

School engagement trajectories of immigrant youth: Risks and longitudinal interplay with academic success

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Abstract

We examined behavioral school engagement trajectories of immigrant and non-immigrant early adolescents in relation to their academic achievement. Data were based on teacher judgments and school records. Students from immigrant families living in Greece and their non-immigrant classmates ($N = 1057$) were assessed over the three years of middle school (ages 13 to 15). Academic achievement influenced later school engagement more strongly than vice versa for both immigrant and non-immigrant students. Low achievement, being an immigrant student and social adversity were found to be risk factors for the initial level of behavioral engagement. An overall increase in students' absenteeism over the course of the study was stronger for immigrant students. The immigrant status effect was due to immigrant students' lower achievement. The results suggest that immigrant youth may disengage from school to protect themselves from academic failure. This would also be a plausible explanation for earlier findings that immigrant and non-immigrant students do not differ in psychological well-being, even though immigrant students have significantly lower academic achievement. Implications for interventions to promote academic achievement and to prevent disengagement in immigrant students are discussed.

Keywords

developmental psychopathology, school engagement, immigration, longitudinal study, multi-level/hierarchical

School engagement has attracted the attention of researchers in large part because of its strong connection with academic achievement (Fredricks, Blumenfeld, & Paris, 2004). Students who are actively involved in their own education, connect to what they are learning, and forge meaningful, positive relations at school, are likely to do well academically. School success in turn can be a harbinger for positive future adaptation, opening opportunities and providing choices to youth (Masten, Burt, & Coatsworth, 2006). However, there is concern that many students are bored, unmotivated, and disengaged from school life (e.g. Appleton, Christenson, & Furlong, 2008). According to an OECD (2003) report, that included 43 countries, about 1 in 4 students can be considered disaffected and disengaged from school. Concomitantly, there is growing concern that many of the increasing numbers of immigrant students in schools across many societies are disengaged (OECD, 2003), with long-lasting potential consequences for the future success of immigrant youth as well as their receiving societies (Motti-Stefanidi & Masten, 2013).

The goal of the present study was to examine the behavioral engagement trajectories of immigrant youth, and their non-immigrant classmates, enrolled in Greek urban public schools, in relation to their academic achievement. First, we investigated the interplay over the three middle school years of their behavioral engagement and academic achievement trajectories. Then we examined two interrelated questions. Do immigrant students have significantly lower school engagement, concurrently and over time, compared to their non-immigrant classmates, and can possible low engagement among immigrant students be accounted for by their lower academic achievement or other risk factors such as higher social disadvantage?

The impetus for the study came from the literature implicating engagement as a potential target for intervention to promote

achievement (see Appleton et al., 2008; Fredricks et al., 2004), based on the idea that higher school engagement leads to better grades. However, our research suggests that the opposite direction is at least as important. We found that, despite the substantially worse academic achievement of immigrant students, their psychological well-being was comparable to that of their non-immigrant classmates (Motti-Stefanidi, Asendorpf, & Masten, 2012; Motti-Stefanidi, Pavlopoulos, Obradović, Dalla et al., 2008). We surmised that these findings might signal a self-protective disinvestment from academic achievement and school-related experiences that would be accompanied by decreased school engagement. This argument is in line with the stereotype threat phenomenon (Steele & Aronson, 1995). Minority students who face negative stereotypes regarding their ability to perform well, which may be expressed through teachers' lower expectations (Eccles, 2009), devalue school achievement and disengage from both negative and positive academic experiences to protect their self-esteem. Thus, we propose the immigrant youth educational disengagement hypothesis, whereby low academic achievement would drive immigrant students' disengagement from school.

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Developmental period

Data for this study were drawn from a larger longitudinal investigation, the Athena Studies of Resilient Adaptation project (ASTRA), of immigrant early adolescents' adaptation in the middle school context. During the first year of the project the students had just started middle school, which is part of the nine-year compulsory education. They were followed for three years through this level of schooling. The beginning of middle school is a particularly important period to study behavioral engagement and its interplay with academic achievement over time, as it involves a major developmental transition and potential turning points in both school engagement and achievement.

Early adolescents are confronted during this period with a multiplicity of significant changes in their neurobehavioral development in conjunction with new educational and social challenges (Roeser, Eccles, & Sameroff, 1998). Immigrant youth, in addition, face the acculturative challenges of having to learn to navigate between at least two cultures, and to develop, not only their personal, but also their ethnic and national identities (Motti-Stefanidi, Berry, Chrysochoou, Sam, & Phinney, 2012). However, often schools where immigrant students are enrolled are not well equipped to meet their developmental and acculturative needs (Suárez-Orozco, Rhodes, & Milburn, 2009). The lack of congruence between students' needs and the social context has been advanced as the explanation for declining trajectories both in school engagement (e.g. Wang & Eccles, 2012) and in academic achievement over the middle school years (e.g. Roeser et al., 1998).

Cultural context

Greece used to be a source of immigrants and then transformed into an immigrant-receiving country in the early 1990s. The influx to the country of large numbers of immigrants in the 1990s became associated with rises in economic competition and crime rates. Unprepared to deal with these phenomena, many native Greeks reacted with an increase in xenophobia and discrimination (Fakiolas, 1999). By 2000, based on data compiled from Eurobarometer surveys, negative attitudes toward foreigners were significantly more pronounced in Greece, Belgium, Germany and France than in other European countries (Semyonov, Rajzman, & Gorodzeisky, 2006). Children of immigrant descent, with the exception of ethnic Greek immigrants, do not easily acquire Greek citizenship even when born in Greece. Today, more than 10% of the students enrolled in Greek public schools are of immigrant origin. However, the school system generally does not provide the educational support needed for these students to achieve their potential (e.g. Nikolaou, 2000).

Data for this study were collected from schools with a high percentage of immigrant youth from the two largest ethnic groups in the country. These are economic immigrants from Albania, and Pontic-Greek immigrants from the former Soviet-Union, who are of Greek ethnic origin. The few immigrant students in these schools who did not belong to these ethnic groups, originated from different European, Asian and African countries.

Behavioral school engagement

Students' school engagement is a multidimensional construct, often delineated in terms of three components: behavioral, emotional, and cognitive (Fredricks et al., 2004). We focused on behavioral rather than emotional and cognitive engagement as the aspect of

engagement most readily observed and proximal to school success (Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). Behavioral engagement involves participation and effort to perform academic tasks, as well as participation in school-related social activities, and positive conduct in school (Fredricks et al., 2004). It reflects also emotional and cognitive engagement because emotionally and/or cognitively engaged students will be more likely to expend greater effort, and to invest more, in academic tasks, consistent with findings from Suárez-Orozco et al. (2008).

Behavioral school engagement is best directly observed in the classroom which was however not possible in the current study. We used two other frequently used measures of behavioral school engagement: unexcused absenteeism and teacher-rated engagement (see Fredricks et al., 2004).

Reciprocal influences of behavioral engagement and academic achievement

The first major aim of this study was to examine whether and how level and growth in behavioral engagement are related to level and growth in academic achievement, and whether these effects are similar for immigrant and non-immigrant youth. In addition to testing for the concurrent and over-time connection of the two constructs, the results were expected to shed some light concerning the predominant direction of effects. Are students' grades declining over the middle school years because of their lower behavioral school engagement, as expected based on the engagement hypothesis? Or, is, instead, their engagement declining over time because of failing to do well enough in school, as expected by the immigrant youth educational disinvestment hypothesis?

Both cross-sectional and longitudinal studies have consistently shown that school engagement is closely linked to the school success of all youth, independently of the immigrant or social status of the student (Fredricks et al., 2004). Most of these studies test the engagement hypothesis whereby school engagement is considered a potential precursor of academic achievement. For example, Li and Lerner (2011), who studied the development of behavioral, as well as of emotional, engagement of a sample of early adolescents from diverse ethnic and racial backgrounds, found that youth who followed the highest pathways of behavioral engagement tended to have higher academic achievement than youth who followed more problematic engagement pathways, as well as that immigrant and minority youth tended to follow more problematic school engagement trajectories through adolescence. Furthermore, Suárez-Orozco et al. (2010) found that one of the most robust predictors of their recently arrived immigrant early adolescents' academic achievement was their behavioral engagement.

As Fredricks et al. (2004) have suggested, the relationship between the two constructs is most probably bidirectional, such that academic achievement also influences changes in school engagement. However, few studies have tested for bidirectional pathways between these constructs, and none in immigrant youth. For example, Hughes, Luo, Kwok and Loyd (2008) found an effect of math and reading achievement on the school engagement of primary school children, as well as an effect of engagement on achievement. They argued that lower initial academic achievement may discourage children and lead to lower persistence and effort. In a similar vein, Lord, Eccles and McCarthy (1994) found that students who are doing poorly in school show greater declines in academic motivation during the transition to middle school.

Based on this literature, we expected bidirectional effects but not necessarily of the same effect size. We also assumed that the way these constructs are connected concurrently and over time would not differ for Greek and immigrant students (see Finn, 1993). The direction and strength of these effects could have important implications for intervention efforts to promote achievement and to prevent disengagement from school.

Immigrant status as a risk factor for behavioral engagement

The second major goal of the study was to examine the extent to which being an immigrant student is a risk factor for behavioral engagement, concurrently and over time, and, if it is a risk factor, whether it can be accounted for by other risks often associated with immigrant status, such as high social adversity or low academic achievement.

The evidence concerning the effect of students' immigrant status on school engagement and academic motivation is generally inconsistent. Some studies indicate that first-generation immigrant youth may place a higher value on their school success, show higher school engagement, and receive better grades than either second-generation immigrants, or non-immigrant, youth, a phenomenon known as the "immigrant paradox" (e.g. Berry, Phinney, Sam, & Vedder, 2006; Fuligni, 1997; Garcia Coll & Marks, 2011; Pong & Zeiser, 2011). However, this phenomenon is not universal, and a considerable diversity in immigrant advantage or risk for academic motivation and school engagement, has been observed, contingent on the receiving society (e.g., Motti-Stefanidi, Pavlopoulos, Obradovic, & Masten, 2008), and the immigrant group (e.g., Suárez-Orozco et al., 2009).

In contrast, the family's level of socioeconomic status (SES) adversity is more clearly a risk factor for youth's school engagement (e.g. Yazzie-Mintz, 2007). Actually, an OECD (2003) report on 15-year-old students' engagement at school, based on cross-sectional data from 43 countries, found that being foreign-born (i.e. first-generation immigrant) and living in a family of low SES were related to greater student disengagement.

According to this report, Greece, which is the context of the present study, had average scores in school engagement significantly below the OECD average. Based on this finding, and due to the virtual lack of educational remedial support from Greek schools for immigrant youth and for non-immigrant youth of low SES, who often may need it but neither the school nor their parents provide it, we expected that immigrant status and low social status would be negatively related to students' behavioral engagement.

In addition to effects of immigrant status and social adversity on engagement, our longitudinal design allowed for examining whether immigrant status and social adversity are risk factors for changes in behavioral engagement. Substantial declines in academic motivation and engagement have been widely reported across the period of early adolescence (Eccles & Roeser, 2009), which are more pronounced for youth of low SES families (see Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). However, significant diversity in the intraindividual change of school engagement has also been reported. For example, Janosz, Archambault, Morizot and Pagani (2008) found that over half of their sample followed a relatively high trajectory, which only slightly decreased over time, although Li and Lerner (2011) reported that minority youth seem to follow less favorable school engagement

trajectories, starting at a lower level and/or showing steeper declines. Furthermore, the school engagement of newly arrived immigrant youth to the US, independently of any advantage in their initial level of engagement, also declined significantly over the adolescent years (e.g., Suárez-Orozco et al., 2009).

Therefore, we expected a decline in behavioral engagement of both immigrant and non-immigrant students. However, we expected the decline in immigrant youth's behavioral engagement to be stronger than that of non-immigrant youth. This expectation was based on the serious language barriers of these students, unaddressed by the school system (Nikolaou, 2000), and on discrimination experiences (Triandafyllidou, 2000). The latter have been shown to lead to student disaffection with, and disengagement from, school (Wong, Eccles, & Sameroff, 2003).

We also examined whether the immigrant effect prevails if academic achievement or social adversity are statistically controlled. Immigrants tend to become integrated in the lower socioeconomic strata of societies (see Masten, Liebkind, & Hernandez, 2012). Based on our own data immigrant adolescents were shown to live under significantly higher social adversity than their non-immigrant classmates (Motti-Stefanidi, Pavlopoulos, Obradović, & Masten, 2008). However, even after controlling for social adversity, immigrant status continued to predict negatively for academic achievement. Does it continue to also predict school engagement?

The evidence concerning the link between school engagement and academic achievement of both immigrant and non-immigrant youth has been reviewed in the previous section. Our data suggest that immigrant students have significantly lower academic achievement than their non-immigrant counterparts (Motti-Stefanidi, Asendorpf et al., 2012). After testing for the concurrent and longitudinal links between school engagement and academic achievement, we will further examine our initial immigrant youth educational disinvestment hypothesis, namely, that it is their academic failure that explains their lower school engagement. We expect that after controlling for academic achievement, immigrant status will cease to predict negatively for school engagement. Answers to these questions are directly relevant to targets of interventions. Should immigrants' academic achievement be promoted by supporting their school engagement or should the target of intervention be their academic achievement, which would be expected to keep them engaged in the school?

To summarize, three interrelated research questions were tested. First, we examined whether and how level and growth in behavioral engagement are related to level and growth in academic achievement, and whether these effects are similar for immigrant and non-immigrant youth. Second, we investigated the extent to which being an immigrant student is a risk factor for behavioral engagement, concurrently and over time. Third, we examined whether immigrant students' lower engagement can be accounted for by high social adversity or low academic achievement.

Method

Sample

This study included students attending 12 schools in Athens, Greece, that had high proportions of immigrant students. Permission to study the students in these schools was granted by the Greek Ministry of Education. A total of 1057 students who attended 49 middle school grade 1 classes took part in the study (wave 1; age $M = 12.7$ years, $SD = 0.65$; 53% male). Of these students,

50.3% were immigrants mainly from Albania and the former USSR (29.9% first-generation, 20.4% second-generation immigrants); the proportion of immigrants in class varied between 20% and 100%. Language skills were self-reported by immigrants; a highly skewed distribution indicated that 69% of them reported very good skills, and first-generation immigrants reported only slightly lower skills than second-generation immigrants, $t(472) = 2.33, p < .05$, Cohen's $d = 0.21$. The sample of the current study is the same that was used by Motti-Stefanidi, Asendorpf et al. (2012) for studying adaptation and well-being.

The cohort was assessed annually for three school years. Retention from wave 1 to wave 2 was 75% ($N = 785$) and 80% from wave 2 to wave 3 ($N = 627$), resulting in an overall retention rate of 59% from wave 1 to 3 (58% for immigrants, 61% for Greeks). The loss of 41% of the original cohort over the course of the study required a systematic evaluation of attrition effects.

Measures

All questionnaires were translated from Greek into Albanian and Russian, and were then back-translated into Greek by four bilingual speakers. Immigrant students could choose the language in which they preferred to respond to the questionnaires. The vast majority (90%) of the immigrant students chose to respond to the questionnaires presented in Greek.

Behavioral engagement was assessed by *absenteeism* and *teacher-rated engagement*. Each student's absenteeism was obtained from the school records for each wave in terms of the number of hours during the first trimester of the year that he/she was absent without the being excused from class by parents and/or a medical doctor. In addition, Greek language teachers rated the engagement of each student in the classroom in each wave on six items, each rated on a 5-point scale, ranging from "not at all" to "very much". These items assessed the degree to which the student were motivated and engaged in schoolwork. Sample items are: "concentrates in class", "participates in class", "has usually prepared his/her homework". The scale had a high internal consistency in all three waves (Cronbach's $\alpha > .90$).

Academic performance was assessed in terms of a student's grade point average (GPA) for each school year obtained from school records. Grade points in Greek middle schools are rated by teachers on a 20-point scale, with higher points indicating better performance. The GPA of each student was based on the judgments of at least four different teachers for five different subjects during the first trimester of each school year of data collection (Mathematics, Ancient Greek, Modern Greek, Physics and History) that were highly consistent across subjects within each wave ($\alpha > .95$). GPA consisted of the average across all subjects on the 20-point scale.

Risks

Immigrant status and immigrant generation were dummy-coded (1 for being immigrant, 0 for being Greek; 1 for second generation, 0 for first generation).

Social adversity was assessed in each wave by the sum of student-reported single-parent household, low professional status (e.g., unskilled worker, farmer, unemployed) of either parent, and high residential density (i.e., the quotient of the number of people living in the house to the number of the rooms in the house being

higher than one). The sum of risk factors provided a cumulative risk index (range 0 to 4).

Results

Sample attrition

We studied systematic sample attrition over the three waves of the study by comparing the drop-outs in wave 2 with the students with assessments up to wave 2, and the drop-outs in wave 3 with the students with assessments up to wave 3, in terms of the individual predictors and outcomes used in the multi-level models for all students, namely sex, immigrant status, socioeconomic adversity, academic achievement, and the two engagement measures. Of the $2 \times 6 = 12$ tests, four reached significance. Students who dropped out in wave 1 had lower scores in academic performance and higher scores in absenteeism, and students who dropped out in wave 2 had lower scores in teacher-rated engagement and higher scores in absenteeism (in each case, $p < .05$, Cohen's $d < 0.35$). Thus, the dropout effects were small. They were mostly due to teachers or students refusing to participate in the study or families moving to a different location; drop-outs from the school system were extremely rare. As explained in the results section, we controlled systematic attrition either by Full Information Maximum Likelihood estimation in the cross-lagged regression models or by multi-level modeling of the individual developmental trajectories.

Descriptive statistics

Table 1 presents the means, standard deviations, and intercorrelations of the main variables in the study.

The one-year stabilities were highest for GPA, followed by teacher-rated engagement and absenteeism. The concurrent correlations between teacher-rated engagement and GPA were higher (.77 to .72) than for absenteeism (-.37 to -.32). Immigrants scored higher on social adversity and lower on GPA. All correlations with engagement (or inverse absenteeism) were negative for the three risk factors immigrant status, social adversity and low GPA.

Cross-lagged analyses of school engagement and academic achievement

The interrelations between school engagement and GPA across the three waves of the study were analyzed separately for absenteeism and teacher-rated engagement, using cross-lagged regression models (Finkel, 1995). In these models, the effect of school engagement on GPA in the next year is modeled as a direct path controlling for the indirect path(s) containing the stability of GPA from the earlier year(s); the converse effect of GPA on school engagement is similarly modeled (see Figure 1). In addition, the residuals of the two predictions of the same year are allowed to correlate; these correlations inform about correlated change of the two variables. These models were estimated with AMOS 20 (Arbuckle, 2012) using Full Information Maximum Likelihood estimation that controls for missing data.

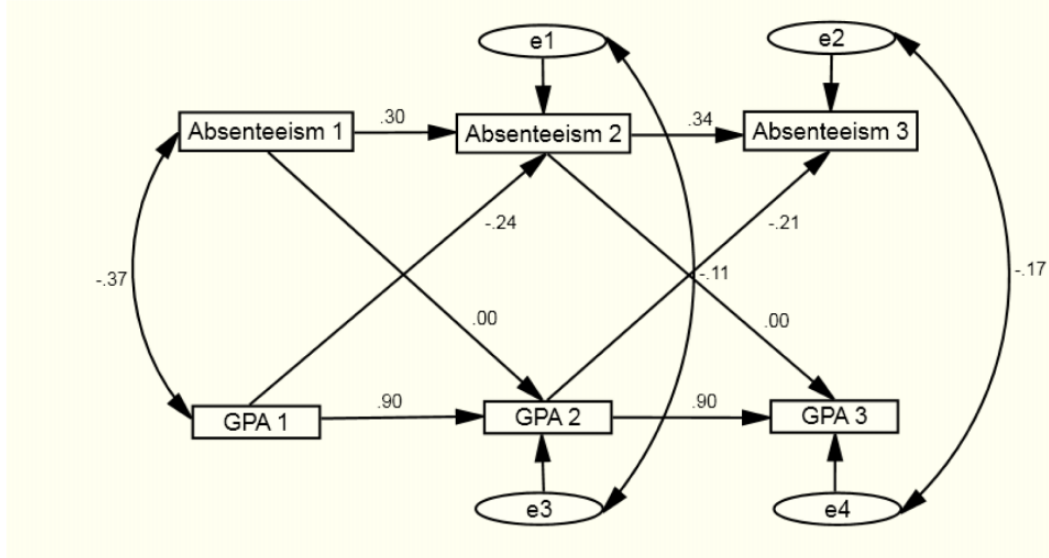
First we checked for possible inconsistencies between the predictions from the first year and from the second year that may arise, among other causes, from systematic attrition. We compared an unrestricted model where the stabilities and cross-lagged regressions were allowed to vary across the predictions from the first and

Table 1. Means, standard deviations, and intercorrelations of the main variables.

Variable (score range)	Age	n	M	SD	ADVI	GPA1	GPA2	GPA3	ABS1	ABS2	ABS3	TEN1	TEN2	TEN3	
Immigrant (0 = no, 1 = yes)	13	IMMI	1057	.50	.50	.27	-.42	-.41	-.39	.16	.18	.25	-.32	-.31	-.23
Adversity (0– 4)	13	ADVI	1017	.83	.80		-.29	-.24	-.24	.13	.14	.16	-.20	-.18	-.11
GPA (1–20)	13	GPA1	843	13.7	3.02			.89	.84	-.37	-.32	-.32	.77	.71	.68
	14	GPA2	748	13.3	2.97				.89	-.27	-.33	-.31	.73	.73	.64
	15	GPA3	620	13.4	3.02					-.21	-.28	-.34	.67	.74	.72
Absenteeism (hrs)	13	ABS1	832	8.16	11.39						.37	-.36	-.23	-.18	
	14	ABS2	671	12.40	15.38						.36	-.34	-.27	-.15	
	15	ABS3	584	16.50	17.80							-.26	-.29	-.28	
Engagement (teacher rating 1–5)	13	TEN1	1039	3.75	0.91								.61	.52	
	14	TEN2	577	3.83	0.88									.55	
	15	TEN3	525	3.56	0.90										

Note. All correlations are significant ($p < .05$). Stability correlations in boldface.

Panel A: Absenteeism



Panel B: Teacher-rated engagement

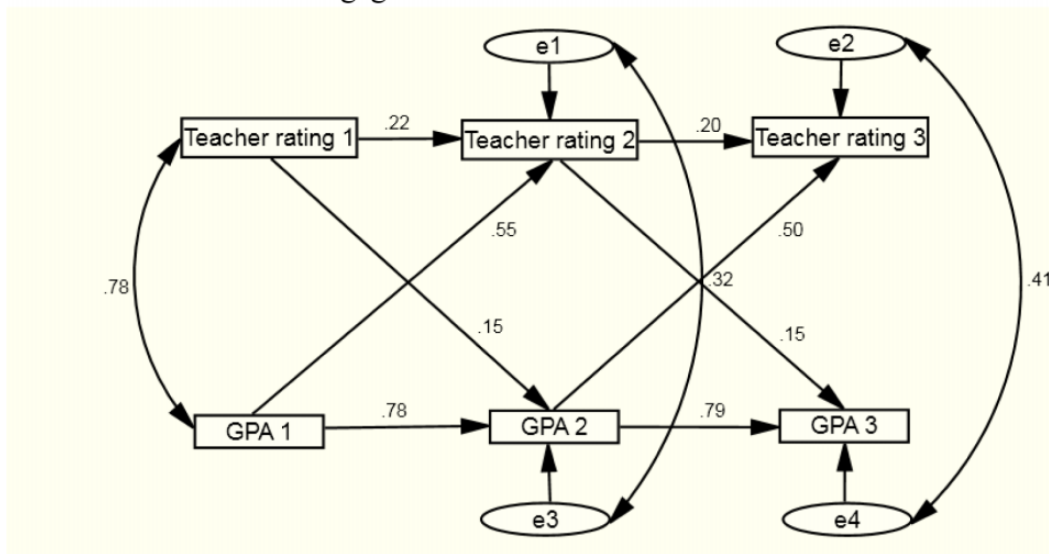


Figure 1. Cross-lagged analysis of school engagement and school achievement (GPA) for the full sample. Reported are standardized solutions for the final models. All path coefficients and correlations are significant at $p < .02$.

from the second year, with a restricted model that constrained the stabilities and the cross-lagged effects to be equal across the predictions from the first and from the second year.

For absenteeism, the restricted model did not show a significantly poorer fit than the unrestricted model ($\chi^2(4) = 3.55, p = .47$) and was thus retained as the final model; its fit was acceptable given the large sample, $\chi^2(8) = 60.60, p < .001, CFI = .98, RMSEA = .079 [0.061, .098]$. Similarly, for teacher-rated engagement the restricted model also did not show a significantly poorer fit than the unrestricted model ($\chi^2(4) = 6.46, p = .17$) and was thus retained as the final model; its fit was also acceptable, $\chi^2(8) = 29.52, p < .001, CFI = .99, RMSEA = .048 [0.029, .048]$.

In contrast, constraining to be equal in the final model the cross-paths from GPA to absenteeism and vice versa strongly decreased fit, $\chi^2(1) = 67.78, p < .001$. As Figure 1, Panel A indicates, absenteeism was influenced by GPA whereas the opposite was not true. Furthermore, the significant negative correlations of the residuals indicated that changes in teacher-rated engagement and GPA were slightly negatively correlated for both 1-year prediction intervals. Thus, increases in GPA were accompanied by decreases in absenteeism, and decreases in GPA by increases in absenteeism.

Similarly, constraining in the final model the cross-paths from GPA to teacher-rated engagement and vice versa also decreased fit, $\chi^2(1) = 25.15, p < .001$, indicating that GPA influenced engagement more strongly than vice versa. As Figure 1, Panel B indicates, the teacher ratings were strongly driven by GPA, although a small significant influence from the teacher judgment to GPA was also found. Furthermore, and in line with the results for absenteeism, the changes in teacher-rated engagement and GPA were significantly positively correlated. Thus, increases/decreases in GPA were accompanied by similar increases/decreases in teacher-rated engagement.

Together, these results showed a stronger influence of GPA on engagement than vice versa as well as correlated change in GPA and engagement. Possible moderations of the results by gender and immigrant status were tested using multi-group analysis. For gender, equal paths and correlations for males and females could not be assumed for both absenteeism and teacher-rated engagement because the constrained models showed a poorer fit than the unconstrained models (in both cases, $\chi^2(7) > 23.80, p < .001$). Inspection of the results showed that unequal stabilities had to be assumed for the engagement measure in both cases because engagement showed lower stabilities for males than for females. Relaxing the equality constraint for these stabilities resulted in a good fit of the less constrained models, $\chi^2(6) < 11.98, p > .06$. Thus, engagement was less stable in males than in females but apart from that the models fitted the data of both males and females, particularly the asymmetric cross-paths.

The same procedure applied to group differences between first- and second-generation immigrants and between immigrants and Greeks resulted in a similar pattern. Equal paths and correlations could be assumed for first- versus second-generation immigrants for both absenteeism and teacher-rated engagement, $\chi^2(7) < 4.17, p > .75$, and for immigrants and Greeks except for the stabilities of GPA because GPA was more stable for Greeks than for immigrants. Relaxing the equality constraint for these stabilities resulted in an acceptable fit of the less constrained models, $\chi^2(6) < 12.76, p > .04$. Thus, the results depicted in Figure 1 applied to both males and females and to both Greeks and both groups of immigrants except for a somewhat lower stability of engagement for males and GPA for immigrants. Because low GPA predicted low engagement

both concurrently and longitudinally, low GPA was clearly identified as a risk factor for low engagement.

Effect of immigrant status on engagement

Table 1 suggests that immigrants show less engagement at all ages. However, the zero-order correlations in Table 1 do not control for selective attrition, confound within- and between-classroom differences, and most importantly may be driven by immigrants' lower GPA and higher adversity which, in turn, are also risk factors for low engagement (see Table 1). Therefore we studied the effect of immigrant status on engagement by a sequence of models of increasing complexity where adversity and GPA were added as statistical controls in addition to gender.

Because the data showed a nested structure (ages within individuals within classrooms), it was most appropriate to analyze them using multi-level modeling (see e.g., Hox, 2010). Individual linear trajectories were modeled at Level 1 by their intercepts and slopes which were predicted at Level 2 by constant individual characteristics (gender, immigrant status, and adversity and GPA at age 13); classroom differences were controlled at Level 3 of each model. We used the HLM 6.0.8 software (Raudenbush, Bryk, & Congdon, 2009) for analysis.

Multi-level analysis controls for missing data at Level 1 (Hox, 2010; Little, 1995) but not at higher levels. Therefore missing data in the predictors at Level 2 were imputed with the default option of SPSS 18 (five imputations), using all available Level 2 data; the imputed files were subsequently used by HLM 6.0.8 using its multiple imputation option (we also analyzed the data without imputing missing values at Level 2 which resulted in a slightly weaker but otherwise virtually identical pattern of findings). No missing data occurred at Level 3.

A decomposition of the variance of the two engagement measures into components at the three levels of analysis showed substantial variance between ages (Level 1; for absenteeism, 73.2%, for teacher-rated engagement 44.3%), between individuals (Level 2; 19.3%, 44.5%), and between classrooms (Level 3; 7.5%, 11.2%). Because the between-classroom variation was relatively low and we were not interested in between-classroom effects, we analyzed the data with three-level models with age centered at wave 1 as the only Level 1 predictor; dummy-coded immigrant status as the main Level 2 predictor along with grand-mean centered gender, adversity and GPA as control variables; and no predictor at the classroom level. Thereby all analyses are controlled for the statistical dependency of the data within classrooms as well as for classroom differences in mean engagement.

Table 2 reports the results for a sequence of models of increasing complexity at Level 2. The model without predictors at Level 2 serves as a baseline comparison model. Using the notation provided in the HLM output where P, B, G denote regression coefficients and E, R, U error terms, and WAVE is wave of the study centered at the first wave, this model reads for absenteeism:

Level-1 Model

$$\text{ABSENTEEISM} = P_0 + P_1 * (\text{WAVE}) + E$$

Level-2 Model

$$P_0 = B_0 + R_0$$

$$P_1 = B_1 + R_1$$

Level-3 Model

$$B_0 = G_{00} + U_{00}$$

$$B_1 = G_{10} + U_{10}$$

Table 2. Results of multi-level regressions predicting initial levels and slopes of engagement from immigrant status, controlling for other risks and gender.

Model	Absenteeism							Teacher-rated engagement						
	Initial			Slope			Pseudo R^2	Initial			Slope			Pseudo R^2
	<i>b</i>	<i>SE</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>p</i>		<i>b</i>	<i>SE</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>p</i>	
1. Baseline (no Level 2 predictors)	7.60	0.50	.001	4.57	0.64	.001	—	3.81	0.06	.001	−0.13	0.04	.001	—
2. Gender (0 = male, 1 = female)	−2.39	0.77	.004	−0.43	0.78	.587	.06	0.48	0.08	.001	0.04	0.03	.218	.24
3a. Immigrant (0 = Greek, 1 = immigrant)	2.98	0.96	.004	2.07	0.78	.011	.12	−0.48	0.06	.001	0.02	0.03	.453	.36
3b. Adversity age 13 (z-score)	0.80	0.33	.021	0.48	0.39	.227	.10	−0.15	0.03	.001	0.03	0.01	.030	.30
3c. GPA age 13 (z-score)	−3.70	0.41	.001	−1.02	0.45	.027	.31	0.63	0.03	.001	−0.04	0.02	.086	.94
4a. Adversity age 13 (z-score)	0.50	0.32	.129	0.40	0.38	.301		−0.10	0.03	.001	0.03	0.01	.047	
Immigrant (0 = Greek, 1 = immigrant)	2.74	0.98	.008	1.87	0.75	.016	.16	−0.43	0.06	.001	0.01	0.03	.738	.41
4b. GPA age 13 (z-score)	−3.70	0.39	.001	−0.76	0.43	.082		0.63	0.04	.001	−0.04	0.03	.135	
Immigrant (0 = Greek, 1 = immigrant)	−0.02	0.89	.979	1.24	0.65	.063	.31	0.01	0.05	.837	0.00	0.03	.906	.94

Note. $N = 1057$ students in 49 classrooms. Reported are unstandardized regression coefficients b and the Pseudo- R^2 for the variance explained by the Level 2 predictors in three-level models, with age centered at age 13 as the Level 1 predictor, dummy-coded immigrant status and grand-mean centered gender and standardized adversity and GPA as Level 2 predictors, and no predictor at Level 3 (classrooms). Initial refers to the intercept at age 13, slope to the linear change between ages 13 and 15. Models 3a–4b include also gender (not shown). Missing values at Level 2 were imputed. Significances for b refer to robust standard errors.

Table 2 indicates that on average students were 7.60 hours absent during the first trimester of middle school, and that absenteeism increased over the next two years at a rate of 4.57 hours per year. Similarly, teacher-rated engagement decreased from initially 3.81 with a rate of 0.13 points per year (see also Table 1).

Adding gender as a predictor for the initial level and slope of absenteeism reduced the Level 2 variance from 37.25 to 34.91, thus Pseudo- $R^2 = (37.25 - 34.91)/37.25 = .06$ (differently from ordinary multiple regression, under rare conditions the explained variance may decrease when a predictor is added, a case that did not occur in the present study); therefore the coefficient of explained variance in multi-level models is labeled Pseudo- R^2). Female students were on average 2.39 hours less absent than male students, and this gender difference did not significantly change over the course of the study (see Table 2). Similarly, gender explained 24% of the variance in teacher-rated engagement, females were judged as being 0.48 points more engaged than males, and this gender difference did not significantly change.

The models 3a–c study the effects of the three risks (being immigrant, living in an adverse social environment, low academic achievement) separately from one another; because gender was also included, all results are controlled for gender differences. For absenteeism, Table 2 presents a clear pattern of results. Each risk concurrently predicted absenteeism at age 13, and each risk tended to predict increasing absenteeism over the next two years (non-significantly for adversity). The variance explained by gender and GPA was approximately three times larger (31%) than the variance explained by gender and immigrant status (12%) or gender and adversity (10%). The predictions by GPA were consistent with the cross-lagged analysis where GPA also predicted absenteeism both concurrently and across ages.

Models 4a and 4b study the effect of immigrant status after controlling for gender and social adversity (Model 4a), or gender and GPA (Model 4b). Immigrant status controlled for gender and adversity continued to predict both concurrent absenteeism and increasing absenteeism; thus, immigrants' stronger tendency to be absent from school without excuse could not be explained by their higher adversity scores (see Table 1). In stark contrast, when immigrant status was controlled for GPA, its remaining effect on concurrent absenteeism was virtually zero ($p = .979$), and its effect on

increasing absenteeism became non-significant ($p = .063$). The bottom line is that the effects of immigrant status on concurrent absenteeism could be fully explained by the lower GPA of the immigrant students, and after controlling for GPA immigrants showed only a marginal tendency for increased absenteeism.

For teacher-rated engagement, a highly similar pattern was found except that the GPA effect was even stronger in terms of explained variance. As Table 2 indicates, all three risks, if analyzed separately, again concurrently predicted engagement at age 13, and tended to predict decreasing engagement over the next two years (non-significantly for immigrant status and only marginally for GPA). For initial engagement level, controlling for adversity did not change the effects of immigrant status whereas controlling for GPA again reduced the immigrant status effects to virtually zero, replicating the pattern for absenteeism. Not surprisingly, the non-significant effect of immigrant status on change in engagement remained non-significant after controlling for either adversity or GPA.

We additionally checked whether these results applied to both first- and second-generation immigrants by replacing immigrant status with dummy-coded first- and second-generation immigrants (both dummy variables were simultaneously entered into the analyses reported in Table 2). The results were highly similar for both immigrant groups; each group showed the same significant effects as the overall immigrant status variable except for the effects of second-generation immigrants on absenteeism where the effect on initial status and on the slopes were only marginally significant ($p < .06$ and $p < .07$) which can be attributed to the relatively small group of second-generation immigrants.

In sum, immigrant status was a risk factor for initial engagement even after controlling for social adversity, both for first- and second-generation immigrants. Because the effect disappeared after controlling for GPA, the immigrant status effect on initial engagement was fully accounted for by immigrants' lower GPA (see Table 1). This was true for both absenteeism and teacher-rated engagement. In addition, immigrant status was a risk factor for increasing absenteeism even after controlling for social adversity, and this effect was again fully accounted for by immigrants' lower GPA. However, immigrant status did not predict decreasing teacher-rated engagement (the only discrepancy between the two measures of engagement).

Discussion

This study focused on the behavioral school engagement trajectories over the middle school years of immigrant early adolescents, and of their non-immigrant classmates, enrolled in Greek urban public schools, in relation to their academic achievement. The relationship between these variables was expected to be bidirectional. Lagged analyses between behavioral school engagement and academic achievement trajectories confirmed this hypothesis, although academic achievement drove school engagement more strongly than vice versa. These findings held for both immigrant students and for their non-immigrant classmates and for both genders.

In a similar vein, it was shown that the initially lower behavioral school engagement, and the increasing gap over the middle school years in the engagement of immigrant students compared to their non-immigrant classmates, was mainly due to immigrants' low academic achievement. Together these findings support the immigrant youth educational disinvestment hypothesis, whereby immigrant students may disengage from academic activities over time to protect themselves from the negative psychological effects of school failure.

Behavioral engagement and academic achievement

Even though a number of longitudinal studies have shown concurrent correlations between school engagement and academic achievement (e.g. Johnson, McGue, & Lacono, 2006; Li & Lerner, 2011), very few have examined the covariation of intraindividual changes in these two domains of behavior (e.g. Hughes et al., 2008), and none in immigrant samples.

We found that behavioral engagement was positively related to academic achievement in the first year of middle school, and that achievement more strongly influenced engagement in the next year than vice versa. This finding held for both time windows (between waves 1 and 2 and waves 2 and 3), for both genders, both immigrant and non-immigrant groups, and was virtually identical for first- and second-generation immigrants, which strongly strengthens our conclusions. This asymmetry contributes to extant knowledge by suggesting that causality runs more strongly from achievement to engagement than from engagement to achievement, although no firm causal conclusions can be drawn from correlational studies.

In addition, both engagement and achievement showed synchronous changes. Thus, for whatever reason, when a student either increased or decreased in one domain, this student showed a simultaneous increase or decrease in the other as well. These synchronous changes could be due to unmeasured influences affecting both behavioral engagement and academic achievement in a similar way, such as effects of peers, teachers or family members. They may also reflect bidirectional processes taking place within a time frame of assessment on a more rapid time scale. These results held in general for both immigrant and non-immigrant youth, a finding that is suggested also by other studies (see Finn, 1993).

Our results were largely consistent across the two measures of engagement, although they were generally stronger for the teacher ratings than for absenteeism. This finding may be partly due to a halo effect (teachers partly infer engagement from good grades) as well as to a lower reliability of the absenteeism measure, which seems also one reason for its relatively low long-term stability.

Risks for behavioral engagement

Significant group differences were found, as expected, for both level and change in students' behavioral engagement. Immigrant status, low academic achievement, and social adversity were risk factors in most cases for both measures of initial behavioral engagement (absenteeism and teacher ratings). For both measures of engagement, the effect of immigrant status on initial engagement remained significant after social adversity was statistically controlled but disappeared after academic achievement was controlled. Over the next two years, the absenteeism of all students increased. Immigrant students presented a steeper increase in absenteeism than non-immigrant students, and this widening gap between immigrant and non-immigrant students remained significant when social adversity was controlled but ceased to be significant if academic achievement was controlled. However, teacher-rated engagement did not decrease.

The lower school engagement of immigrant students, compared to their non-immigrant classmates, provides additional evidence that the ethnic group and the host country may differentially predict the presence of the immigrant paradox. We reported similar findings regarding immigrant students' academic achievement (Motti-Stefanidi, Asendorpf & Masten, 2012). The finding that immigrant status is actually a risk factor for both school engagement and academic achievement may be explained by the fact that Greek schools provide minimal institutional support to address immigrant youth's language barriers and other educational needs (Nikolaou, 2000). However, such support is highly predictive of immigrant students' school performance (OECD, 2010) as well as of their school engagement (OECD, 2003).

The general decrease observed in students' behavioral engagement over the period of early adolescence is congruent with the literature (see Appleton, Christenson & Furlong, 2008; Fredricks et al., 2004). Similar findings have also been reported in other studies of immigrant youth school engagement (Suárez-Orozco et al., 2009). However, to the best of our knowledge, no other study has directly compared changes in school engagement of immigrant students and of their non-immigrant classmates. Furthermore, the widening of the gap in absenteeism between immigrant and non-immigrant students is consistent with findings regarding the behavioral engagement particularly of minority and low SES youth (see Wigfield et al., 2006), but has not been documented before for immigrant youth.

The widening gap in absenteeism between immigrant and non-immigrant students seems to be due to immigrants' low academic achievement. These results, which are consistent with the results from the cross-lagged analyses, provide further evidence that immigrant students' initial academic failure contributes to their disengagement from school, both concurrently and over time. This finding offers support to our immigrant youth educational disinvestment hypothesis.

What cannot be elucidated by this study is whether this decline in immigrant students' behavioral engagement is the result of acculturation. One would need a third group, consisting of youth who remained in the immigrant's home country (Fuligni, 2001) to draw safe conclusions on this matter. If engagement of immigrant youth decreased more than their peers who remained in the country of origin, then the decreases observed in immigrant youth's engagement might be attributed to acculturation on the developmental change. If, in contrast, the engagement of all three groups showed parallel declining paths these could be argued to reflect developmental change.

Immigrant students' larger increase in absenteeism was not reflected in teachers' ratings of engagement, possibly due to a more lenient attitude toward immigrant students. A similar attitude has been documented for change in the academic achievement of students who were enrolled in higher mean SES adversity classrooms, the majority of whom were immigrants (Motti-Stefanidi, Asendorpf et al., 2012). Discrimination in the form of low expectations for immigrant students could also play a role in the different findings for teacher reports versus absenteeism.

The finding that immigrant status continued to predict lower school engagement, over and above social adversity, but not over and above academic achievement, suggests that academic achievement may capture processes that have a negative effect on students' school engagement, not captured by social adversity. The effect of social disadvantage and low academic achievement on school engagement, which concerns both immigrant and non-immigrant students, may be related to being enrolled in schools that are not well equipped to meet these students' developmental and acculturative needs (see Suárez-Orozco et al., 2009), as was the case in our sample of schools. However, the effect of low academic achievement, which in our study was judged by at least four different teachers, on school engagement may additionally reflect other processes that have been shown to have a negative effect on school engagement (see Wigfield et al., 2006), such as unaddressed language barriers and discrimination (Triandafyllidou, 2000).

Limitations

This study has a number of limitations. One limitation is related to sample attrition. Longitudinal data on the adaptation, and its predictors, of immigrant youth are rare and challenging to obtain. We successfully collected three waves of longitudinal data, but faced considerable attrition by the third wave. We dealt with this issue by using multi-level modeling and Full Information Maximum Likelihood estimation.

Another limitation is related to the fact that one school engagement measure and academic achievement were based on teacher ratings, which results in shared method variance and somewhat inflated correlations between GPA and teacher-rated engagement. However, it should be noted that, whereas the school engagement measure was based on one teacher's ratings (the Greek language teacher who knows students best due to the number of hours teaching in each class), GPA was based on judgments of at least four different teachers.

A third issue is that we did not study moderating effects of gender in the multi-level analyses. Significant gender differences in school engagement during the middle school years have been documented (e.g. Wang & Eccles, 2012). A multinational study, which included a Greek sample, reported in agreement with other studies that girls present higher school engagement than boys (Lam et al., 2011). We found the same gender main effect. However, due to the complexity of our analyses we controlled for gender instead of studying interactions between gender and other predictors because the models including these interactions would become too complex and would provide insufficient statistical power to test for them, given our sample size.

A fourth limitation concerns the representativeness of the immigrant sample. The sample was drawn from schools in the capital of the country with a high immigrant enrollment. The results cannot be generalized to immigrant youth living in rural areas, or to the more

disenfranchised undocumented immigrants. However, it should be noted that when the data was collected (2005–07) schools used to accept students independently of their legal status.

A final, obvious limitation is that we studied behavioral engagement in only one cultural context with its specific educational system, immigration history, and integration policies. We would be not surprised if some of our findings would come out differently in different cultural contexts.

Despite these limitations the study had several unusual strengths. It was possible to study immigrant adolescents' trajectories of behavioral engagement through the middle school years, and directly compare them with those of their non-immigrant classmates, while controlling for classroom differences in mean engagement. To the best of our knowledge, this is the first study that involves such a direct comparison. Furthermore, both dependent and independent variables were assessed based on diverse sources of information, including teachers and school records. Finally, as far as we know ours are the first cross-lagged analyses between academic achievement and school engagement for immigrant samples.

Conclusions

Results of this study show that, contrary to the immigrant paradox, immigrant youth face higher risks than non-immigrant peers for lower school engagement. Moreover, this gap appears to increase over the middle school years among immigrant students at least concerning absenteeism. Results offered more support for the effects of achievement on engagement than the reverse. Academic achievement problems may lead to disengagement in an effort to preserve psychological well-being in the context of failure in this developmental task domain, as would be supported by the stereotype threat phenomenon (Steele & Aronson, 1995). A future study should directly test this hypothesis.

Nonetheless, behavioral engagement was strongly and persistently related to concurrent achievement, which may be the result of long history of bidirectional influences occurring well before middle school. Engagement may have more influence on achievement in primary school (e.g. Ladd & Dinella, 2009) and a protective role in the transition to middle school (cf. Lord et al., 1994). The window of opportunity for improving achievement by increasing engagement may occur then prior to the middle school transition, although Hughes et al. (2008) argued that interventions in primary school that target both domains are more likely to improve achievement.

In any case, achievement itself appears to be an important target for change in immigrant students. Here too, earlier efforts may be important, aiming to support and foster their academic achievement by providing adequate resources for success during the primary school years. These results shift our attention to the importance of promoting students' academic achievement for preventing school disengagement.

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