sport Motivation" (ISM).

As flow at work, it is important to offer to Italian researchers a reliable measure of flow in sport, since flow is the principal framework used in research to understand the psychology of optimal experience in sport (Swann et al., 2017b) and such measure is currently lacking in the Italian language. This could represent a contribution for both work and organizational psychologist working with professional athletes, and sport psychologist.

The aim of this study is, therefore, to offer the adaptation of the Italian version of the I-WOLF scale (Zito et al., 2015) to sport, named I-WOLFS. The factorial validity of the I-WOLFS is presented through an exploratory factor analysis performed on a sample of 132 professional athletes, and a confirmatory factor analysis performed on a sample of 161 professional athletes. Moreover, to assess the validity of the scale and to deepen the psychometric characteristics of the I-WOLFS, correlations (Pearson's r) have been performed between I-WOLFS and a general index of flow to verify the correspondence with reported flow state, and passion (for sport), as literature suggests as correlated with flow (Vallerand & Houlefort, 2003; Zito & Colombo, 2017).

METHODS

Participants

To perform the factor analyses process, a sample of 293 professional athletes (20.8% football players, 31.8% cyclists, 47.4% skiers), was randomly divided into two subsamples. The first, composed of 132 participants, was used for the exploratory factor analysis: 70.5% male, average age 27 years ($SD = 10.3$), average weekly sport hours 11 ($SD = 4.7$), average sport activity 18 years ($SD = 8.6$).

The second sample, used for the confirmatory factor analysis is composed of 161 athletes: 52.3% male, average age 27 years ($SD = 11.2$), average weekly sport hours 11 ($SD = 6.1$), average sport activity 18.7 years ($SD = 9.1$).

Procedure

The Italian version of the Flow at Work scale (Zito et al., 2015) was adapted from work in general to the sport activity, and it was filled out by professional athletes. Different sports teams were contacted and players voluntarily decided to participate in the study. The research was approved by the Bioethics committee of the researchers' University and by the sports organizations participating in the study. Data were collected through a paper-and-pencil questionnaire and researchers gave to the participants instructions to complete the questionnaire, and information about the anonymity of their data.

Measures

- *Flow sport.* It was used the Italian version of the Flow at Work scale (Zito et al., 2015) applied to sport as profession. The scale consists of thirteen items divided into the three dimensions: Absorption (four items), Sport Enjoyment (four items), and Intrinsic Sport Motivation (five items). Items were assessed on a 7-point frequency scale ranging from 1 = Never, to 7 = Always.
- *Passion.* It was used the Italian version of the Passion for work scale (Zito & Colombo, 2017), applied to sport. Passion represents a strong inclination toward an activity in which people spends time and energy. Passion is measured through two dimensions, depending on the

type of the internalization of the passionate activity. The first dimension is Harmonious Passion (HP, seven items) for an activity in harmony with the life of the individual which produces motivation and engagement. The second dimension is Obsessive Passion (OP, 7 items) characterized by pressure linked to the passionate activity which becomes pervasive in the individual's life. The scale was assessed on a Likert scale ranging from 1 = Not agree at all, to 7 = Very strongly agree.

- *General flow.* It was measured with the Flow Short Scale (Rheinberg, Vollmeyer & Engeser, 2003) to assess general flow since the scale measures, through ten items, the general feeling of flow. The Likert scale ranges from 1 = Not at all, to 7 = Very much.

Data analysis

To assess the factorial validity of the Italian version of the Flow at Work scale applied to sport, data analysis first performed an exploratory factor analysis (EFA) with SPSS 24, and then a confirmatory factor analysis (CFA) with Mplus 7. A sample of 293 professional athletes was divided into two subsamples: the first composed of 132 participants for the EFA and the second composed of 161 participants for the CFA. The sample was randomly splitted, and it was balanced in order to have a sample of at least 150 subjects for conducting the CFA (Guadagnoli & Velicer, 1988). According to literature (Bollen & Long, 1993), the model was assessed by several goodness-of-fit criteria: the chi-square value (χ^2); the Comparative Fit Index (CFI); the Tucker-Lewis Index (TLI); the Root Mean Square Error of Approximation (RMSEA); the Standardized Root Mean Square Residual (SRMR).

Moreover, Cronbach's alphas were calculated for each factor and correlations were performed (on the whole sample) to verify the association between the scale of flow at work applied to sport and other relevant variables expected to be correlated, such as passion for sport and a general measure of flow.

RESULTS

Considering the structure of the original scale of Flow at Work (Bakker, 2008) and of the Italian version of the scale (Zito et al., 2015), EFA was performed through a 3-factor solution with oblimin rotation (Kaiser's normalization) and

ML extraction. EFA shows a 3-factor structure of the scale in line with literature, but on item of ISM (item 11 "I do sport I enjoy it") loaded the factor of SE (Table 1). More specifically, the structure showed three factors: SE (five items, $\alpha = .87$), ISM (four items, $\alpha = .71$), and ABS (four items, $\alpha = .85$). Factor loadings range between $.68$ and $.88$ for SE, between $.51$ and $.94$ for ISM, and between $.51$ and $.96$ for ABS.

Therefore, the 13-item solution with five items for the SE factor, has been tested in the confirmatory factor analysis.

The factor solution absorbs 59% of the total variance: SE explains 34% of the variance, ISM explains 15%, and ABS explains 10%.

Finally, within factors correlations the higher resulted between SE and ABS ($r = .42$), followed by the correlations between SE and ISM ($r = .36$), and between ABS and ISM ($r = .18$), in line with the original version of the scale (Bakker, 2008).

CFA was performed on this factor solution, but fit indices were not completely satisfactory, particularly as for RMSEA and SRMR which resulted too high: $\chi^2 = 151.960$; $df = 60$; $p < .00$; CFI = .90; TLI = .87; RMSEA = .10; SRMR = .11. In order to verify the structure of the scale, also the original version of the scale was tested (four items for SE, five items for ISM, four items for ABS) through CFA, but also in this case fit indices were not acceptable with high RMSEA and SRMR, and low CFI and TLI: $\chi^2 = 199.411$; $df = 62$; $p < .00$; CFI = .85; TLI = .81; RMSEA = .12; SRMR = .09. Considering the loading score of item 11 in the EFA and the low score of this item in these CFAs, a model without item 11 has been tested. Fit indices were now satisfactory, also adding correlations between items (Figure 1) which are consistent both semantically and theoretically: $\chi^2 = 85.927$; $df = 47$; $p < .001$; CFI = .95; TLI = .93; RMSEA = .07; SRMR = .06. Different models were therefore tested (Table 2) and, in line with literature (Bakker, 2008) and the previous Italian version of the scale applied to work (Zito et al., 2015), the best model resulted the 3-factor one which empirically showed its factorial validity.

Deepening the model, all items load only on the intended factors and factors loading range between $.60$ and $.87$ for ABS, between $.78$ and $.90$ for SE, and between $.39$ and $.56$ for ISM (Figure 1).

Correlations between factors are good and, in line with exploratory factor analyses, the model shows a high correlation between SE and ISM, and between SE and ABS.

This factor solution resulted balanced in the number distribution of items and also Cronbach's alphas are good: SE

(four items), $\alpha = .87$, ISM (four items), $\alpha = .70$, and ABS (four items) $\alpha = .82$.

As for correlations (Table 3), as expected, these three factors positively correlate with the general flow index, with a higher correlation in particular between general flow and ABS ($r = .56$) and SE ($r = .47$). Furthermore, general flow is highly and positively associated with the total flow sport ($r = .60$), which is highly and positively correlated also with HP ($r = .57$) and OP ($r = .53$), in line with literature. Moreover, the three dimensions of flow applied to sport also positively correlate with the two dimensions of passion for sport showing a higher correlation between ABS and OP ($r = .49$) and a higher correlation between SE and HP ($r = .47$).

CONCLUSIONS

The aim of this study is to adapt the I-WOLF scale to sport, in order to offer to both organizational and sport psychologists, an instrument useful to detect flow as optimal experience.

EFA shows the original three-factor structure, but one item of the ISM factor loads on the SE factor. Even if this loading does not reflect the original scale, looking at the item statement (item 11 "I do sport I enjoy it") this result seems to be consistent both from a semantic standpoint, and with literature suggesting that enjoyment is a type of intrinsic motivation (Bakker, 2008). Therefore, it was decided to keep this solution which presented, however, the original structure composed by Absorption, Sport Enjoyment and Intrinsic Sport Motivation.

Correlations between factors are interesting: if literature on flow at work suggests that enjoyment and motivation are mostly correlated due to workers' pleasure in doing an activity that motivates them (Bakker, 2008), in this step of analysis enjoyment is highly correlated with absorption. This could be related to the absorption that characterize the sport activity which has a gradual build-up (Swann et al., 2017b), during which the athlete explores options and gains confidence and enjoying the activity.

CFA performed first the version with item 11 within the SE factor, but fit indices were not satisfactory. It was decided to verify this analysis using the original version of the scale, but also in this case fit indices were not acceptable. Item 11 was therefore deleted by analyses and the 12-item solution resulted good. Different models were tested, and the 3-factor model respected the original structure of the scale.

Table 1 – Exploratory factor analysis: 13 items, 3-factor solution (ML extraction; Oblimin rotation; Kaiser's normalization), N = 132

Item Number	Items	Factors		
		SE	ISM	ABS
6	Faccio sport con molto piacere	.88	-.16	.05
7	Facendo sport mi sento felice	.82	-.02	.01
5	Fare sport mi fa stare bene	.73	.04	-.01
8	Mentre sto facendo sport mi sento allegro	.70	.15	-.04
11	Faccio sport perché mi piace	.68	.11	.06
13	La mia motivazione deriva dallo sport in sé e non dalla retribuzione	-.14	.94	-.06
9	Farei sport anche se fossi pagato di meno	-.01	.73	.01
12	Quando faccio sport lo faccio per me stesso	.10	.58	.03
10	Penso che vorrei fare sport anche nel mio tempo libero	.24	.51	.11
3	Quando sto facendo sport mi dimentico di tutto quello che mi circonda	-.17	.04	.96
4	Sono totalmente immerso nello sport	.13	-.06	.84
1	Quando faccio sport non penso a nient'altro	-.31	.01	.65
2	Mi faccio coinvolgere dallo sport	.22	.02	.51
Alpha		.87	.71	.85
Mean (item)		6.40	6.07	5.37
Standard Deviation		.73	.99	1.11
Correlation between factors		Factors		
		SE	ISM	ABS
SE		1		
ISM		.36	1	
ABS		.42	.18	1

Legenda. SE = Sport Enjoyment; ISM = Intrinsic Sport Motivation; ABS = Absorption.

Moreover, the scale resulted now more balanced with four items in each factor.

The added correlations between items, are distributed among the three dimensions, the interesting one is between one item of SE and one item of ISM, underlying again the correspondence between these two constructs.

Again, also in this analysis, correlations between

factor resulted interesting from empirical and theoretical standpoints. The correlation between SE and ISM and between SE and ABS are quite similar, showing a balance between the relation between enjoyment and motivation as linked to each other (Bakker, 2008; Davis et al., 1992), and the enjoyment which seems to grow during the absorption dynamics (Swann et al., 2017b).

Table 2 – Results of the confirmatory factor analysis: 12-item solution, model comparison (N = 161)

MODEL	X ²	df	p	RMSEA	CFI	TLI	SRMR	Model comparison	ΔX ²	df	p
Model 1: 3-Factor Model	85.927	45	.001	.07	.95	.93	.06				
Model 2: 2-Factor Model ABS+SE, ISM	270.485	53	.000	.16	.73	.67	.12	M2-M1	184.558	8	-.001
Model 3: 2-Factor Model ABS+ISM, SE	228.057	53	.000	.14	.78	.73	.11	M3-M1	142.13	8	.000
Model 4: 2-Factor Model SE+ISM, ABS	201.761	53	.000	.13	.82	.77	.10	M4-M1	115.834	8	.000
Model 5: 1-Factor Model	336.900	54	.000	.18	.65	.58	.12	M5-M1	250.973	8	.000

Legenda. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; ABS = Absorption; SE = Sport Enjoyment; ISM = Intrinsic Sport Motivation.

As for the correlations to verify the psychometric characteristics of the 12-item scale, this study confirms the validity of the I-WOLFS, since all the dimensions positively correlate with the general flow index. In particular, this index highly correlates with ABS, suggesting that individuals identify in the total concentration a crucial aspect of the flow experience (Bakker, 2008). Moreover, the high correlation between the general flow index and SE, shows the centrality of enjoyment during the flow experience (Zito et al., 2016), in line with literature suggesting enjoyment as reflecting happiness and positive judgments about the quality of the working life (Bakker, 2008), or activity.

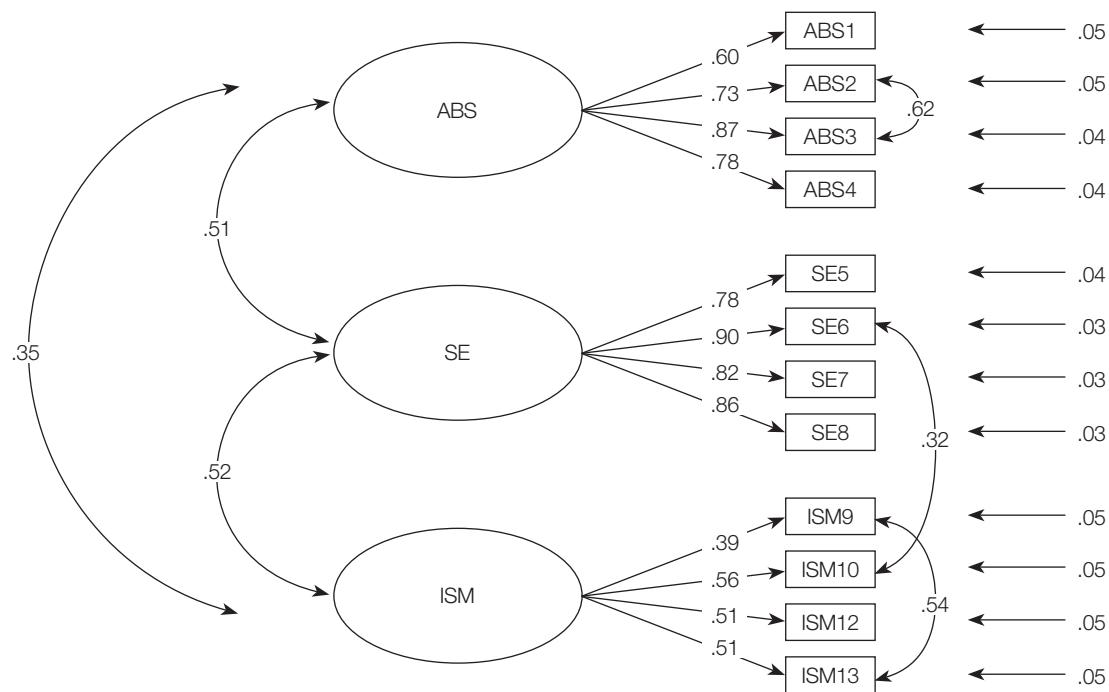
Finally, flow dimensions show positive relationships with OP and HP, in line with literature (Vallerand & Houlfort, 2013; Zito & Colombo, 2017), reinforcing the idea that flow can be associated to a positive passion such as HP, which fosters engagement and well-being (Zito & Colombo, 2017). The positive correlation between flow and OP is supported by literature suggesting that people that find important their activity and are dedicated, are absorbed experiencing flow experiences (Zito & Colombo, 2017). This is also in line with the energizing effect of flow among athletes so that they would continue the activity and feel they cannot wait to do it (Swann et al., 2017b). Being completely immersed in the activity, or being under pressure in doing it, could excessively increase the absorption (Csikszentmihalyi, 1990) and this has

to be monitored to verify that athletes are not experiencing under pressure situations straining them or reducing their performance.

A study limitation is the use of a small sample that not involves all the disciplines, but it includes both team and individual sports that is a source for this preliminary adaptation based, however, on a robust and reliable measure. Moreover, this study used a self-report questionnaire and a cross-sectional research design that does not permit the establishment of definitive relations of causality between variables. Another limitation of this study is to not have collected data by using the ESM procedure (Csikszentmihalyi, 1990), a method which measures flow using beeper that daily remind to respondents to answer to a questionnaire. However, considering the impracticability of wearing electronic devices during a performance (Jackman et al., 2017), the retrospectively measurement is the best in this sample.

Findings highlight that the I-WOLFS scale is a reliable measure to detect flow among professional athletes and this measure can be used by almost two main disciplines: work and organizational psychology and sport psychology.

Measuring flow applied to professional activity is beneficial both for performance, and for the individual well-being. The awareness about the flow dynamics and the level of flow experienced, can orient the athlete and the team manager to balance the skills and the requests both in the

Figure 1 – Results of the confirmatory factor analysis – 12-item solution (N = 161)

Note. ABS = Absorption; SE = Sport Enjoyment; ISM = Intrinsic Sport Motivation.

Table 3 – Correlations, Means and Standard Deviations (Pearson's r) (N = 293)

	M	SD	1	2	3	4	5	6	7
1. FLOW SPORT_TOTAL	5.95	.69	(.82)						
2. ABS	5.25	1.13	.79** (.82)						
3. SE	6.41	.76	.78**	.47** (.87)					
4. ISM	6.19	.88	.66**	.19**	.37** (.70)				
5. GENERAL FLOW INDEX	5.25	.81	.60**	.56**	.47**	.30** (.85)			
6. HP	5.83	.75	.57**	.37**	.47**	.44**	.53** (.75)		
7. OP	4.82	1.28	.53**	.49**	.39**	.28**	.48**	.47**	(.90)

Note. ** p<.01 level. Cronbach's alpha's on the diagonal (between brackets).

Legenda. ABS = Absorption; SE = Sport Enjoyment; ISM = Intrinsic Sport Motivation; HP = Harmonious Passion; OP = Obsessive Passion.

workout and in the competition, to formulate orientation feedback and to set up realistic and clear goals. As at work, in fact, flow requires open goals (Swann et al., 2017a) and goals

influence the performance and the subjective experience with consequences on psychological outcomes, such as happiness, satisfaction and well-being (Swann et al., 2017b). Considering

the relevance for these topics, future studies should consider to detect the relationship between the positive experience during sport and other variables related to well-being, that give also the possibility to set up own goals and procedures, such as job crafting (Cenciootti et al., 2016).

For team manager, therefore, results very important to foster flow experiences among athletes, creating athletic preparations and conditions which particularly focuses

on the specific individual skills to face the challenge-skill balance, and on shared and definite goals. Working on specific skills, on the development of new abilities can lead to an enhanced motivation and self-esteem which can improve the individual performance. This could be a precious strategy that would enhance also general team performance: the positive emotions and experiences go through a contagion which creates group emotions.

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Psychometric examination of the Psychological Capital (PsyCap) and the Career Decision-Making Process (CDMP) scales

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● **ABSTRACT.** Questo studio contribuisce alla validazione di due scale, potenzialmente utilizzabili in modo congiunto, incentrate sulle quattro componenti del Capitale Psicologico (speranza, resilienza, autoefficacia e ottimismo) e quattro dimensioni del *Career Decision-Making Process* (ansia verso la scelta, percezione di importanza della scuola, autoefficacia nel processo decisionale, pianificazione del futuro). Basandosi su due campioni di studenti della scuola secondaria di primo grado, l'analisi fattoriale esplorativa e confermativa hanno fornito supporto alla ipotesi che le scale denominate PsyCap e CDMP rappresentino misure di auto-valutazione valide nella rilevazione delle risorse in grado di facilitare il processo decisionale della carriera.

● **SUMMARY.** The current study was aimed to validate two scales, potentially jointly used, focused on the four dimensions of Psychological Capital (i.e., hope, resilience, self-efficacy and optimism) and the four facets of Career Decision-Making Process (i.e., career choice anxiety, perceived instrumentality of education, career decision-making self-efficacy and career planning attitude) among middle school students. In Study 1 the PsyCap and CDMP scales were developed and evaluated through a principal component analysis ($N = 602$). In Study 2 a confirmatory factor analysis ($N = 989$) was performed in order to validate the four-dimensional structure of the scales. The obtained results provided evidence for two theoretically grounded 16-item scales composed of four factors each: the PsyCap and the CDMP scales. The PsyCap and the CDMP scales are valid self-report measures assessing the key dimensions of psychological capital and the resources able to ease the career decision-making process.

Keywords: Psychological capital, Career decision-making, Middle school students

INTRODUCTION

The transition from middle school to high school could be defined as a crucial step among Italian adolescents, essentially because it corresponds to their first vocational choice. Since adolescents' beliefs about alternative career paths develop while taking such educational decisions, the choice of a specific high school program seems to constitute a significant step for their career development (Super, 1980). In particular, it implies a demanding decision-making process during which different decisional tasks or activities are faced, such as exploring different high school programs, reflecting on their interests and skills, comparing preferences, and lastly picking out a single option. Handling this process is very complex for at least two orders of reasons. Firstly, it is faced by Italian middle school students during a vulnerable stage of their growth, that has increasingly encouraged the development and implementation of initiatives and tools aimed at facilitating their capability to deal efficiently with the difficulties that could arise (Biolcati, Palareti & Mameli, 2017). Secondly, it is more and more affected by the uncertainty that derives from the social and economic changes occurred in the last decades. The new career theories emerged in the 21st century, such as Career Construction theory (Savickas, 2005, 2011), Self-Construction theory (Guichard, 2004, 2005) and Life Construction theory (Guichard, 2013), are aimed to explain how people can construct coherence and continuity, and pursue their purpose and projects despite of the loss of stable structures and predictable trajectories in life course. These theories describe the career construction as a process through which individuals attempt to implement self-concepts in occupational roles, but, due to the changing nature of self and situations, this process is never really completed. During adolescence, it is expected that individual will be able to manage exploratory activities and make fitting educational and vocational choices based on self-knowledge and occupational information. Success in adapting to these developmental tasks results in a more effective functioning as a student and gets ready for progressively mastering the next tasks along the developmental continuum (Savickas, 2012). Accordingly, the career decision-making process faced by adolescents has been shown to affect subsequent choice implementation in term of choice actualization, choice satisfaction, performance in the chosen option, and choice stability (e.g., Germeijs & Verschueren, 2006). Overall, these theoretical frameworks and empirical evidence suggested

the necessity to delve deeper into different features of the decision-making process and its effect on the positive adjustment to the selected career path. On the other hand, a noteworthy literature review revealed that most of studies focused on the transition from high school to university/job market, thus neglecting students' transition to high school (Bardick, Bernes, Magnusson & Witko, 2006). Consequently, the great number of instruments developed to measure career decision-making process are mainly validated among high school students' population (e.g., Gati & Levin, 2014). In addition, most of these instruments are aimed at assessing exclusively the difficulties and setbacks that may occur during the career decision-making process.

In line with the positive approach to psychology (Seligman & Csikszentmihalyi, 2000), that emphasizes individual strengths and virtues in order to enhance individual wellbeing and personal grow, rather than focusing on weaknesses and disease, the current study aimed to develop two instruments able to assess those personal resources that can facilitate the career decision-making process and predict the ability to adjust to a new school environment during the transition from the middle to the high school.

The role of personal resources in the career decision-making process

The career decision-making process may be conceptualized as a developmental process consisting of different tasks related to the need to make a choice, starting from the contemplation of several alternatives that have to be compared considering their specific qualities and possible implications (Tinsley, 1992). As argued by Gati, Krausz and Osipow (1996), career decisions are characterized by the following features: a) the number of potential alternatives to consider is often fairly large; b) an extensive amount of information is available on each alternative; c) a large number of aspects (e.g., length of training, type of relationship with people) is required to adequately describe the occupations and the individual's preferences in a detailed and meaningful way; d) uncertainty plays a major role because the development of individual's characteristics (e.g. abilities and interest) and the future career opportunities are difficult to predict. These characteristics make the career choices a demanding task: accordingly, a large amount of research has focused on the difficulties that may arise during the career decision-making

process. These difficulties include, for instance, lack of readiness, lack of motivation to engage in the career decision-making process, general indecisiveness concerning all types of decisions, dysfunctional beliefs about career decision-making, lack of information and inconsistent information (Amir & Gati, 2006).

In addition to the prevailing negative accent on these obstacles, previous studies revealed at least three fundamental features to cope with decisional tasks (Germeijs & Verschueren, 2006): the orientation to choose or awareness of the need to take a decision and the motivation to engage in the career decision process; the exploration or proactive collection of information about oneself and the environment; the strength of confidence in – and attachment to – a particular career goal. Thus, research has started to devote growing attention to the personal resources that enable individuals to cope with these tasks. Savickas (1997) introduced the construct of career adaptability to refer to "...the readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustments prompted by the changes in work and work conditions" (p. 254). Career adaptability includes four dimensions: *concern* reflects the awareness of the need to plan a vocational future; *control* entails the ability to take deliberate action being aware of one's responsibility in influencing and tackling oneself and the surrounding context; *curiosity* denotes an attitude to discover one's environment; *confidence* refers to the ability to successfully overcome obstacles and move forward in order to chase and achieve one's main career goals. Recent findings on samples of Italian students indicated that career adaptability is related to a lower perception of internal and external career barriers, as well as a wider range of career interests, and higher quality of life (Soresi, Nota & Ferrari, 2012). Furthermore, career adaptability has been shown to result in a greater orientation toward future and career decisiveness (Nota, Ginevra & Soresi, 2012), and higher satisfaction (Santilli, Marcionetti, Rochat, Rossier & Nota, 2016; Wilkins et al., 2014).

The present study identified four personal aspects that may influence how students face with these decisional tasks: *career choice anxiety*, *perceived instrumentality of education*, *career decision-making self-efficacy* and *career planning attitude*.

Career decision-making self-efficacy refers to an individual's degree of belief that he/she can successfully perform and complete the tasks required to take career

decisions (Betz, Klein & Taylor, 1996). In general, self-efficacy has been shown to play a crucial role in the self-regulation process of motivation: actually, this personal resource influences the adoption of a specific behavior, the amount of effort expended, and how long it will be sustained in the face of obstacles and aversive experiences (Bandura, 1982). More specifically, empirical evidence suggested that the career decision-making self-efficacy is related to a greater level of engagement in the career decision-making process, particularly in exploration activities (Chiesa, Massei & Guglielmi, 2016).

If on the one hand, career decision-making self-efficacy can foster students to take an educational choice, on the other hand, career decision-making process may be hindered by *career choice anxiety*, that has been defined as affective distress negatively associated with career choice certainty and vocational identity (Vidal-Brown & Thompson, 2001) and positively related to the need for career information and self-knowledge (Dickinson & Tokar, 2004). A critical personal resource for career decision-making is the attitude toward planning (i.e., *career planning attitude*), which reflects a future direction and the involvement in preparing oneself to make long-run occupational or educational choices (Super, Thompson, Lindeman, Myers & Jordaan, 1988). Adolescents' career planning is associated with career decision self-efficacy and several positive outcomes, such as high levels of goal-setting and career expectations and goals (e.g., Rogers, Creed & Glendon, 2008).

Finally, since the outcomes of personal investment in education on one's career will be visible far in the future, a key facet is represented by the *perceived instrumentality of education*, a resource that could meaningfully stimulate students to commit to their choices. Perceived instrumentality entails the individual understanding of the relevance of a present task for valued future goals. This perception boosts the value attributed to the task and, consequently, the level of interest and motivation in fulfilling it. This perception translates into practice when students engage in learning activities given the value that they can represent for their educational and professional future (Miller & Brickman, 2004). Thus, a first goal of the present research was to explore the psychometrics properties of a scale aimed at assessing the four facets of career decision-making process among middle school students: *career choice anxiety*, *perceived instrumentality of education*, *career decision-making self-efficacy* and *career planning attitude*.

Personal resources for school adjustment: Psychological Capital

The positive psychology movement inspired the conception of the Positive Organizational Behavior (POB), that is “the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today’s workplace” (Luthans, 2002, p. 59). This theoretical framework led to the definition of Psychological Capital (PsyCap), a personal resource that entails “an individual’s positive psychological state of development that is characterized by: (1) having confidence (*self-efficacy*) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (*optimism*) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (*hope*) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (*resiliency*) to attain success” (Luthans, Youssef & Avolio, 2007, p. 3). PsyCap represents a second-order construct determined by the shared variance between the four positive psychological resources described, each of which has demonstrated both discriminant and convergent validity (Newman, Ucbasaran, Zhu, & Hirst, 2014). A key characteristic of PsyCap, that makes it a very interesting construct both for scholars and practitioners, is represented by its state-like nature, that implies the opportunity to develop and implement intervention strategies able to promote this resource that, in turn, has been shown to foster employees’ levels of engagement in their work and to prevent them from harmful outcomes such as symptoms of psychological distress (Mazzetti, Guglielmi, Chiesa & Mariani, 2016). Although PsyCap has been originally applied to the investigation within organizational settings, empirical research has started to explore and support its positive association with the academic performance. Siu, Bakker and Jiang (2014) found that PsyCap affect the university students’ engagement through the enhancement of intrinsic motivation. Moreover, Luthans, Luthans and Palmer (2016) indicated that PsyCap is associated with student-faculty engagement, community-based activities, and transformational learning opportunities.

Finally, a great amount of studies confirmed the relationship between the individual psychological resources that constitute PsyCap and positive academic outcomes. Indeed, the individual confidence in one’s ability to attain any desired goal can predict several positive outcomes, such as academic performance

(Valentine, DuBois & Cooper, 2004), and may also foster students’ levels of effort, persistence, and perseverance (Zeldin & Pajares, 2000). In addition, empirical results revealed that optimistic students report a greater performance when compared to their pessimistic colleagues and a higher level of engagement in their study activity (Medlin & Faulk, 2011). Moreover, previous findings suggested that high levels of hope among university students may result in a greater student engagement, as well as an improved academic performance (Van Ryzin, 2011). Additionally, students characterized by the ability to tackle and overcome successfully potential adversities and risks also report higher levels of study enjoyment and an active participation in schools’ activities (Martin & Marsh, 2006). Furthermore, optimism and hope represent personal resources able to foster the experienced level of satisfaction through career adaptability among adolescents (Santilli et al., 2016; Wilkins et al., 2014). In line with this theoretical background and the empirical results described, a second aim of the current study was to validate a scale measuring the four PsyCap dimensions (i.e., *hope*, *resiliency*, *self-efficacy* and *optimism*) on a sample of middle school students.

Development of the PsyCap and CDMP scales

Two different lists of items were created in order to describe actual behaviors and attitudes able to capture and describe the key characteristics of Psychological Capital and Career Decision-Making Process among middle school students. Based on the theoretical perspectives and empirical evidence described, we developed an initial set of 6 items for each PsyCap dimension (i.e., *hope*, *resiliency*, *self-efficacy* and *optimism*) and each core resource that could enable the Career Decision-Making Process among middle school students (i.e., *career choice anxiety*, *perceived instrumentality of education*, *career decision-making self-efficacy* and *career planning attitude*). In order to elaborate a sound and pertinent instrument, the content validity of these different sets of items was assessed using a panel of five judges who have worked on average 11 years as academic researchers in the field of education studies and vocational psychology. In particular, the panel was composed of four women and one man, with a $M_{age} = 34.4$ ($SD = 7.16$). The content validity of these pools of items was evaluated using the procedure proposed by Lynn (1986). The five judges were asked to evaluate the content

validity of items using two main criteria: 1) *Theoretical relevance*: each of the 6 items included in the afore-mentioned pools was evaluated considering its pertinence in describing attitudes/behaviors referable to the theoretical definition of the specific resource involved; 2) *Suitability to the target population*. As these instruments were intended for middle school students, a further criterion was the level of suitability and clarity with regard to this target population.

These two aspects were evaluated independently by each judge on a 4-point Likert scale including the following response options: 1 = irrelevant; 2 = somewhat relevant; 3 = quite relevant and 4 = extremely relevant. The Item-level Content Validity Index (I-CVI) was calculated using the number of judges giving a rating of either 3 or 4 divided by the total number of judges in the panel. In line with the guidelines provided by Lynn (1986), the I-CVI must be equal to 1.00 when the panel consists of 5 or fewer judges: accordingly, in the current study only items reporting a total agreement among judges for both the above-mentioned criteria (clarity of language and theoretical dimension) were considered in the final version of the scales. As a result, each subscale within the PsyCap scale (i.e., *hope, resiliency, self-efficacy* and *optimism*) and the CDMP scale (i.e., *career choice anxiety, perceived instrumentality of education, career decision-making self-efficacy* and *career planning attitude*) included 4 items. Thus, the PsyCap and the CDMP scales were composed of 16 items each. Then, the Content Validity Index for the overall scale (i.e., S-CVI) was calculated as the average I-CVI across items. Since the PsyCap and the CDMP scales included only items reporting an I-CVI of 1.00, in the current study the S-CVI was equal to 1.00, thus exceeding the cutoff of .80, considered as a rule of thumb for an acceptable content validity of the scales (Davis, 1992).

AIMS

Based on the theoretical background already described, the aim of the current study was to describe the process that led to the development and validation of two questionnaires designed to assess the core aspects of Psychological Capital (PsyCap) and Career Decision-Making Process (CDMP) among middle school students. In particular, the purposes were: (1) to develop and evaluate the factorial validity of two questionnaires aimed at measuring the key dimensions of psychological capital and the resources able to ease the career decision-making process (*Study 1*); (2) to cross-validate the results of the exploratory

factor analysis conducted in Study 1, through a confirmatory factor analysis investigation aimed at supporting the factorial structure previously identified (*Study 2*).

METHODS

Participants and procedure

In order to evaluate the psychometric properties of the PsyCap and the CDMP scales previously developed, data were collected on two different samples. Both samples consisted of middle school students from different Italian regions, who filled-out an online questionnaire as part of a project concerning school career guidance. For both scales, all items were scored on the following five-point Likert scale: 1 = *Not at all*, 2 = *Slightly*, 3 = *Moderately*, 4 = *Very*, 5 = *Extremely*. First, the psychometric properties of the PsyCap and the CDMP scales were explored using an exploratory factor analysis conducted on Sample 1 ($N = 602$), where the slight majority were men (51.2%) and the mean age was 12.91 ($SD = 1.09$). Then, a confirmatory factor analysis was performed on Sample 2 ($N = 989$). Within this sample, 51.4 of respondents were men and the mean age was 12.92 ($SD = 1.30$).

RESULTS

Sample 1: Exploratory factor analysis

The factorial structure of our questionnaires was evaluated through a principal component analysis (PCA) on the 16 items of each scale with oblique rotation. In the current study, only factors with an Eigenvalue ≥ 1 were considered. Moreover, a cut-off value of loading larger than .40 was used as a criterion to retain items. The obtained results supported the hypothesized 4-factor structure of both the PsyCap and the CDMP scales. Furthermore, the dimensions of both scales reported an internal consistency above the criterion of .65 (DeVellis, 2003). Concerning the PsyCap scale, the factor labelled as *hope* explained 15.57% of the variance, the factor named as *resiliency* explained 14.96% of the variance, the factor corresponding to the *self-efficacy* dimension explained 14.5% of the variance and the *optimism* factor explained 12.65% of the variance. Together, these four factors explained 57.68% of the variance. Table 1 reports the items (in Italian),

Table 1 – Exploratory factor analysis results of the PsyCap scale ($N = 602$)

Items	M	SD	Item loadings			
			Factor 1 Hope	Factor 2 Resiliency	Factor 3 Self-Efficacy	Factor 4 Optimism
1. Ho diversi modi in mente per ottenere le cose che per me sono più importanti	3.96	.85	.58			
2. Quando ho un problema penso a diversi modi per risolverlo	3.68	.85	.81			
3. Anche nelle situazioni dove gli altri non vedono una soluzione, io riesco a trovare il modo per risolvere il problema	3.86	.95	.75			
4. Penso che ogni problema possa essere risolto in tanti modi differenti	4.01	.82	.73			
5. Sono bravo a reagire quando incontro degli ostacoli (ad esempio, se prendo un brutto voto a scuola o se i professori mi dicono che non ho svolto bene un compito)	3.49	.91	.55			
6. Faccio in modo che lo stress derivante dallo studio non mi travolga	3.57	.97	.70			
7. Penso di essere bravo a resistere all'ansia dei compiti o delle verifiche a scuola	3.17	.95	.84			
8. Sono capace di controllare emozioni e paure che potrebbero crearmi difficoltà nel raggiungere buoni risultati a scuola	3.68	.92	.73			
9. A scuola è soprattutto il mio impegno a portarmi ad avere buoni risultati	3.44	.98	.81			
10. Riesco ad affrontare lo studio in modo da ottenere delle valutazioni positive	3.13	1.11	.76			
11. Penso che le cose che ho fatto in passato potranno aiutarmi per affrontare il futuro	2.98	1.22	.63			
12. Grazie all'impegno riesco a raggiungere i miei obiettivi	3.24	1.02	.72			
13. Anche se possono capitare degli imprevisti, sono fiducioso riguardo il futuro	3.31	1.20	.74			
14. Affronto le situazioni con ottimismo	3.41	1.12	.46			
15. In genere mi aspetto che le cose vadano per il verso giusto	3.43	1.14	.78			
16. Spesso penso che mi capiterà qualcosa di bello	3.47	1.18	.75			
Eigenvalue	4.60	1.75	1.60	1.28		
% of variance	15.57	14.96	14.50	12.65		
Cronbach's α	.74	.75	.74	.70		

their means, standard deviations, internal consistency (Cronbach's α), and factor loadings.

Within the CDMP scale, the factor labelled as *career choice anxiety* explained 18.8% of the variance, the factor corresponding to the *perceived instrumentality of education* explained 16.91% of the variance, the *career decision-making self-efficacy* dimension explained 15.35% of the variance and the last factor, named as *career planning attitude*, explained 12.38% of the variance. Overall, these dimensions explained 63.44% of the variance.

Descriptive results for the CDMP and factor loadings are indicated in Table 2.

Sample 2: Confirmatory factor analysis

With the purpose of corroborating the results obtained through the exploratory factor analysis performed on Sample 1, the four-factor structure of the PsyCap scale (i.e.,

Table 2 – Exploratory factor analysis results of the CDMP scale ($N = 602$).

	Items
1.	Sono in grado di raccogliere le informazioni che mi servono riguardo le scuole superiori a cui sono interessato
2.	Se avessi una lista di tutte le scuole superiori, saprei scegliere quelle che più mi interessano
3.	Penso che adesso saprei già dire quale scuola superiore sarebbe meglio che io scegliessi
4.	Sono già in grado di scegliere la scuola superiore più adatta ai miei interessi
5.	Penso che raccogliere più informazioni possibili sulle scuole superiori che potrei frequentare mi permetterà di scegliere quella più adatta a me
6.	Devo riflettere con attenzione sui miei interessi e le mie capacità per poter scegliere l'indirizzo di studi più giusto per me
7.	Penso di dover raccogliere più informazioni di quelle che già ho riguardo gli indirizzi di studio delle scuole superiori
8.	Ho intenzione di confrontarmi con diverse persone (ad esempio, genitori, professori e compagni di scuola) riguardo le scuole superiori che potrebbero interessarmi
9.	Mi interessa molto continuare a studiare
10.	Penso che le energie che si impiegano nello studio siano ben spese
11.	Penso che studiare sia importante se si vuole avere successo nella vita
12.	Credo che lo studio sia importante per il mio futuro
13.	Se penso al futuro, ho paura che potrei scegliere un percorso di studi che in realtà potrebbe non essere adatto a me
14.	Sono preoccupato per la scelta della scuola superiore perché questa decisione porterà dei cambiamenti importanti nella mia vita
15.	Sono preoccupato per la scelta della scuola superiore perché se dovessi sbagliare mi sentirei responsabile di questo errore
16.	Pensare di scegliere la scuola superiore mi fa sentire agitato perché è una decisione che richiede molto sforzo
Eigenvalue	
% of variance	
Cronbach's α	

hope, resiliency, self-efficacy and optimism) and the CDMP scale (*i.e., career choice anxiety, perceived instrumentality of education, career decision-making self-efficacy and career planning attitude*) was tested on Sample 2 (N = 989) using a confirmatory factor analysis with the AMOS software package (Arbuckle, 2005). Several indices were examined in order to assess model fit: the χ^2 goodness-of-fit statistic, the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), the Goodness of Fit Index (GFI), and the Root Mean Square Error of Approximation (RMSEA).

Values $\geq .90$ for TLI, CFI and GFI, and values $\leq .08$ for RMSEA indicate acceptable fit (Byrne, 2001). The fit indices of the CFA's for the PsyCap and the CDMP scales are reported in Table 3.

The four-factor model obtained in the exploratory factor analysis showed a good fit to our data for both the PsyCap and the CDMP scales, with all values consistent with the criteria previously defined as a norm for a satisfactory fit. The item loadings and the correlations between the four dimensions of the PsyCap are illustrated in Figure 1.

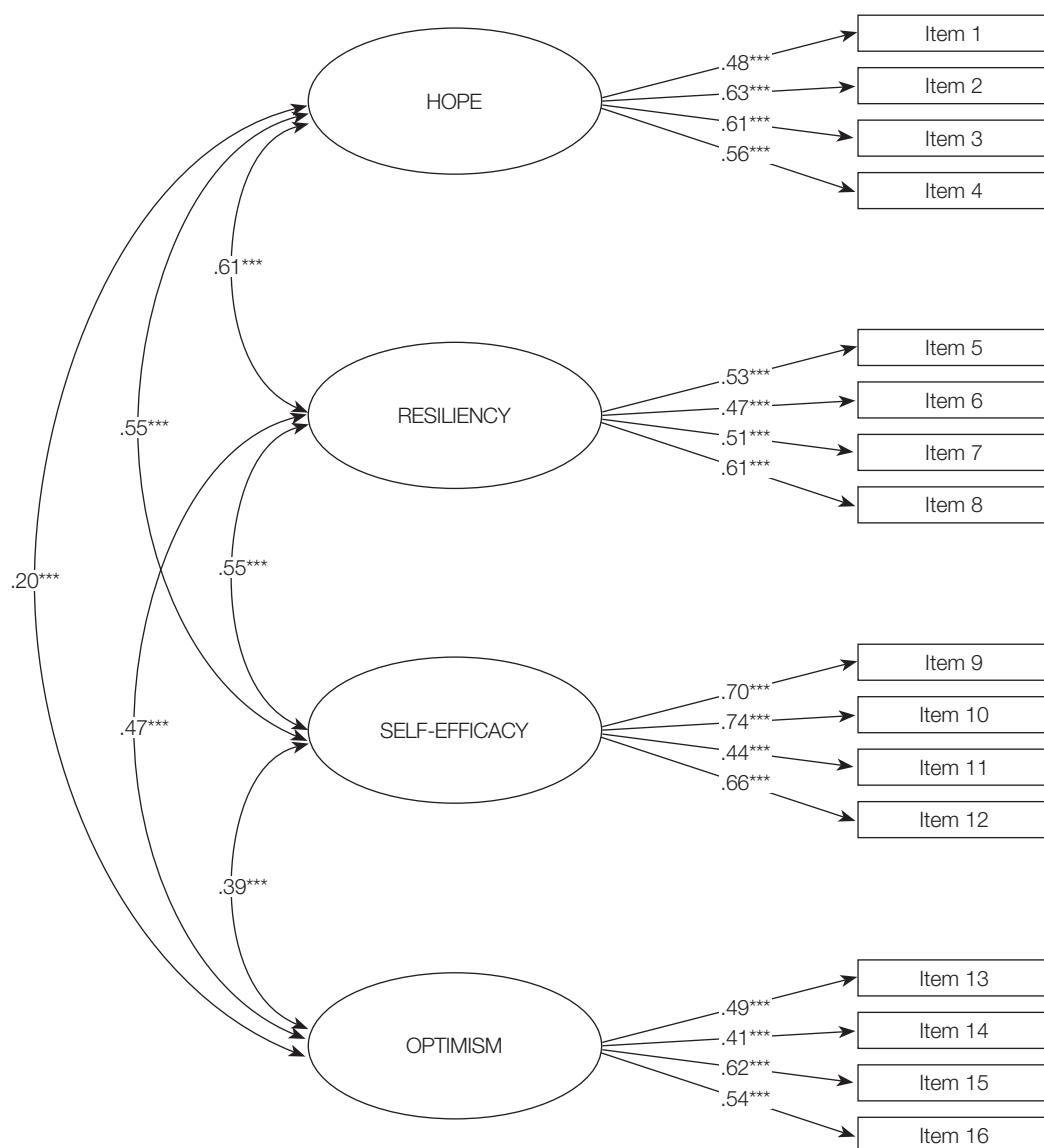
Item loadings					
M	SD	Factor 1	Factor 2	Factor 3	Factor 4
		Career Decision-Making Self-Efficacy	Career Planning Attitude	Perceived Instrumentality of Education	Career Choice Anxiety
3.39	.99	.66			
3.42	1.23	.79			
2.97	1.33	.75			
2.94	1.33	.78			
4.13	.85		.77		
3.98	.91		.48		
3.60	1		.70		
3.76	1.04		.68		
3.74	1			.77	
3.87	.92			.74	
4.35	.80			.85	
4.36	.81			.83	
3.08	1.22				.80
3.29	1.19				.80
3.22	1.30				.81
3.01	1.21				.72
		4.21	3.54	1.41	1
		18.8	16.91	15.35	12.38
		.84	.83	.80	.67

Table 3 – CFA fit indices of the PsyCap and the CDMP scales in Sample 2 ($N = 989$).

Model	χ^2	df	TLI	CFI	GFI	RMSEA
PsyCap scale - Four-factor model	340.26***	98	.90	.91	.96	.06
CDMP scale - Four-factor model	373.25***	98	.93	.95	.96	.05

Note. *** $p < .001$

Legenda. χ^2 = chi-square; df = degrees of freedom; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; GFI = Goodness of Fit Index; RMSEA = Root Mean Square Error of Approximation.

Figure 1 – Standardized path coefficients of the Psychological Capital (PsyCap) scale

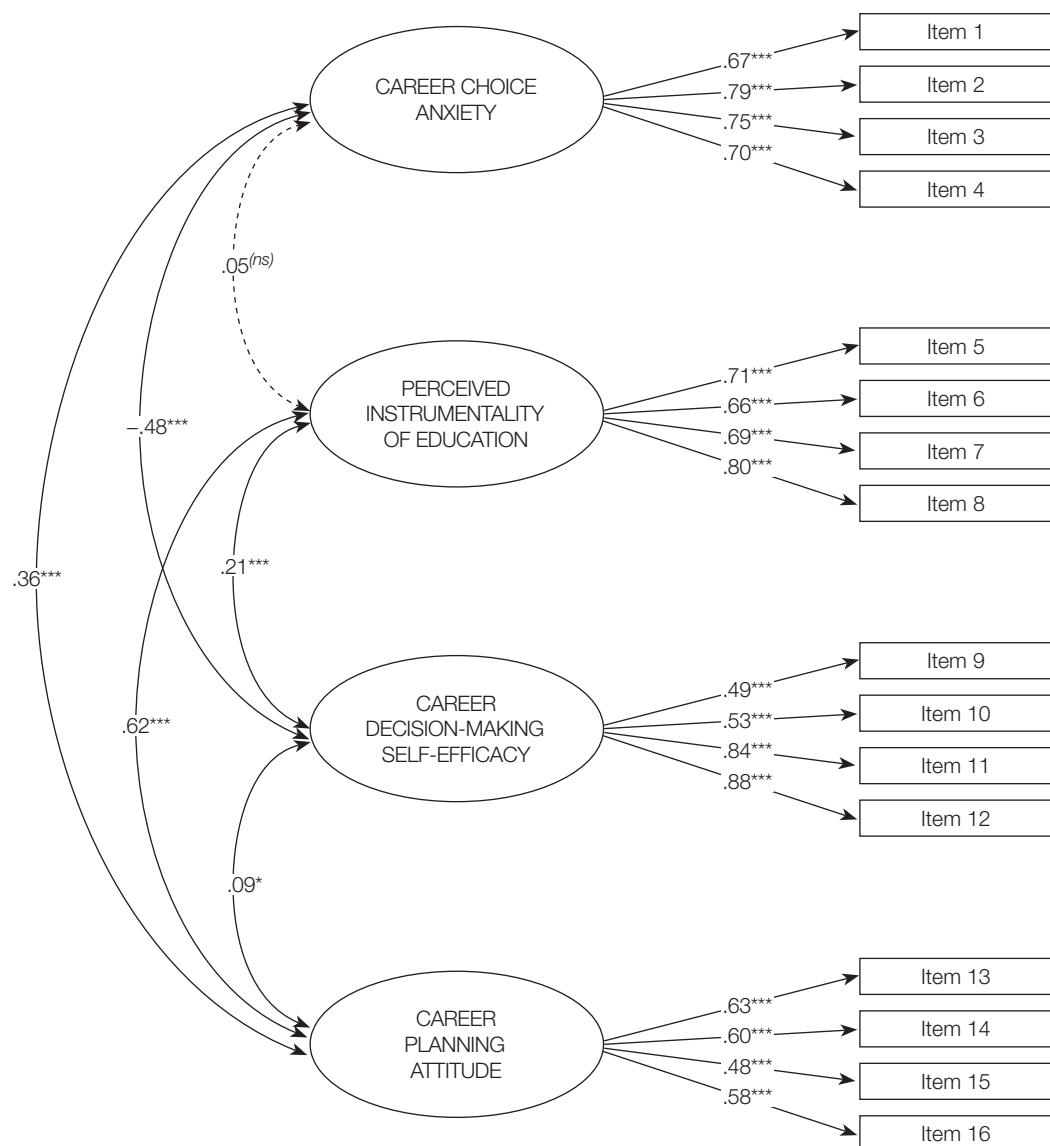
Note. *** $p < .001$

It should be noted that all items loaded significantly on the corresponding latent factor, with coefficients ranging from .41 to .74 (all $p < .001$). Moreover, the four resources composing the PsyCap (i.e., *hope*, *resiliency*, *self-efficacy* and *optimism*) were significantly correlated with each other.

Figure 2 illustrates the item loadings and the correlation coefficients between the four dimensions of the CDMP scale: *career choice anxiety*, *perceived instrumentality of*

education, *career decision-making self-efficacy* and *career planning attitude*. As for the PsyCap scale, all items reported a significant loading on their corresponding latent dimension, with coefficients ranging from .48 to .88 (all $p < .001$). In addition, the four latent factors were significantly related, excluding the relationship between career choice anxiety and perceived instrumentality of education ($r = .05$, $p = .240$).

Figure 2 – Standardized path coefficients of the Career Decision-Making Process (CDMP) scale



Note. * $p < .05$; *** $p < .001$; dotted lines denote non-significant coefficients.

DISCUSSION

This study presented two different measures aimed at assessing complementary facets of personal resources that can facilitate the career decision-making process and that anticipate the capacity to adapt to a different environment during the students' transition from middle to high school. To this purpose, data obtained on two independent samples of middle school students were used to perform exploratory and confirmatory factor analyses that provided evidence for two theoretically interpretable 16-items scales constituted of 4 factors each.

Namely, these results suggest that the PsyCap scale is a factorially valid and internally consistent measure of the four dimensions of Psychological Capital (i.e., hope, resilience, self-efficacy and optimism). Furthermore, the obtained evidence supported the suitability of the Career Decision-Making Process (CDMP) scale, as a valuable measure of the four facets of Career Decision-Making Process (i.e., *career choice anxiety, perceived instrumentality of education, career decision-making self-efficacy and career planning attitude*) among middle school students.

On the other hand, there are some limitations that should be acknowledged. First, all participants were Italian. Thus, future research based on the English version of the PsyCap and the CDMP scales would allow to test whether these scales produce the same results across different countries. Moreover, in the current study we did not gather data using other measures that allowed to examine whether our measures correlate well with validated scales. Hence, the concurrent validity of our measures was not tested. Analogously, we did not collect data aimed at testing discriminant validity, defined as the evidence that measures of constructs that theoretically should not be highly related to each other are, in fact, not found to be highly correlated to each other. Thus, future studies should explore these properties of the scales here developed.

Overall, it can be concluded that the PsyCap and the CDMP scales represent two factorially valid and internally consistent measures of those resources that have been identified as crucial tools in order to handle successfully the career decision-making process and also to cope with the challenges involved in the transition from the middle to the high school. In particular, the current study contributes to fill the gap of literature on the career decision-making process during the transition from middle to high school (Bardick et al., 2006). This transition requires adolescents to plan their

future anticipating the academic challenges that will be faced at the high school (Benner, 2011), as well as their occupational aspiration at the end of the high school. Since PsyCap has been identified as a crucial predictor of students' engagement and motivation (Bakker & Jiang, 2014), the PsyCap scale here validated may represent a strategic tool in order to evaluate the resource pool available for adjusting to the high school environment. In a similar vein, the CDMP scale was designed to investigate four personal resources able to foster a positive attitude towards the career decision-making process during the transition to high school. Specifically, career decision-making self-efficacy and career planning attitudes may support the motivation to engage in the career decision process, as well as the collection of information about oneself and environment, while career choice anxiety and perceived instrumentality of education may affect the level of commitment to a particular career choice (Germeijs & Verschueren, 2006).

To summarize, these instruments may represent valuable tools for scholars and professionals involved in career guidance and counseling interventions among students facing critical career transitions, in agreement with the emerging focus on healthy functioning and well-being, that has increasingly encouraged the application of the positive psychology approach into non-clinical settings (Robertson, 2017).

In particular, they could be crucial for two specific purposes: first, they may provide the foundation for a suitable analysis of the vocational needs expressed by a specific target population and, subsequently, for developing tailored interventions that consider participants' strengths and weaknesses. Furthermore, they could be employed as instruments able to promote a process of self-exploration, a crucial component of the career decision-making process.

In terms of future perspectives of intervention, it should be noted that the personal resources under investigation could be significantly enhanced through specific intervention strategies that, in turn, may foster the level of well-being among middle school students. For instance, Luthans, Avey and Patera (2008) developed and tested a short training intervention that has been shown to increase the four dimensions of Psychological Capital among employees and, consequently, to attain higher levels of psychological well-being. In line with the current study, investing in intervention strategies aimed at fostering Psychological Capital and the resources involved in the Career Decision-Making Process could be particularly useful for students tackling their first vocational choice.

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