Scholastic psychological well-being and irrational thoughts in students of primary and secondary school: An Italian study

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ABSTRACT

The period of pre-adolescence is a period of age transition during which undesirable feelings such as anxiety, shyness, guilt, depression and anger are experienced accompanied by physical and hormonal changes experienced during puberty. Therefore, during early adolescence the psychological well-being is a critical issue. This period of transition coincides to the passage from the primary to the secondary school in Italy. This transition could have some effects on the psychological well-being on children, in particular on their scholastic well-being. In addition, during early adolescence children develop irrational thoughts. We tested, therefore, the variation of scholastic well-being and irrational thoughts in children of the primary (n = 50; mean age 10.5; 56 % females) and secondary school (n = 61; mean age 11.5; 49 % females). Results showed that children of the secondary school have lower scholastic well-being and higher level of irrational thoughts than children of primary school. In particular, during the transition from the primary to the secondary school, children showed a lower level of satisfaction with academic results and the perception of a low support from their teachers. In addition, there was also a stronger reduction of self-esteem and an increment of distrust in achieving scholastic success. A scholastic psychological support, with particular attention to the emotional development of early-adolescents, is suggested.

1. Introduction

Scholastic psychological well-being (SPWB) is a composition of positive experiences, satisfaction, happiness and the possession of skills- e.g., cognitive skills, coping capacity and resilience (Tobia & Marzocchi, 2015a). Internationally, the importance of promoting scholastic well-being has been recognized in movements such as the WHO Health Promoting Schools in Europe (Rasmussen & Rivett, 2000) and the Co-ordinated School Health Program in the US context (Murray et al., 2007). SPWB is an important element for a successful scholastic career (Chow, 2007).

Konu and Rimpela (2002) proposed an overall model of SPWB, the School Well Being Model, on the basis of Allardt's (1989) sociological model of well-being. The authors identified four categories of well-being indicators in school: presence of structural conditions and characteristics (having); quality of social relationships (loving); availability of means and resources for self-realization (being); health condition (health). In particular, the having indicator is referred to the presence of a safe, secure, non-noisy environment that facilitates the execution of the teaching activity. However, a comfortable environment is not the only condition to assure SPWB. Oher important issues are good relationships of students with teachers and parents (loving), the possibility to have positive learning experiences and the ability to develop personal abilities and self-realization (being). Obviously, the absence of physical and psychological health problem is another important factor for SPWB (Allardt, 1989).

Recent studies showed that the analysis of SPWB should be done starting from children's perspective (Bourke & Geldens, 2007; Skattebol et al., 2013). Watson et al. (2012) argue that well-being cannot be understood except in the context of the subjective experience of the children themselves.

One of the most prominent aspect in SPWB are children's beliefs about their cognitive abilities. In particular, irrational beliefs can have negative effects on their psychological condition and on their scholastic performance (Zyromski & Joseph, 2008).

Irrational beliefs, according to Ellis, are characterized by extreme rigidity, illogicity, contradiction with reality and they prevent children people from reaching well-being (Ellis & Dryden, 1987). High levels of

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irrational beliefs generate negative emotions, low self-efficacy and lack of satisfaction which thwart individuals' efforts to change and to adapt their cognitive strategies in relation to the difficulty of the problem (Ellis, 1994).

Following Allardt's and Ellis' theory we decided to study the variation of irrational thoughts and of SPWB in students of the primary and secondary school.

The period of pre-adolescence (early adolescence), which covers the transition from childhood to adolescence (approximately 11–14 years), is a period during which undesirable feelings such as anxiety, shyness, guilt, depression and anger are experienced accompanied by physical and hormonal changes experienced during puberty (Vernon & Schimmel, 2004). During pre-adolescence, emotional regulation is linked to psychological well-being: poor regulatory competence can contribute to the onset of psychopathological symptoms (Garnefski et al., 2005), in particular of the depressive type (Siener & Kerns, 2012). Furthermore, non-adaptive regulatory strategies, such as excessive rumination, suppression and avoidance, are risk factors for the development of anxiety disorders (Silk et al., 2003) and externalizing problems (Rydell et al., 2007). During this time, adolescents may experience anxiety and stress due to issues such as their physical appearance, popularity, peer rejection, peer pressure, or growing independence from adults (Stone & Bradley, 1994). Some studies indicate that satisfaction with life decreases (Chang et al., 2003) and anxiety traits increase (Byrne, 2000) in the first years of adolescence. Towards the end of pre-adolescence, anger increases (Roeser & Eccles, 1998) and satisfaction with school and family decreases (Huebner et al., 2005). Similarly, irrational beliefs are higher in pre-adolescence than in late adolescence (Marcotte, 1996). Given these findings, preadolescents may have difficulty in experiencing positive emotions and evaluating their life in a positive way.

Some studies showed that there are significant connections between depression and cognitive impairment in adolescents (Garber et al., 1993; Haley et al., 1985; Marton et al., 1993). Marcotte (1996) found that depressive symptoms increase during adolescence, especially between 15 and 16 years. The increment of depressive symptoms is higher in females than in males. Probably this increment is due to the changes of body image (Dornbusch et al., 1984), but also the tendency to develop irrational thoughts can have an effect on it (Marton et al., 1993). Other studies showed that the tolerance to frustration, the excessive demands on one's abilities and the low self-esteem have a negative impact on psychological well-being and they also stressed that improving self-esteem and reducing irrational thoughts about personal abilities could reduce the risk of depression (Elkind, 1967; Marcotte & Baron, 1993).

Adolescents' well-being is also connected to social relationships. Parental social support (Suldo & Huebner, 2004), the parental warmth (Chang et al., 2003), the quality of parental relationships (Huebner et al., 1999; Leung & Zhang, 2000) and the level of attachment with parents (Huebner et al., 1999; Leung & Zhang, 2000) have been shown to have an important impact on life satisfaction for adolescents. Wenz-Gross et al. (1997), revealed that students can cope better with depression and improve their self-esteem if they have parental support and they can cope better with school stress if they have the support of teachers.

Çivitci and colleagues showed that irrational thoughts have a negative impact on adolescents' well-being. In particular, the authors showed that the demand for comfort is an important predicting factor of well-being (Çivitci, 2009). Demand of comfort is the belief that life must be comfortable and positive. Adolescents with a higher request of comfort tend to have low levels of psychological well-being, especially for girls (Çivitci, 2009).

Early adolescence is a period characterized by an intense self-experimentation and the verification of one's relational and cognitive abilities (Pombeni, 1993). The major critical point of this phase is the onset of risky behaviors and school dropout (Nicolò & Zavattini, 1992). Therefore, the beliefs and thoughts about personal competence, self-efficacy, ability to reach personal goals, self-esteem and approval and

respect from others are, probably, fundamental issues for SPWB. The other important aspect concerns the transition from the primary to the secondary school. Secondary school compared to primary school implies a greater workload and the transition from a context characterized by more "caring" relationships to a context that, more explicitly, individuals are evaluated more on their learning abilities and scholastic achievements. Changes in social context can coincide with an increment of learning requests, form teachers and parents, and this can provoke an increment of irrational thoughts.

A problematic transition from the primary to the secondary school can affect students' scholastic success both directly, by worsening school results and achievements, and indirectly, by reducing self-esteem and study motivation (Coffey, 2013; Corbière, 1997; West et al., 2010). In relation to previous studies (Çivitci, 2009; Marcotte, 1996; Tobia & Marzocchi, 2015a; West et al., 2010), we predict a reduction in school well-being and an increase in irrational thoughts in students of secondary school.

We developed the following hypotheses:

H1. : Irrational thoughts are higher in students of secondary school than in students of primary schools.

H2. : SPWB level is lower in students of secondary school than in students of primary schools.

In relation to these hypotheses, we developed further hypotheses. Because irrational thoughts are considered as probable causes of SPWB, we tested if:

H3. : Irrational thoughts significantly predict SPWB (in particular, higher irrational thoughts are related to lower SPWB).

H3 was then divided into two sub-hypotheses to test the moderator effect of scholastic level (primary vs. secondary school) and gender of students. In particular, we wanted to test if the predictive power of irrational thoughts was greater in students of the secondary school than in students of the primary school (in this case the secondary school strengthen the connection between irrational thoughts and SPWB) and if it was greater in girls than in boys. Therefore, we proposed two sub-hypotheses:

H3a. : Irrational thoughts have more predictive power of SPWB in students of secondary school.

H3b. : Irrational thoughts have more predictive power of SPWB in girls.

2. Methods

2.1. Participants

111 children participated in the study. 50 children attended the last year of the primary school (2 classrooms) and 61 the first year of the secondary school (3 classrooms) in Laterza, a town in the region of Puglia of the southern part of Italy. 52.3 % of children were females (56 % and 49 % in primary and secondary school, respectively). The mean age and relative standard deviation (SD) were 10.5 years (SD = 0.503) and 11.5 (SD = 0.502) for children of the primary and secondary school, respectively. The family background of the two groups was similar in social extraction, employment condition and socio-economical status. Table 1 shows the demographic characteristics (income level, education level and employment) of the population settled in Laterza (data are obtained from the last ISTAT census of Italian population, ISTAT, 2019). The small size of the town (about 15,000 inhabitants), the fact that Italian schools are public schools in which children are aggregated in classrooms independently from the demographic characteristics and the low presence of immigrants in relation to the global population (1.8 %) contribute to increase the homogeneity of demographic characteristics between primary and secondary school.

Table 1

Demographic characteristics of the resident population in Laterza during the research phase. Data are from Italian population census 2019 (ISTAT, 2019).

Income level	Percentages(%)	Education level	Percentages(%)	Employment	Percentages(%)
< € 10,000	42.0	No education	7.2	Unemployed	9.3
€ 10,000–€ 25,000	16.9	Primary	18.4	Employed	39.9
€ 15,000–€ 26,000	26.5	Secondary	32.4	Casual worker	7.2
€ 26,000–€ 55,000	13.6	High school	34.8	Student	9.3
€ 55,000–€ 75,000	0.5	University degree	7.2	Homeworker	12.5
€ 75,000–€ 120,000	0.4			Pensioned	21.9
> € 120,000	0.2				

2.2. Materials

2.2.1. The Questionnaire for the assessment of school well-being (Questionario del Benessere Scolastico or QBS-B/R 8–13; Tobia & Marzocchi, 2015b)

The QBS-B can be compiled by children attending from the third to the fifth grade of primary school and the QBS-R can be compiled by children, from the first to the third class of the secondary school. They represent two parallel versions of the same questionnaire (the B version for "children" and the R version for "boys/girls"), with the same structure and the same items, but referring to different populations for standardized scores. The QBS is a questionnaire to collect information about the quality of child's experience at school. This questionnaire includes 27 items. Rating are given on a 3 step Likert scale (0 = not true, 1 = quite true, 2 = very true). The items are divided into five subscales that allow the calculation of an overall scholastic well-being score. The subscales are:

2.2.2. Satisfaction and recognition (SR)

The subscale consists of 4 items which measure children's level of satisfaction with their academic results and perception that their commitment and skills are appreciated by parents and teachers (e.g.: "I am satisfied with my scholastic achievements").

2.2.3. Relationship with teachers (RT)

The subscale consists of 5 items which assess children's level of trust in teachers and confidence in emotional availability, support and recognition from teachers (e.g.: "I feel comfortable with my teachers").

2.2.4. Relationship with classmates (RC)

The subscale consists of 5 items which assess children's experience of acceptance by the other members of the class, level of trust in classmates and the presence of significant friendships (e.g.: "I have many friends in the classroom").

2.2.5. Emotional attitude at school (EA)

The subscale consists of 4 items that measure the emotional reactions of children in dealing with school requests and their experiences of anxiety, shame and guilt (e.g.: "I am ashamed to speak in front of the whole class").

2.2.6. Sense of self-efficacy (SE)

The subscale consists of 6 items that assess children's perception of self-efficacy, taking into consideration his point of view on the necessary cognitive and learning abilities to be successful at school (e.g.: "I easily learn new things").

There are also 3 items, not included in the five subscales and not used to calculate the global score, that can used to identify the probable causes put in place by the children. These probable causes are the excessive difficulty of homework, the necessity to be helped when doing homework, the belief to be less intelligent than others when failing homework.

2.2.7. The inventory of dysfunctional thinking (IDT; Ciarrochi & Bailey, 2008)

We used the Italian version of the IDT (Di Pietro, 2016). The IDT is used in the cognitive-behavior therapy clinical practice to assess the level of irrational thoughts and dysfunctional thinking (Ciarrochi, 2004; Ciarrochi & Bailey, 2008) and it is based on Ellis' theory of irrational beliefs (Ellis, 1994; Ellis & Dryden, 1987). The inventory consists of 30 items on a 5 steps Likert scale (never, rarely, sometimes, often, always). Participants are asked to consider the events of the last month when responding. The items are divided into six subscales, each including 5 items.

2.2.8. Strength (Str)

This subscale assesses the tendency to be perfect and to always achieve a high degree of success and self-efficacy in every activity (e.g.: "I must be the best at whatever I do").

2.2.9. Low self-esteem (self)

This subscale assesses thoughts relating to low self-esteem and the tendency to evaluate oneself as not enough capable (e.g.: "I am a worthless person").

2.2.10. Love and approval (love)

This subscale is related to the necessity to be the loved and approved by others (e.g.: "I need the approval of others").

2.2.11. Avoidance (avoid)

This subscale assesses the tendency to avoid painful thoughts and negative emotions (e.g.: "I must not have negative emotions").

2.2.12. Thoughts as insurmountable obstacles (Obst)

This subscale assesses the strength of the belief that irrational thoughts and emotions are insurmountable obstacles for effective actions (e.g.: "My emotions are an obstacle in my life").

2.2.13. Hope (hope)

This subscale assesses hopelessness and the intensity of believing that it is impossible to get what you want (e.g.: "Things never go the way I want them to").

In the original version of the IDT a global score of dysfunctional thinking was not considered, even if the subscale scores are intercorrelated (Ciarrochi & Bailey, 2008).

2.2.14. Procedure

The study was a cross-sectional study. Children and parents were recruited through a series of meetings between the research staff and families. In these meetings the reasons for the research and the procedures adopted to collect the data were explained to the parents and teaching staff of the school. Participation was voluntary and not paid. Before testing the children, parents, who accepted to participate, were contacted through the assistance of teachers and signed the informed consent for participation in the research. In the consent sheet they were given information about respect for privacy, according the Italian and European laws (Italian law n. 196/2003 and EU GDPR 679/2016, respectively).

Participants were tested in the second term of the school year. Before collecting the data, the examiner gave a brief explanation about the research and explained how to compile the questionnaires. Additional explanations were provided for children who requested them. The compilation of the questionnaire was anonymous. Questionnaires administration was collective and made during school time. One of the authors (F.L.) went to school in specific days of the week, in accordance with the teachers who were present during the administration. The general manager of the school, who according to the Italian law is responsible of students' safety, accepted the application to perform the research in the school (ref. n. 1471) and the research project was approved by our department. We followed the Helsinki Declaration of Human Rights.

2.2.15. Statistical analyses

We performed different statistical analyses. Descriptives, consistency measures (Cronbach's alpha) of children's scores on QBS and IDT, and bivariate intra- and intercorrelations between subscales both for primary and secondary school group, were reported. Multiple *t*-test were carried on QBS and IDT subscales between primary and secondary school group. A Multigroup Confirmatory Factor Analysis (MG-CFA) was computed for testing measurement invariance between children of the primary and secondary school. We estimated the reliability of the CFA models with χ^2 and goodness of fit indexes. According to Schermelleh-Engel et al. (2003) an acceptable model should have CFI and TLI indexes >0.90, RMSEA <0.10, RMSEA C.I. left boundary <0.8 and SRMR <0.10. We tested the measurement invariance using two CFA models, one for QBS and the other for IDT and we tested, above all, the configural, metric and scalar invariance of models (Meredith, 1993). Then we performed different multiple regression analyses to test if irrational thoughts predict SPWB and if gender affects SPWB. We also estimated Average Variance Extracted (AVE) and Composite Reliability (CR) for both QBS and IDT factorial models. AVE more than or equal to 0.5 confirms the convergent validity. The values of CR between 0.6 and 0.7 are acceptable. If AVE is <0.5, but composite reliability is higher than 0.6, the convergent validity of the construct is still adequate (Shrestha, 2021). According to MacCallum and colleagues, samples for CFA should be in the range between 100 and 200 when the mean value of loadings is about 0.5 and the factor model has a small number of factors (MacCallum et al., 1999). In our case the sample size consists of 111 subjects. All analyses were performed using R (version 4.1.1) and Lavaan package for MG-CFA.

Table 2
Descriptives (mean, standard deviation, skewness and kurtosis) and internal consistency (Cronbach' alpha) of the raw data for each QBS and IDT subscale. sd is the standard deviation. *t*-tests for the mean differences between primary and secondary school group are also reported. *p* values were corrected according to the false discovery rate procedure for multiple *t*-tests (Benjamini & Hochberg, 1995). Significant t values are reported in bold type.

			Mean	sd	Skewness	Kurtosis	Cronbach's α	Lower α	Upper α
Primary school	QBS	SR	1.43	0.44	−0.56	−0.42	0.75	0.64	0.84
		RT	1.70	0.35	−1.11	0.17	0.71	0.58	0.81
		RC	1.60	0.40	−1.45	3.00	0.79	0.71	0.87
		EA	0.95	0.46	−0.29	−0.70	0.52	0.31	0.69
		SE	1.30	0.37	−0.72	0.16	0.64	0.48	0.77
		QBS tot	6.98	1.31	−0.70	−0.07	0.81	0.73	0.88
	IDT	Str	9.08	3.06	1.00	0.52	0.54	0.35	0.71
		Self	7.30	3.19	2.36	7.21	0.72	0.61	0.82
		Love	11.08	3.50	0.42	−0.07	0.50	0.28	0.68
		Avoid	13.64	5.67	0.38	−1.05	0.81	0.72	0.88
		Obst	11.48	4.23	0.61	0.11	0.75	0.64	0.84
		Hope	9.04	3.37	1.38	2.69	0.69	0.56	0.80
Secondary school	QBS	SR	1.19	0.43	−0.29	0.09	0.76	0.67	0.84
		RT	1.46	0.42	−0.50	−0.30	0.71	0.60	0.81
		RC	1.60	0.44	−1.84	4.08	0.79	0.71	0.86
		EA	0.91	0.46	0.26	−0.56	0.40	0.17	0.60
		SE	1.31	0.37	−0.32	−0.44	0.62	0.47	0.74
		QBS tot	6.48	1.29	−0.24	−0.36	0.80	0.72	0.86
	IDT	Str	9.85	3.33	0.44	−0.86	0.54	0.36	0.69
		Self	8.90	3.74	0.86	−0.19	0.66	0.52	0.77
		Love	11.74	4.10	0.35	−0.88	0.62	0.47	0.74
		Avoid	14.05	5.42	0.00	−1.08	0.73	0.62	0.82
		Obst	12.64	4.34	0.31	−0.94	0.70	0.58	0.80
		Hope	11.07	3.79	0.41	−0.69	0.56	0.38	0.70

t-tests			t	p (t)
	QBS	SR	**2.87**	0.01
		RT	**3.32**	0.00
		RC	0.01	0.98
		EA	0.40	0.69
		SE	−0.20	0.84
	IDT	Str	−1.26	0.21
		Self	**−2.40**	0.02
		Love	−0.90	0.37
		Avoid	−0.39	0.70
		Obst	−1.42	0.16
		Hope	**−2.94**	0.00

Note: QBS = Questionnaire for the Assessment of School Well-Being; SR = Satisfaction and recognition; RT = Relationship with teachers, RC = Relationship with classmates; EA = Emotional attitude at school; SE = Sense of self-efficacy. IDT = Inventory of Dysfunctional Thinking; Str = Strength; Self = Low Self-Esteem, Love = Love and approval; Avoid = Avoidance, Obst = Thoughts as Insurmountable Obstacles; Hope = Hope.

3. Results

Table 2 reports descriptives (mean, standard deviation, skewness and kurtosis) for QBS and SDT. The skewness and kurtosis values of the subscales of the various subscales are mostly included in the range of values −2 and +2. For QBS, only RC subscale has kurtosis > |2|. For IDT, only Self subscale has skewness and kurtosis >|2| and Hope subscale has kurtosis >|2|, but only for primary school children. Therefore, data distributions of subjective responses are sufficiently normal (Trochim & Donnelly, 2010). Regarding reliability, Table 1 reports Cronbach's alphas and the relative confidence interval (95 %). Most of the Cronbach's alpha values are good (>0.70) or acceptable (>0.60; Kline, 2000). Only for some subscales (EA and Str both for primary and secondary school group) the reliability values are lower than 0.60, but sufficient. Generally, children answers at QBS and IDT are adequately valid.

Table 2 reports also the results of multiple *t*-test. The *p* values were adjusted according to the false discovery procedure (Benjamini & Hochberg, 1995). For the QBS only the SE and RT subscale showed significant t values. Children of the secondary school reported lower level of satisfaction and a lower level of trust and support from teachers. For the IDT, Self and Hoper scale showed significant *t* values. Therefore, Children of the secondary school reported a lower level of self-esteem and a higher level of hopelessness than those of the primary school.

Table 3 shows the bivariate intra- and intercorrelations between QBS and IDT subscales. Intracorrelations are higher between IDT subscales than between QBS subscales and only few intercorrelations between QBS and IDT subscales are significant. Low self-esteem (Self), in particular, shows significant intercorrelations with SR, RT and RC subscales for students of primary school and significant intercorrelations with SR and EA subscales for students of secondary school.

Table 4 shows the results of the MG-CFA analysis for measurement invariance between children of the primary and secondary school. The scalar invariance of both the QBS and the IDT is confirmed, because the chi square difference ($\Delta\chi^2$) between nested models is not significant (Meredith, 1993). Model M_{conf} is the comparison model with free parameters for both groups for testing configural invariance. Model M_{metr} tested loadings invariance between groups for metric invariance. Model

M_{scal} tested loadings and intercepts invariance between groups for scalar invariance.

Fig. 1 shows the path diagrams of the scalar models for QBS and IDT. By setting to zero the mean of the general factor of the QBS for the primary school group, the mean of the general factor for the secondary school group is −0.642 ($z = -2.798$, $p < .01$). By setting to zero the mean of the general factor of the IDT for the primary school group, the mean of the general factor for the secondary school group is 0.489 ($z = 2.366$, $p < .05$). Therefore, there is a significant decrease of the global level of psychological well-being and a significant increment of the general level of irrational thoughts during the transition from the primary to the secondary school. The AVE and CR for QBS are 0.28 and 0.63, respectively, for boys and 0.28 and 0.62 for girls. The AVE and CR for IDT are 0.52 and 0.86, respectively, for boys and 0.51 and 0.85 for girls.

Table 5 shows the regression analysis of the relation between the IDT subscales and the factor scores of QBS. We reported also the statistical analyses for the entire regression model, with R^2, F and relative probability and f^2 which is the effect size index for regression models. Regression models with f² equal to 0.02, 0.15 and 0.35 are considered models with low, medium and large effect size (Cohen, 1992). In the model in which IDT subscales were the predictors of QBS scores, only the subscale Self subscale predicts significantly the QBS scores ($t = -3.15$, $p < .001$). Therefore, we performed different regressions using only Self subscale as predictor of QBS together with the dummy variable School (0 = primary school; 1 = secondary school) and Gender (0 = boys; 1 = girls) to test if the predictions of Self subscale are affected by school grades or by gender.

Table 5 also shows the results of these regressions. Self and school grades are the only significant predictors of SPWB and interaction between these variables is not significant. The model with the variables school and Self is the model with the highest validity ($R^2 = 0.29$, $F_{3,107} = 14.59$, $p < .001$, $f^2 = 0.41$).

4. Discussion

Hypothesis H1 and H2 were confirmed. Irrational thoughts have

Table 3

bivariate intra- and intercorrelations between QBS and IDT subscales for students of primary ($n = 50$) and secondary school ($n = 61$).

			SR	RT	RC	EA	SE	Str	Self	Love	Avoid	Obst
Primary school	QBS	SR										
		RT	0.39***									
		RC	0.34*	0.09								
		EA	0.40***	0.17	0.14							
		SE	0.27	0.31*	0.21	0.37*						
	IDT	Str	−0.23	−0.22	−0.28	−0.21	0.07					
		Self	−0.44***	−0.38**	−0.33*	−0.23	−0.28	0.53***				
		Love	−0.12	−0.18	−0.26	−0.08	0.21	0.48***	0.28			
		Avoid	0.02	0.03	−0.23	0.07	0.03	0.22	0.38**	0.44***		
		Obst	−0.21	−0.23	−0.26	−0.26	−0.18	0.50***	0.58***	0.48***	0.58***	
		Hope	−0.33*	−0.18	−0.45***	−0.17	−0.08	0.44***	0.69***	0.40***	0.45***	0.68***
secondary school	QBS	SR										
		RT	0.48***									
		RC	0.22	0.34*								
		EA	0.27*	0.01	−0.20							
		SE	0.42***	0.34*	0.31*	0.05						
	IDT	Str	−0.04	−0.19	−0.25	−0.24	−0.14					
		Self	−0.35**	−0.22	−0.12	−0.36**	−0.21	0.50***				
		Love	−0.23	−0.20	−0.13	−0.32*	−0.18	0.56***	0.68***			
		Avoid	−0.08	−0.01	0.02	−0.19	−0.12	0.31*	0.24	0.40***		
		Obst	−0.13	−0.12	−0.07	−0.28*	−0.10	0.48***	0.40***	0.61***	0.51***	
		Hope	−0.24	−0.18	−0.16	−0.30*	−0.14	0.55***	0.72***	0.72***	0.31*	0.56***

Note: QBS = Questionnaire for the Assessment of School Well-Being; SR = Satisfaction and recognition; RT = Relationship with teachers, RC = Relationship with classmates; EA = Emotional attitude at school; SE = Sense of self-efficacy. IDT = Inventory of Dysfunctional Thinking; Str = Strength; Self = Low Self-Esteem, Love = Love and approval; Avoid = Avoidance, Obst = Thoughts as Insurmountable Obstacles; Hope = Hope.

* Significant at *p* < .05.

** Significant at *p* < .01.

*** Significant at *p* < .001.

Table 4

Statistical results (χ^2 and df) of CFA models used for the MG-CFA analysis. Chi-squared differences ($\Delta\chi^2$ and relative df and p values) are reported. Goodness of fit indexes (CFI, TLI, RMSEA, 90 % RMSEA CI and SRMR) are also reported.

Questionnaires	CFA models	χ^2	df	$\Delta\chi^2$	$\Delta\chi^2$ df	$p(\Delta\chi^2)$	CFI	TLI	RMSEA (90 % CI)	SRMR
QBS	M_{conf}	17.64	10				0.88	0.77	0.12 (0.00–0.21)	0.07
	M_{metr}	21.97	15	4.33	5	0.50	0.89	0.86	0.09 (0.00–0.17)	0.09
	M_{scal}	30.53	19	8.56	4	0.07	0.82	0.82	0.10 (0.02–0.18)	0.11
IDT	M_{conf}	34.32	18				0.94	0.90	0.13 (0.06–0.19)	0.06
	M_{metr}	45.73	24	11.41	6	0.08	0.92	0.90	0.13 (0.07–0.18)	0.12
	M_{scal}	52.32	29	6.58	5	0.25	0.92	0.91	0.12 (0.07–0.17)	0.13

Note: MG-CFA = Multi-Group Confirmatory Factor Analysis; M_{conf} = CFA model for configural invariance; M_{metr} = CFA model for metric invariance; M_{scal} = CFA model for scalar invariance; df = degree of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis fit Index, RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; SRMS = Standardized Root Mean Square Residual.
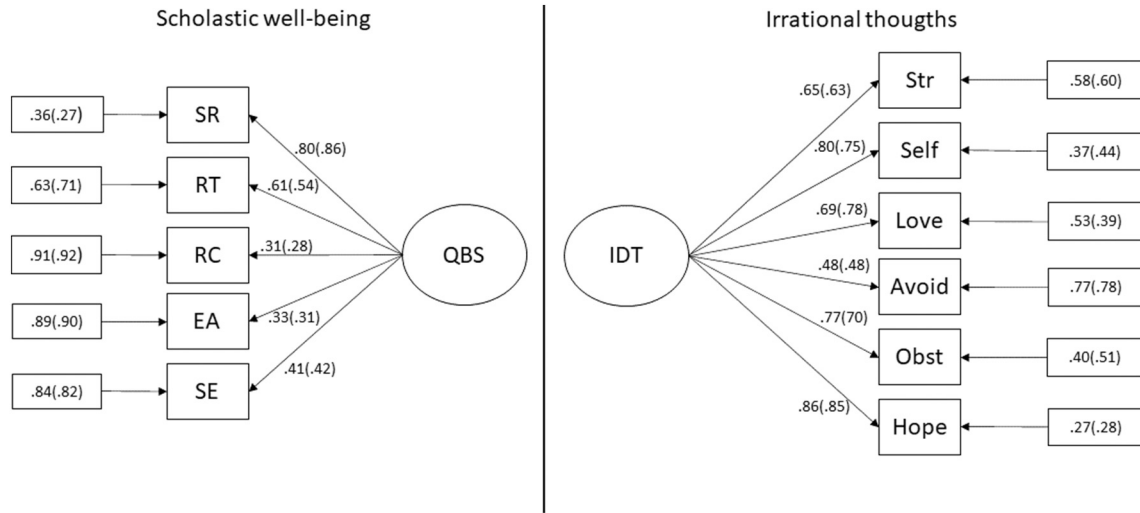

Fig. 1. Path diagram of the scalar models for QBS and IDT. Standardized loadings and residuals (in boxes) are reported for boys and girls (in parentheses). All coefficients were significant for $p < .01$. QBS = Questionnaire for the Assessment of School Well-Being; SR = Satisfaction and recognition; RT = Relationship with teachers, RC = Relationship with classmates; EA = Emotional attitude at school; SE = Sense of self-efficacy. IDT = Inventory of Dysfunctional Thinking; Str = Strength; Self = Low Self-Esteem, Love = Love and approval; Avoid = Avoidance, Obst = Thoughts as Insurmountable Obstacles; Hope = Hope.

Table 5

Regression analyses for testing predictive power of irrational thoughts (model 1), or of school grand and self-esteem (model 2), or gender and self-esteem (model 3) on scholastic psychological well-being. β and β* are raw and standardized beta coefficients, respectively.

	predictors	β	β*	t	p(t)	VIF	$p(\eta^2)$	R^2	F (df1,df2)	p(F)	f^2
Model 1	Str	−0.01	−0.03	−0.31	0.76	1.66	0.00	0.25	5.774 (6, 104)	<0.001	0.33
	Self	−0.15	−0.40	−3.15	0.00	2.27	0.09				
	Love	0.00	0.01	0.11	0.91	1.92	0.00				
	Avoid	0.03	0.14	1.33	0.19	1.45	0.02				
	Obst	−0.05	−0.15	−1.18	0.24	2.14	0.01				
	Hope	−0.02	−0.05	−0.32	0.75	2.75	0.00				
Model 2	School	−0.81	−0.43	−2.08	0.04	6.54	0.04	0.29	14.59 (3, 107)	<0.001	0.41
	Self	−0.14	−0.52	−3.81	0.00	2.82	0.12				
	School×Self	0.04	0.02	0.95	0.34	9.65	0.01				
Model 3	Gender	0.51	0.27	1.28	0.21	6.40	0.02	0.243	11.47 (3, 107)	<0.001	0.32
	Self	−0.10	−0.40	−3.08	0.00	2.36	0.08				
	Gender×Self	−0.04	−0.02	−0.78	0.44	7.72	0.01				

Note: QBS factor scores is the dependent variable of model 1, 2 and 3. Str = Strength; Self = Low Self-Esteem, Love = Love and approval; Avoid = Avoidance, Obst = Thoughts as Insurmountable Obstacles; Hope = Hope. VIF = Variance Inflation Factor; $p(\eta^2)$ = partial eta squared. R^2 = multiple correlation coefficient. df1 and df2 = degrees of freedom for numerator and denominator, respectively. f^2 = effect size for multiple regression.

higher intensity in students of the secondary school, while SPWB level is lower. We confirmed the results of previous studies that showed the negative impact on quality of life of school transition in students (Marcotte, 1996; Marcotte & Baron, 1993; Tobia & Marzocchi, 2015a; West et al., 2010). In relation to SPWB, the students of the secondary school showed a lower level of satisfaction with academic results, a lower perception of appreciation for their commitments and support from their teachers, in comparison to the students of the primary school.

These results partially confirm the results of previous studies that evidenced an increment of rage (Roeser & Eccles, 1998) and a reduction of satisfaction with life, school and family in early adolescents (Chang et al., 2003; Huebner et al., 2005).

In relation to irrational thoughts, the students of the secondary school showed a lower level of self-esteem and a higher level of hopelessness and distrust to achieve personal goals in comparison to the students of the primary school. This result supports the results of

previous studies that showed the necessity to improve self-esteem and to reduce irrational thoughts in early adolescents (Elkind, 1967; Marcotte & Baron, 1993; West et al., 2010). In relation to social relationships, student of the secondary school declared that their relation with teachers was more problematic. In particular, they felt receiving less support and confidence form their teachers. Our results evidenced that the teacher support is more important than the parental support in determining the psychological well-being at school, confirming the results of previous studies (Coffey, 2013; Wenz-Gross et al., 1997).

Hypothesis H3 was partially confirmed, because only low self-esteem had a significant predictive value on SPWB. Differently from the previous study of Çivitci (Çivitci, 2009), in which the demand for comfort resulted to be a significant factor, in our study self-esteem represented the most important factor for psychological well-being. The difference can be explained by the different cultural context of the two studies: in Çivitci's study the students all originated from Turkey. In addition, we did not find a significant difference between boys and girls in relation to the predictive power of irrational thoughts on psychological well-being.

5. Conclusion

In relation to Allardt's theory of School Well Being (Allardt, 1989), our results showed that probably, the most influential issues in Italian students' psychological well-being during their transition from the primary to the secondary school is the quality of their social relationship especially with the teachers, that pay an important role by giving support and warm confidence to children, and the necessity to get rid of irrational thoughts that can contrast the process of self-realization and a successful scholastic development. In particular, low self-esteem and high distrust in successful achievements have a severe negative impact on scholastic well-being. From this point of view, psychological support for students during the transition from primary to secondary school would be desirable to reduce the negative impact of irrational thoughts on scholastic well-being. The necessity of a psychological support for helping children in the transition phase was evidenced also by other studies (Coffey, 2013; West et al., 2010).

5.1. Limitations, future research directions and practical implications

There are some limits in our study. The first limit is the reduced dimension of our sample and the specific geographical location. However, the statistical analyses on the sample data show a sufficient degree of validity and it must be stated that it is not easy to obtain collaboration from schools and parents to carry out research on children. Another limitation is the fact that the group of primary school children is different from that of secondary school. Even if the two groups can be considered homogeneous for the reasons described in the methods section (small town, public school and low percentage of immigrants) probably a longitudinal study to observe the transition phase from primary to secondary would have better evidenced the variation of children's psychological conditions.

Our study evidenced a fair level of discomfort in the transition from primary to secondary school. The transition from primary to secondary school is confirmed as a critical phase in the development process of adolescents (Coffey, 2013; Corbière, 1997; Zyromski & Joseph, 2008). The practical implication, therefore, is that a scholastic psychological support, with particular attention to the emotional development of adolescents, could be thoroughly useful to limit the negative effects of transition from primary to secondary school.

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Declaration of competing interest

Data availability

Data will be made available on request.

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