



## Differences and similarities in adolescents' academic motivation across socioeconomic and immigrant backgrounds

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### ABSTRACT

The study, based on Self-Determination Theory (SDT), investigated the similarities and differences in the academic motivation of adolescents with different socioeconomic status (SES) and immigrant backgrounds. Exploratory Structural Equation Modelling (ESEM) analyses were conducted on data from a representative sample of 26,598 Italian adolescents. While the structure of academic motivation proposed by SDT (i.e. the self-determination continuum) proved to be invariant across different SES and immigrant backgrounds, different groups were characterised by specific types of motivation. Adolescents with a low SES had lower levels of intrinsic motivation and identified regulation, together with higher levels of amotivation and external regulation than their peers with high SES. Immigrant adolescents had lower levels of identified regulation and higher levels of amotivation, external and introjected regulation than natives. While confirming the universality of the structure of motivation postulated by SDT, our findings show that in disadvantageous social and economic conditions the more self-determined forms of motivation can be weakened, thereby exacerbating the difficult conditions of disadvantaged adolescents.

### 1. Introduction

Self-Determination Theory (SDT; Ryan & Deci, 2017) claims that human motivation has a universal multidimensional structure based on different types of regulation that reflect various levels of self-determination (i.e. the perception of being the source of one's own behaviour) and that these types of regulation are organized along a self-determination continuum, ranging from autonomous motivation (i.e. engaging in an activity for reasons that are perceived as self-endorsed or volitional) to controlled motivation (i.e. engaging in an activity for internal or external pressures), and amotivation (i.e. the absence of any form of motivation).

The assumption of the universality of the self-determination continuum has been examined over the years (Howard et al., 2017), but it has never been tested across populations with very different economic and social conditions, even though, according to Maslow's paradigm of the hierarchy of human needs (Maslow, 1954), these conditions might affect the structure of motivation and the relevance of the different types

of motivation.

The present study, based on a large sample of Italian adolescents, aims to fill these gaps in the literature by examining the similarities and the differences in motivation across different socioeconomic and immigrant backgrounds. Focussing on adolescents' motivation to study, this is possibly the first research to investigate the possible differences in the structure of the self-determination continuum as well as in the levels of the specific forms of regulation across these different individual backgrounds. Our findings would offer very relevant information for better understanding how to support adolescents' self-determination, thereby helping to improve their psychological well-being and academic performances. In fact, highly varied experiences and consequences are associated with the different types of motivation: compared to externally motivated people, self-determined people usually have higher levels of performance, persistence, vitality, self-esteem, and general well-being (Ryan & Deci, 2017).

In the following sections, we describe the self-determination continuum, and then we review the research literature on the relationships

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between academic motivation and socioeconomic and immigrant backgrounds. This is followed by a presentation of the research questions that our study set out to investigate.

### 1.1. The self-determination continuum of academic motivation

The self-determination continuum (Fig. 1) includes five types of motivation, arranged according to their degree of autonomy (Deci & Ryan, 2000). Intrinsic motivation represents the highest level of self-determination and consists of studying for its own sake, for one's personal interest and enjoyment. Identified regulation occurs when students consciously consider studying as valuable and important for themselves. At a lower level of self-determination, that of introjected regulation, students do not fully identify with studying and they do it in order to maintain or improve their self-esteem and to avoid a sense of guilt. This is followed by external regulation, the lowest level of self-determination, at which adolescents study in order to obtain rewards or avoid punishments. Finally, self-determination is totally absent in amotivated students, who do not want to study and they feel that they have little or no control over their decisions and actions. While theoretically distinguishing between these kinds of motivations, SDT also recognizes that most intentional behaviours are a combination of different motivations: for example, students can have a spontaneous interest in learning together with the desire to achieve high grades.

The structure for the self-determination continuum as described by SDT (Ryan & Connell, 1989) implies that a quasi-simplex (ordered) pattern of correlations exists between the different types of motivation, with stronger positive correlations between those that are adjacent than those that are distant. SDT postulates that humans have a universally shared propensity to explore and understand (intrinsic motivation) and to assimilate social norms and regulations through active internalization (external regulations) and that the structure of the continuum is stable across individuals of different ages, genders, languages, cultures, and ability levels (Reeve et al., 2018).

### 1.2. Academic motivation across different socioeconomic and immigrant backgrounds

According to SDT, self-determined motivation is encouraged when individuals can satisfy their psychological need for autonomy (Ryan & Deci, 2017). Some studies have shown that this need can be frustrated when individuals face disadvantageous economic and social conditions (Di Domenico & Fournier, 2014). Thus, adolescents with a lower socioeconomic status (SES) are more likely to experience negative emotions (Alivernini et al., 2019; Chen, 2004), and psychological distress (Currie et al., 2012), and they have an increased risk of illness (Bradley & Corwyn, 2002). Immigrant adolescents are more socially isolated (Cavicchiolo et al., 2020), more frequently victimized (Pistella et al., 2020) and have lower levels of psychological well-being (Belhadji Kouider et al., 2014, 2015). In similar conditions, adolescents' physical and safety needs are usually unfulfilled and, according to Maslow's paradigm of the hierarchy of human needs (Maslow, 1954), motivation can be based on the satisfaction of these very basic needs, while the

development of the more self-determined forms of motivation could be compromised. Although several studies have examined the universality of the basic psychological needs and the effects that social background can have upon them (Reeve et al., 2018; Vansteenkiste et al., 2020), the influence of social background on the structure of motivation and the relative levels of the different forms of motivation is a field that remains largely unexplored. The present study therefore aimed to examine the SDT assumption of universality focussing on motivation.

A recent meta-analysis (Howard et al., 2017) provided some support for the hypothesis of the universality of the structure of motivation, showing that the overall pattern of the self-determination continuum remained unvaried in the various samples examined. However, it also revealed a certain degree of heterogeneity that could not be explained by the factors considered (i.e. individuals' employment condition, age and gender). Further studies examining the invariance of the self-determination continuum across various different factors are therefore needed in order to support the assumption of universality.

According to SDT, the socioeconomic background of adolescents can have a fundamental impact on their academic motivation by enhancing or diminishing the different types of regulation (Deci & Ryan, 2009; Reeve et al., 2018). Unfortunately, research into possible differences in the types of academic motivation across students with different SES is limited and contradictory. McGeown et al. (2014) showed that SES did not account for any variance in extrinsic and intrinsic motivation of high school students, while Young et al. (2011) found that the role of SES varied across cultural groups: it was predictive of intrinsic and extrinsic motivation in African-American college students, but it had no impact on motivation in European and Hispanic Americans.

Although research has examined the academic motivation of high school students across countries and cultures (Chirkov, 2009; Tóth-Király et al., 2017), only one study has specifically focused on the differences between native and immigrant students (Alivernini et al., 2018). Immigrant students showed higher levels of external regulation and of intrinsic motivation than their native peers. However, the study was based on primary school students and the results cannot be directly extended to high school students (Alivernini et al., 2008). Therefore, the possible differences between immigrant and native adolescents on the specific types of motivation still need to be clarified.

Taken together, the studies reviewed so far have not provided conclusive results regarding the similarities and differences in adolescents' academic motivation across SES and immigrant backgrounds. This is unfortunate, because this information would be fundamental for supporting adolescents' motivation and, consequently, their psychological well-being and performances at school.

## 2. The present study

The present study aimed to investigate the similarities and differences in adolescents' academic motivation across different SES and immigrant backgrounds. On the basis of the literature summarised above we attempted to answer the following research questions:

**RQ1.** Is the structure of academic motivation proposed by SDT (i.e. the self-determination continuum) invariant across different SES and

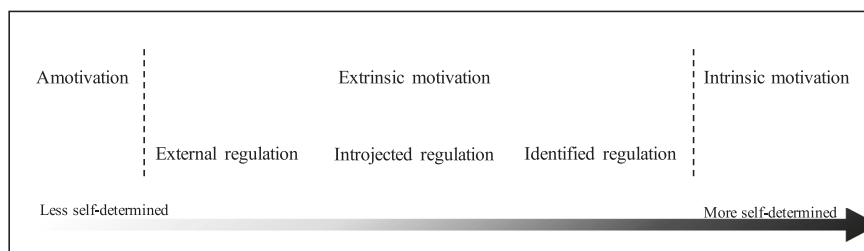


Fig. 1. Representation of the self-determination continuum (Deci & Ryan, 2000).

immigrant backgrounds?

**RQ2.** Do the types of academic motivation differ across different SES and immigrant backgrounds?

In order to address RQ1, we verified the presence of a quasi-simplex pattern of correlations between the types of motivations and its generalizability across different immigrant and socioeconomic backgrounds. This was done by using Exploratory Structural Equation Modelling (ESEM, [Asparouhov & Muthen, 2009](#)) which provides more exact estimates of relations between latent factors ([Asparouhov & Muthen, 2009](#); [Morin et al., 2013](#)) and it is therefore particularly suitable for examining the pattern of correlations between the different types of motivation and its invariance across different backgrounds ([Guay et al., 2015](#)). To the best of our knowledge this is the first study to examine the invariance of the self-determination continuum across different SES and immigrant backgrounds.

In order to answer RQ2, we performed latent mean difference tests on the various types of regulation across SES and immigrant backgrounds, on a large representative sample of Italian 10th grade students. The invariance of the scale used to measure academic motivation across the groups taken into consideration was examined. These analyses allowed us to obtain reliable comparisons which controlled for measurement error. No study hitherto had used this approach across different immigrant and SES backgrounds. In addition, the large representative sample of adolescents allowed us to have more exact estimates of the differences in academic motivation across the different groups and to investigate variations between different levels of SES, a factor that is rarely analysed due to its limited variability in small samples.

### 3. Materials and methods

#### 3.1. Sample and procedure

The data analysed in the present study came from a representative sample of 26,598 Italian 10th-grade students who took part in the National Evaluation of Learning ([National Institute for the Evaluation of the Education System, 2015](#)). Full classes of tenth graders were randomly selected from the population of Italian public upper secondary schools and a questionnaire was administered to all the students in these classes. The present study focussed on a subset of the measures in the questionnaire ([Alivernini et al., 2017](#)). The students' average age was 15.60 years ( $SD = 0.76$ ), 49% were males, 6.7% were first-generation immigrants (born abroad and with foreign-born parents), and 5.7% were second-generation immigrants (born in Italy, but with both parents born abroad). To protect students' privacy, information was not collected about the country of origin of immigrant students. Since our sample was representative of the population of 10th grade Italian students, we expected its composition to be in line with national data, according to which most immigrant students in Italian high schools are from other European countries or North Africa, with more than 40% of the foreign students coming from Romania, Albania and Morocco ([Ministry of Education, Universities and Research \[MIUR\], 2020](#)). Each school obtained informed consent and parental permission according to the assessment protocol of the National Evaluation of Learning ([National Institute for the Evaluation of the Education System, 2015](#)).

#### 3.2. Measures

##### 3.2.1. Academic motivation

Academic motivation was assessed by means of the Italian version ([Alivernini & Lucidi, 2008](#)) of the Academic Motivation Scale (AMS; [Vallerand & Bissonnette, 1992](#); [Vallerand et al., 1993](#)). Each of the five subscales measures a type of motivation to study and consists of four items, that are possible responses to the question "Why do you go to high school?", each one of which is rated on a 4-point Likert-type scale, ranging from 1 (does not correspond at all) to 4 (corresponds a lot). The

Cronbach's alphas of the subscales in the sample ranged from 0.81 to 0.71.

##### 3.2.2. SES

Adolescents' SES was measured ([Organisation for Economic Co-operation and Development \(OECD\), 2014](#)) by means of the factor scores deriving from a Principal Component Analysis on four indicators: occupational level of parents, educational level of parents, home possessions, and home literacy resources. The tertiles of the SES scores were then computed in order to distinguish three groups of students: lower SES (SES scores in the first tertile), central SES (SES scores in the second tertile), and higher SES (SES scores in the third tertile).

##### 3.2.3. Immigrant background

Immigrant background was defined in accordance with the classification of the Organization for Economic Co-operation and Development ([Organisation for Economic Co-operation and Development \(OECD\), 2014](#)): native adolescents were defined as born in Italy and with at least one parent who was born in Italy; first-generation immigrants were defined as foreign-born and with parents born abroad; second-generation immigrants were defined as born in Italy and with parents born abroad.

#### 3.3. Analyses

The ESEM analyses were carried out using Mplus 8 ([Muthén & Muthén, 1998-2017](#)) with the "Type = complex" analytical approach in order to take into consideration the hierarchical structure of the data (students nested within classes; mean ICC = 0.046). The very small amount of missing data (ranging from 0.9% to 1.5%) was handled using the Full Information Maximum Likelihood method as implemented in Mplus.

An ESEM with Geomin rotation was preliminary performed on the AMS in order to test the model of academic motivation consisting of five correlated factors and to verify the presence of a simplex pattern of correlations between these factors. The fit of the model was evaluated using common fit indices and the chi-square test (which can however be oversensitive in samples as large as ours). The measurement invariance of the AMS was then tested across SES backgrounds (lower, central, and higher SES) and immigrant backgrounds (native, first-generation immigrant, and second-generation immigrant). This analysis was carried out in order to examine the generalizability of the simplex pattern of correlations between the types of motivation across different SES and immigrant backgrounds (RQ1). In addition, ascertaining the measurement invariance of the AMS was a necessary prerequisite for obtaining reliable measurements of the differences on the levels academic motivation between the groups (RQ2). A hierarchical series of multi-group ESEMs was performed imposing increasingly restrictive equality constraints on the model's parameters, in the following order ([Marsh et al., 2009](#); [Meredith, 1993](#)): configural, metric, scalar invariance, and invariance of the variance/covariance matrix. The fit of the nested models was compared using the criteria of change in CFI ( $\Delta CFI \leq 0.01$ ), RMSEA ( $\Delta RMSEA \leq 0.015$ ) and TLI ( $\Delta TLI \leq 0.010$ ) recommended by [Chen \(2007\)](#) and [Cheung and Rensvold \(2002\)](#). Finally, latent mean difference tests were performed in order to examine differences in each type of academic motivation across SES and immigrant backgrounds (RQ2). In these tests, the variances of the groups were constrained to be equal to 1, so that the results could be interpreted in terms of Cohen's  $d$ .

### 4. Results

All the fit indices of the ESEM (except for the chi-square test, which was probably affected by the large size of our sample) indicated that the five-factor structure of the AMS had a good fit ([Hu & Bentler, 1999](#)) of:  $\chi^2_{(100)} = 3180.111, p < .001$ ; CFI = 0.978; TLI = 0.958; RMSEA = 0.034 (90% C.I. = 0.033–0.035). The factor solution (see Appendix, Table A.1)

corresponded well to the hypothesized factor structure of the AMS, with all the items loading strongly and significantly on their respective factors, and having weaker loadings on the other factors ( $< 0.30$ ).

The correlations between the five types of academic motivation (see Appendix, Table A.2) mostly supported the simplex correlation pattern: correlations between adjacent types of regulation on the self-regulation continuum were stronger than correlations between types of regulation that are further apart. However, it should be noted that the correlation between introjected regulation and intrinsic motivation was higher than the correlation between introjected regulation and identified regulation.

The results of the measurement invariance analyses (see Appendix, Table A.3) showed that the increasingly restrictive models all provided good levels of fit to the data and the changes in the fit indexes remained very low and below the cut-off criteria (Chen, 2007; Cheung & Rensvold, 2002). The AMS thus proved to be invariant across SES and immigrant backgrounds. As regards our first research question (RQ1), the results of the analysis of the invariance of the variances-covariances show that the pattern of correlations between the types of academic motivation was invariant across SES and immigrant backgrounds.

Finally, Table 1 shows the results of the analyses of the latent mean differences of the five types of academic motivation across the groups taken into consideration (RQ2).

Compared to both central SES and higher SES adolescents, lower SES adolescents showed lower levels of intrinsic and identified regulation and higher levels of amotivation. The same pattern of differences was found between central SES adolescents and higher SES adolescents. In addition, external regulation proved to be higher in central SES and lower SES adolescents, than in higher SES adolescents. Both first-generation and second-generation immigrant adolescents showed higher levels of amotivation, external and introjected regulation than native adolescents, and lower levels of identified regulation, but they did not significantly differ as regards intrinsic motivation. External regulation proved to be slightly lower in second-generation adolescents than in first-generation adolescents, but there were no significant differences between these two groups as regards all the other types of motivation.

## 5. Discussion

The present study aimed to examine similarities and differences both in the structure of motivation and in levels of the specific forms of regulation across SES and immigrant backgrounds, using ESEM on a very large sample of Italian adolescents. Our findings are possibly the first to provide evidence for the generalizability of the self-determination continuum of motivation across different economic and social backgrounds. In fact, the pattern of correlations between the five types of motivation was shown to be invariant across adolescents with

different socioeconomic and immigrant backgrounds. This is an important finding, because it provides empirical support for the assumption of the universality of the continuum structure of motivation postulated by SDT. Consistently with the continuum assumption (Ryan & Connell, 1989; Ryan & Deci, 2017), most of our results confirmed the simplex pattern of correlations between the different types of regulation. The only divergence from the simplex pattern was that intrinsic motivation proved to be more positively correlated with introjected regulation than with identified regulation. This deviant pattern of correlations has been repeatedly found in previous research on the AMS (e.g., Guay et al., 2015; Howard et al., 2017; Litalien et al., 2017). This may be explained (Litalien et al., 2017) by the shared content of the items in the subscales of intrinsic motivation and introjected regulation that refer to present processes, while the items of identified regulation focus on future aims and outcomes.

Together with the stability of the structure of motivation, our study is the first to reveal that the specific types of motivation differ significantly across economic and social backgrounds. Lower SES adolescents had a less self-determined pattern of academic motivation than central and higher SES adolescents, obtaining lower scores for intrinsic motivation and identified regulation, and higher scores for amotivation and external regulation. The same pattern of differences was also detected between central and higher SES students. Immigrant adolescents proved to be less self-determined than natives, reporting higher levels of amotivation, and external or introjected regulation and lower levels of identified regulation. These findings are in line with previous studies (Alivernini et al., 2018) on primary school students as regards external regulation, but the pattern is different as regard intrinsic motivation and introjected regulation, suggesting that motivations for studying in immigrant adolescents become more external as they get older.

On the whole, these findings provide initial evidence that self-determined motivation could be undermined in a situation of disadvantageous economic and social conditions and are consistent with SDT, which postulates that social background can influence motivation by enhancing or diminishing the different types of regulation (Deci & Ryan, 2009; Reeve et al., 2018).

Despite these important findings, some limitations of the present study should be mentioned. Firstly, although our study was based on the consolidated theoretical framework of SDT, our data derived from a cross-sectional design. Longitudinal studies will therefore be needed to corroborate our findings and provide evidence for causal relationships. Secondly, although the study was based on a very large sample of adolescents, only data from 10th grade students was analysed. Further research would be useful in order to generalize our findings to other grades. Finally, further researches should examine what teachers can do and which methods might be more effective for improving the

**Table 1**  
Results of the latent mean differences tests.

Motivation construct	Standardized mean differences					
	Immigrant background			SES		
	Natives vs. Gen1 <sup>a</sup>	Natives vs. Gen2 <sup>a</sup>	Gen1 vs. Gen2 <sup>b</sup>	Central SES vs. Lower SES <sup>c</sup>	Higher SES vs. Lower SES <sup>d</sup>	Higher SES vs. Central SES <sup>d</sup>
Intrinsic motivation	0.06	-0.01	-0.07	-0.10***	-0.21***	-0.11***
Identified regulation	-0.09**	-0.09**	-0.01	-0.14***	-0.25***	-0.11**
Introjected regulation	0.20***	0.13***	-0.08	-0.02	-0.01	0.01
External regulation	0.37***	0.30***	-0.09*	0.03	0.08***	0.05**
Amotivation	0.19***	0.15***	-0.05	0.14***	0.24***	0.10**

Note. Gen1 = first generation immigrants; Gen2 = second generation immigrants; Central SES = SES second tertile; Lower SES = SES first tertile; Higher SES = SES third tertile.

<sup>a</sup> Natives are the reference group.

<sup>b</sup> First generation immigrants are the reference group.

<sup>c</sup> Central SES is the reference group.

<sup>d</sup> Higher SES is the reference group.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

motivation of students from disadvantaged backgrounds.

### 6. Conclusions

We believe that the present study has provided a significant contribution to the literature by revealing the similarities and the differences in academic motivation across different economic and social backgrounds. We have provided the first evidence for the invariance of the self-determination continuum across different socioeconomic and immigrant backgrounds, thus giving support to the universality of the structure of motivation postulated by SDT. Moreover, we have shown that the five types of academic motivation have different patterns in adolescents from different economic and social backgrounds. Our findings suggest that in disadvantageous social and economic conditions the more autonomous forms of motivation can be compromised: although the overall structure of motivation did not vary across economic and social backgrounds, lower SES and immigrant adolescents had lower levels of self-determination and higher levels of controlled motivation and amotivation. This pattern of motivation can have serious consequences, such as poor academic performances and an increased risk of low self-esteem and reduced levels of psychological well-being (Ryan & Deci, 2017), which can further exacerbate the disadvantaged conditions

of these adolescents. Our findings suggest that targeted interventions should be implemented, in order to foster the self-determination of low SES and immigrant adolescents, thereby compensating for situations of inequity and protecting adolescents who are at an unfair disadvantage due to their individual social backgrounds.

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### Author contributions

Sara Manganelli: Conceptualization, Methodology, Formal Analysis. Elisa Cavicchiolo: Data curation, Writing – Original draft. Fabio Lucidi, Federica Galli, Mauro Cozzolino, Andrea Chirico: Writing - Review & Editing. Fabio Alivernini: Conceptualization, Supervision.

### Declaration of competing interest

None.

## Appendix A

Table A1

Standardized factor loadings for the ESEM analysis of the five-factor model of the AMS.

AMS items	F1	F2	F3	F4	F5
<b>F1: Intrinsic motivation</b>					
Because I experience pleasure and satisfaction while learning new things.	<b>0.74</b>	0.02	-0.02	-0.01 <sup>ns</sup>	-0.01 <sup>ns</sup>
For the pleasure I experience when I discover new things never seen before.	<b>0.79</b>	-0.04	-0.01	0.00 <sup>ns</sup>	0.01 <sup>ns</sup>
For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	<b>0.65</b>	0.04	0.02	0.02	-0.06
Because my studies allow me to continue to learn about many things that interest me.	<b>0.53</b>	0.21	0.07	-0.02	0.00 <sup>ns</sup>
<b>F2: Identified regulation</b>					
Because I think that a high-school education will help me better prepare for the career I have chosen.	0.13	<b>0.62</b>	0.00 <sup>ns</sup>	-0.04	-0.01 <sup>ns</sup>
Because eventually it will enable me to enter the job market in a field that I like.	-0.01 <sup>ns</sup>	<b>0.72</b>	-0.05	0.07	0.00 <sup>ns</sup>
Because this will help me make a better choice regarding my career orientation.	-0.01 <sup>ns</sup>	<b>0.67</b>	0.06	0.00 <sup>ns</sup>	0.02
Because I believe that my high school education will improve my competence as a worker.	0.10	<b>0.52</b>	0.05	0.03	-0.09
<b>F3: Introjected regulation</b>					
To prove to myself that I am capable of completing my high-school degree.	0.02	0.16	<b>0.55</b>	0.05	-0.02
Because of the fact that when I succeed in school I feel important.	0.16	-0.04	<b>0.45</b>	0.10	0.07
To show myself that I am an intelligent person.	0.00 <sup>ns</sup>	-0.06	<b>0.77</b>	0.03	-0.00
Because I want to show myself that I can succeed in my studies.	-0.02	0.12	<b>0.76</b>	-0.10	-0.02
<b>F4: External regulation</b>					
Because I need at least a high-school degree in order to find a high-paying job later on.	-0.01 <sup>ns</sup>	0.12	-0.07	<b>0.62</b>	-0.02
In order to obtain a more prestigious job later on.	0.00 <sup>ns</sup>	0.29	0.02	<b>0.48</b>	-0.05
Because I want to have "the good life" later on.	0.01 <sup>ns</sup>	-0.12	0.05	<b>0.57</b>	0.16
In order to have a better salary later on.	-0.02	0.02	0.02	<b>0.75</b>	-0.00 <sup>ns</sup>
<b>F5: Amotivation</b>					
Honestly, I don't know; I really feel that I am wasting my time in school.	-0.10	-0.08	-0.01 <sup>ns</sup>	0.01 <sup>ns</sup>	<b>0.65</b>
I once had good reasons for going to school; however, now I wonder whether I should continue.	-0.02	-0.01 <sup>ns</sup>	0.01	0.00 <sup>ns</sup>	<b>0.70</b>
I can't see why I go to school and, frankly, I couldn't care less.	0.00 <sup>ns</sup>	0.02	-0.01 <sup>ns</sup>	-0.01	<b>0.83</b>
I don't know; I can't understand what I am doing in school.	0.03	0.02 <sup>ns</sup>	-0.01	-0.01 <sup>ns</sup>	<b>0.81</b>

Note. Loadings were significant at  $p < .05$  when not indicated as n.s. Significant loadings  $>0.30$  are marked in bold.

Table A.2

Estimated correlations between the different types of motivation.

	Intrinsic motivation	Identified regulation	Introjected regulation	External regulation	Amotivation
Intrinsic motivation	-				
Identified regulation	0.515	-			
Introjected regulation	0.432	0.329***	-		
External regulation	0.014	0.315***	0.382***	-	
Amotivation	-0.321***	-0.555***	-0.125***	-0.084***	-

\*\*\*  $p < .001$ .

Table A.3

Summary of fit statistics for the assessment of the invariance of the AMS across immigrant backgrounds and SES.

Invariance hypothesis	$\chi^2(df)$	CFI	RMSEA	TLI	Model comparison	$\Delta\chi^2a$	$\Delta CFI$	$\Delta RMSEA$	$\Delta TLI$
1. Configural invariance (IB)	3464.990 (300)	0.977	0.035	0.956	–	–	–	–	–
2. Metric invariance (IB)	3701.121 (450)	0.976	0.029	0.970	1 vs. 2	205.787*	–0.001	–0.006	0.014
3. Scalar invariance (IB)	4200.562 (480)	0.973	0.030	0.968	2 vs. 3	560.382*	–0.003	0.001	–0.002
4. Factor variances-covariances (IB)	4418.947 (510)	0.972	0.030	0.968	3 vs. 4	220.872*	–0.001	0	0
5. Configural invariance (SES)	3495.333 (300)	0.977	0.035	0.955	–	–	–	–	–
6. Metric invariance (SES)	3663.281 (450)	0.976	0.029	0.970	5 vs. 6	134.036	–0.001	–0.006	0.015
7. Scalar invariance (SES)	3855.407(480)	0.975	0.028	0.971	6 vs. 7	177.916*	–0.001	–0.001	0.001
8. Factor variances-covariances (SES)	4129.675 (510)	0.973	0.028	0.970	7 vs. 8	273.862	–0.002	0	–0.001

Note. a. mlr chi square difference test. IB = Immigrant background. SES = Socioeconomic status.

\*  $p < .05$ .

## References

- Alivernini, F., Cavicchiolo, E., Girelli, L., Lucidi, F., Biasi, V., Leone, L., ... Manganelli, S. (2019). Relationships between sociocultural factors (gender, immigrant and socioeconomic background), peer relatedness and positive affect in adolescents. *Journal of Adolescence*, 76, 99–108.
- Alivernini, F., & Lucidi, F. (2008). The academic motivation scale (AMS): Factorial structure, invariance and validity in the Italian context. *Testing, Psychometrics, Methodology in Applied Psychology*, 15, 211–220.
- Alivernini, F., Manganelli, S., Cavicchiolo, E., Girelli, L., Biasi, V., & Lucidi, F. (2018). Immigrant background and gender differences in primary students' motivations toward studying. *The Journal of Educational Research*, 111, 603–611.
- Alivernini, F., Manganelli, S., & Lucidi, F. (2008). Assessment of academic motivation: A mixed methods study. *International Journal of Multiple Research Approaches*, 2, 71–82.
- Alivernini, F., Manganelli, S., & Lucidi, F. (2017). From educational poverty to academic success assessment: Concepts, indicators and tools validated at a national level. *Educational, Cultural and Psychological Studies*, 15, 21–52.
- Asparouhov, T., & Muthén, B. O. (2009). Exploratory structural equation modeling. *Structural Equation Modeling*, 16, 397–438.
- Belhadj Kouider, E., Koglin, U., & Petermann, F. (2014). Emotional and behavioral problems in migrant children and adolescents in Europe: A systematic review. *European Child & Adolescent Psychiatry*, 23, 373–391.
- Belhadj Kouider, E., Koglin, U., & Petermann, F. (2015). Emotional and behavioral problems in migrant children and adolescents in american countries: A systematic review. *Journal of Immigrant and Minority Health*, 17, 1240–1258.
- Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, 53, 371–399.
- Cavicchiolo, E., Manganelli, S., Bianchi, D., Biasi, V., Lucidi, F., Girelli, L., ... Alivernini, F. (2020). Social inclusion of immigrant children at school: The impact of group, family and individual characteristics, and the role of proficiency in the national language. *International Journal of Inclusive Education*, 1–21. In press.
- Chen, E. (2004). Why socioeconomic status affects the health of children: A psychosocial perspective. *Current Directions in Psychological Science*, 13, 112–115.
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14, 464–504.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9, 233–255.
- Chirkov, V. I. (2009). A cross-cultural analysis of autonomy in education: A self-determination theory perspective. *Theory and Research in Education*, 7, 253–262.
- Currie, C., Zanotti, C., Morgan, A., Currie, D., de Looze, M., Roberts, C., Samdal, O., Smith, O.R.F., & Barnekow, V. (Eds.). (2012). Social determinants of health and well-being among young people. Health behaviour in school- aged children (HBSC) study: International report from the 2009/2010 survey. Copenhagen: WHO Regional Office for Europe. Retrieved from [http://www.euro.who.int/\\_data/assets/pdf\\_file/0003/163857/Social-determinants-of-health-and-well-being-among-young-people.pdf](http://www.euro.who.int/_data/assets/pdf_file/0003/163857/Social-determinants-of-health-and-well-being-among-young-people.pdf).
- Deci, E. L., & Ryan, R. M. (2000). The what and why of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268.
- Deci, E. L., & Ryan, R. M. (2009). Self-determination theory: A consideration of human motivational universals. In P. J. Corr, & G. Matthews (Eds.), *The Cambridge handbook of personality psychology*. Cambridge: Cambridge University Press.
- Di Domenico, S. I., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social Indicators Research*, 119, 1679–1697.
- Guay, F., Morin, A. J. S., Litalien, D., Valois, P., & Vallerand, R. J. (2015). Application of exploratory structural equation modeling to evaluate the academic motivation scale. *The Journal of Experimental Education*, 83, 51–82.
- Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, 143, 1346–1377.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Litalien, D., Morin, A. J. S., Gagné, M., Vallerand, R. J., Losier, G. F., & Ryan, R. M. (2017). Evidence of a continuum structure of academic self-determination: A two-study test using a bifactor-ESEM representation of academic motivation. *Contemporary Educational Psychology*, 51, 67–82.
- Marsh, H. W., Muthén, B., Asparouhov, T., Lüdtke, O., Robitzsch, A., Morin, A. J. S., & Trautwein, U. (2009). Exploratory structural equation modeling, integrating CFA and EFA: Application to students' evaluations of university teaching. *Structural Equation Modeling*, 16, 439–476.
- Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harper & Row Publishers.
- McGeown, S. P., Putwain, D., Geijer Simpson, E., Boffey, E., Markham, J., & Vince, A. (2014). Predictors of adolescents' academic motivation: Personality, self-efficacy and adolescents' characteristics. *Learning and Individual Differences*, 32, 278–286.
- Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, 58, 525–543.
- Ministry of Education, Universities and Research [MIUR]. (2020). Gli alunni con cittadinanza non italiana. A. S. 2018/2019. Rome: Ufficio Statistica e studi.
- Morin, A. J. S., Marsh, H. W., & Nagengast, B. (2013). Exploratory structural equation modeling. In G.R. Hancock & R.O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 395–436). Charlotte, NC: Information Age.
- Muthén, L.K., & Muthén, B.O. (1998-2017). Mplus user's guide. *Eighth Edition*. Los Angeles, CA: Muthén & Muthén.
- National Institute for the Evaluation of the Education System. (2015). Rilevazioni Nazionali sugli Apprendimenti 2014-2015 [National Evaluations on Learning 2014-2015]. Author. Retrieved from [https://invalsi-areaprove.cineca.it/docs/attach/035\\_Rapporto\\_Prove\\_INVLSI\\_2015.pdf](https://invalsi-areaprove.cineca.it/docs/attach/035_Rapporto_Prove_INVLSI_2015.pdf).
- Organisation for Economic Co-operation and Development (OECD). (2014). PISA 2012 technical report. Programme for International Student Assessment, OECD Publishing.
- Pistella, J., Baumgartner, E., Laghi, F., Salvati, M., Carone, N., Rosati, F., & Baiocco, R. (2020). Verbal, physical, and relational peer victimization: The role of immigrant status and gender. *Psicothema*, 32(2), 214–220.
- Reeve, J., Ryan, R. M., & Deci, E. L. (2018). Sociocultural influences on student motivation as viewed through the lens of self-determination theory. In G. A. D. Liem, & D. M. McInerney (Eds.), *Big theories revisited 2* (pp. 15–40). Charlotte, NC: Information Age.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749–761.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Publishing.
- Tóth-Király, I., Orosz, G., Dombi, E., Jagodics, B., Farkas, D., & Amoura, C. (2017). Cross-cultural comparative examination of the Academic Motivation Scale using exploratory structural equation modeling. *Personality and Individual Differences*, 106, 130–135.
- Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality*, 60, 599–620.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallières, E. F. (1993). On the assessment of intrinsic, extrinsic, and amotivation in education: Evidence on the concurrent and construct validity of the academic motivation scale. *Educational and Psychological Measurement*, 53, 159–172.
- Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, 44, 1–31.
- Young, A., Gail, J., Hawthorne, M., & Pugh, J. (2011). Cultural predictors of academic motivation and achievement: A self-deterministic approach. *College Student Journal*, 45, 151–163.