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The transition to post-secondary vocational education: students' entrance, experiences, and attainment

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Chapter 5

Jumping Over Their Own Shadow: the Interplay of Students' School Engagement and Performance Across the Transition to Post-Secondary Vocational Education*

ABSTRACT

In this study, we examine the interplay between student engagement and performance across the transition to senior vocational education (SVE) in the Netherlands. Dropout in the first year after the transition to SVE is high, suggesting that many first year students are in a process of gradual disengagement from school. Using multilevel structural equation modeling, we assess the development of emotional engagement, behavioral engagement and performance over time. Results indicate that emotional engagement has a stronger direct impact on performance than behavioral engagement. Pre-transition behavioral engagement affects post-transition engagement, underlining the continuity in students' school careers across contexts. However, pre-transition emotional engagement does not affect post-transition emotional engagement, suggesting that a transfer to a new school environment allows emotionally disengaged students to start with a clean slate.

* This chapter is based on:

Elffers, L. & Oort, F.J. (*submitted*) – Jumping Over Their Own Shadow – the Interplay of Students' School Engagement and Performance Across the Transition to Post-Secondary Vocational Education

INTRODUCTION

In the Netherlands, many students drop out in the first year after the transition to post-secondary vocational education (Dutch Ministry of Education Culture and Science, 2010). Dropout can be viewed as the final stage of a process of gradual disengagement from school, which may have its roots in earlier school years (Alexander, Entwisle, & Kabbani, 2001). Although the transition to a new school or program provides an opportunity to start with a clean slate, earlier disengagement may cast its shadow over students' engagement and performance after a transition (Finn, 1993; Rumberger, 1995). In this study, we examine students' school engagement and performance across the transition to post-secondary vocational education in the Netherlands. Departing from the participation-identification model (Finn, 1989), we apply multilevel structural equation modeling to explore the interplay of engagement and performance over time, and the role of pre-transition engagement on post-transition outcomes.

THEORETICAL BACKGROUND

School engagement and its interplay with performance

School engagement is a multidimensional construct that comprises, at least, an emotional and behavioral dimension (Appleton, Christenson, & Furlong, 2008; Finn, 1993; Fredricks, Blumenfeld, & Paris, 2004). Emotional engagement refers to students' emotional dispositions to school, such as a sense of belonging in school and valuing of education, whereas behavioral engagement refers to students' participation in social and academic activities in the school context (Finn, 1993; Fredricks et al., 2004). Emotional and behavioral engagement are hypothesized to affect academic performance in a mutually reinforcing way (Appleton et al., 2008; Finn, 1989; Fredricks et al., 2004). However, the direct and indirect paths along which engagement and performance interact and develop are not entirely clear. A direct effect of behavioral engagement on academic performance has been established in various studies (Finn & Rock, 1997; Janosz, Le Blanc, Boulerice, & Tremblay, 2000; Rumberger, 1987), but the relationship between emotional engagement and academic performance is less clear (Fredricks et al., 2004). The participation-identification model (Finn, 1989, 1993) suggests that behavioral engagement affects performance directly, which in turn leads to emotional engagement. Emotional engagement promotes further behavioral engagement. Hence, according to the model, academic performance mediates the influence of behavioral engagement on emotional engagement, and emotional engagement affects academic performance indirectly through its effect on behavioral engagement. However, recent studies report alternative relationships between engagement and performance. For instance, a typological study of dropouts points

out that students can be emotionally disengaged eventhough their performance is good (Janosz, LeBlanc, Boulerice, & Tremblay, 2000), and a sense of belonging in school has been shown to directly predict school performance (Samdal, Wold, & Bronis, 1999). These findings suggest that alternative pathways from engagement to performance and vice versa need to be considered to accurately describe the developmental cycle of engagement and performance in school.

School engagement across time and contexts

Whereas most children enter the school system eager to engage in school activities, some students remain highly engaged throughout the school years, while others become gradually disengaged (Alexander et al., 2001; Wehlage & Rutter, 1986). Similar to being involved in a self-reinforcing cycle of positive engagement and performance in school, students can be caught in a negative process of declining engagement and performance (Appleton et al., 2008; Finn, 1989; Fredricks et al., 2004). Fading concentration in the classroom or growing truancy are overt symptoms of a process of disengagement that may have its roots in earlier school years (Alexander et al., 2001). Although a transition to a next grade, new program, or different school may enable students to break out of a spiral of disengagement (Elder Jr, Kirkpatrick Johnson, & Crosnoe, 2003; Langenkamp, 2010), previous disengagement can impede students' engagement in a new grade, program or school (Finn, 1993; Rumberger, 1995). In contrast, Tinto (1993) states that what happens after the transition to a new school environment is more important for students' engagement after the transition than what has previously occurred in their school careers. Hence, it is not yet clear how context-dependent school engagement really is, or what the influence of engagement in one context is on engagement in another context.

OBJECTIVES OF THIS STUDY

Empirical research on the development of engagement is scarce. Most studies of engagement are based on cross-sectional data, and do not allow for disentangling the contribution of emotional and behavioral engagement to performance in school (Fredricks et al., 2004). The single model that describes the continuity and change in engagement and performance over time, as well as the unique contribution of emotional and behavioral engagement to academic performance, is the participation-identification model (Finn, 1989; Fredricks et al., 2004). However, this model appears to overlook some potentially important relationships between engagement and performance, such as a direct effect of emotional engagement on performance, and of behavioral engagement on emotional engagement. Moreover, most studies of student engagement have been conducted with data from predominantly White middle-class samples from middle and high schools, which

makes it difficult to generalize findings to other student populations (Fredricks et al., 2004). With this study, we aim to contribute to the existing body of research by examining the interplay of engagement and performance across the transition to senior vocational education (SVE) in the Netherlands. SVE is the senior continuation of the lowest track in Dutch secondary education, and provides specialized vocational programs for students of 16 years and older. Dropout rates peak in the first year after the transition to SVE (CBS Statistics Netherlands, 2010), suggesting that many students are in a process of disengagement from school in the first year in SVE. As SVE schools, and especially those in urban areas, serve a substantial proportion of students from lower socioeconomic backgrounds and ethnic minority groups, a study of school engagement among SVE students enables us to expand the scope to those groups (Dutch Ministry of Education Culture and Science, 2009; Kuhry, 1998; Scientific Council for Government Policy, 2008). Using structural equation modeling techniques, we model the interplay of emotional and behavioral engagement and academic performance over the course of the first year after the transition. Next, we assess the impact of pre-transition engagement on post-transition engagement, and explore the effects of students' sociodemographic and educational route.

METHODS

Participants and procedure

We analyzed data from a longitudinal study on student persistence in the first year in SVE. To obtain a diverse sample, out of the 40 regional SVE school boards in the Netherlands, we invited 10 school boards that are located in highly and intermediate urbanized areas to participate in the study. Five school boards agreed to participate. From each school board, first year groups were selected from engineering, economics, and health & social care programs at all four SVE degree levels (1: assistant level; 2: basic vocational level; 3: full professional level; 4: specialist level). The groups were selected during the summer break, before individual students were assigned to groups. Measurements took place at three time points in the academic year 2008/9: at the start of the first semester, at the start of the second semester, and at the end of the second semester. Information on students' background and pre-transition engagement was collected at the first measurement occasion, which took place directly at the start of the academic year. At the second measurement, information about students' engagement and performance in the first semester after the transition to SVE was collected. At the third measurement, students reported on their engagement and performance in the second semester. Participation in the study was voluntary for students, but we received no reports that students declined to participate. For a path analysis of the

interplay of engagement and performance over time, a sufficient number of cases with complete data on all three measurements was required. However, selection of students with complete data on all three measurements yielded a restricted sample of 491 students. Therefore, we used the expectation maximization algorithm to impute data for cases with missing values on either the first or second measurement only (SPSS Inc., 2010). The resulting sample included 628 students with complete data, from 55 classes. Basic descriptive statistics of the sample are given in table 1 below. Other than a slight overrepresentation of female students (58%), the sample corresponds to available statistics of vocational education and urban schools in the Netherlands (Dutch Ministry of Education Culture and Science, 2011; Dutch Ministry of Health Welfare and Sport, 2010; Knowledge Centre for Vocational Training and Labour Market, 2010; Kuhry, 1998).

Measures

Data were collected using self-report questionnaires that were completed in a classroom setting under supervision of a teacher. Questionnaire items were inspired by engagement definitions and measures from previous studies (Finn, 1993; Fredricks et al., 2004; Goodenow & Grady, 1993; Voelkl, 1995; Willms, 2003), and were phrased to suit the specific context of SVE and its students. All items consisted of statements to which students responded on a 5-point Likert-type scale (strongly disagree to strongly agree), except for the items on students' background characteristics. We defined emotional engagement in line with the concept of identification with school (Finn, 1989): students' sense of belonging in school (*belonging*: 4 items; $\alpha=.90$; e.g. *I feel at home at this school*), students' valuing of their education (*valuing*: 6 items; $\alpha=.87$; e.g. *What I learn in this program is useful for my future career*), and students' attitudes towards education and their role as a student in general (*attitudes*: 7 items, $\alpha =.85$; e.g. *I think it is important to go to school*). Behavioral engagement was defined in line with the concept of participation in school (Finn, 1989), but as participation in extracurricular activities or student councils is rare in SVE schools, we included measures of behavioral engagement in class-related activities only (*behavioral engagement*: 8 items; $\alpha=.76$; e.g. *I attend most classes*). Since SVE does not have a standardized testing or grading system, no comparable objective measures of student performance were available. Therefore, we used a self-report measure of performance (*performance*: 4 items; $\alpha=.81$, e.g. *Compared to my classmates, my performance in school is very poor / poor / average / good / very good*).

We used two retrospective measures of pre-transition engagement: *prior emotional engagement* (3 items, $\alpha=.88$, e.g. *I felt at home at my previous school*) and *prior behavioral engagement* (6 items, $\alpha=.77$, e.g. *I used to skip classes often at my previous school* (reversed)). Control variables included students' *sector* and *level* in SVE, as well as their *age*, *gender*, and *ethnicity*. First year students in SVE come

from many different academic routes: most students enroll directly after graduating from pre-vocational education (PVE), but students without a PVE diploma are allowed to enroll in the lowest SVE level. Moreover, a substantial group of the first year students are SVE dropouts who make a new start, or graduates from a lower level program in SVE who continue their education at a higher SVE level. Therefore, to account for students' academic attainment prior to the start in their current SVE program, we included an indicator of their academic route prior to transferring to the current program (*prior education*: PVE with graduation, PVE without graduation, SVE with graduation, SVE without graduation, other).

Analytic plan

Intra-class correlation coefficients (ICC) indicate that small to substantial proportions of the variance of the engagement and performance measures can be attributed to between-class differences, with ICC's ranging from .02 to .13 (Snijders & Bosker, 1999). We accounted for the multilevel structure of the data by using robust maximum likelihood estimation, as implemented in the Mplus software for structural equation modeling ("type=complex", see: Muthén & Muthén, 2010). Our analyses comprised three steps. First, we fitted a model that estimates relationships between post-transition emotional engagement, behavioral engagement, and performance. The variable *emotional engagement* was modeled as a latent variable with three indicators: *belonging*; *valuing*; and *attitudes*. The initial model was based on the participation-identification model (Finn, 1989), but we additionally estimated direct effects of emotional engagement on performance, performance on behavioral engagement, and behavioral engagement on emotional engagement. Next, we added the pre-transition engagement measures *prior emotional engagement* and *prior behavioral engagement*, by modeling direct effects of pre-transition emotional engagement on post-transition emotional engagement, and of pre-transition behavioral engagement on post-transition behavioral engagement. Last, we explored the effects of students' prior education, SVE sector and level, age, gender, and ethnicity.

Table 1:
descriptives of sample of 628 first year students in senior vocational education

Characteristic	%
Age	
16-17 years	64
18-19 years	27
> 19 years	9
Gender	
Female	58
Male	42
Ethnic background	
Native Dutch background	53
Moroccan background	16
Turkish background	12
Surinamese background	8
Other ethnic background	13
Prior education	
PVE with diploma	69
PVE without diploma	11
SVE with diploma	8
SVE without diploma	7
Other	12
SVE sector	
Economics	27
Engineering	29
Health & social care	44
SVE degree level	
Level 1	10
Level 2	32
Level 3	27
Level 4	32

RESULTS

Table 2 shows the means, standard deviations and ICC's of emotional engagement, behavioral engagement, and performance in the first and second semester of the first year in SVE. We observe little change in the means and standard deviations, but a substantial decrease in ICC's between the first and the second semester. For example, while 13% of the variance of *belonging* can be attributed to between-class differences in the first semester, this proportion has dropped substantially to 2% in the second semester.

Table 2: descriptives of emotional engagement, behavioral engagement, and performance in the first and second semester of the first year in SVE

Variable	M	SD	ICC
<i>First semester</i>			
Emotional engagement:			
Belonging	3.51	.67	.13
Valuing	4.05	.57	.09
Attitudes	3.80	.64	.07
Behavioral engagement	3.87	.49	.04
Performance	3.87	.57	.03
<i>Second semester</i>			
Emotional engagement:			
Belonging	3.49	.73	.02
Valuing	3.98	.67	.02
Attitudes	3.72	.74	.07
Behavioral engagement	3.75	.57	.03
Performance	3.77	.69	.02

Note:

M = mean, on a scale from 1 (very negative) to 5 (very positive)

SD = standard deviation

ICC = intra-class correlation coefficient

Before adding pre-transition engagement measures to the model, we constructed a model with post-transition variables only, to first establish an optimal model describing the interplay of post-transition engagement and performance. Table 3 gives the fit results of the models that we describe here. First, we compared a model without cross effects (Model 1) to a model with cross effects of first semester behavioral engagement on second semester emotional engagement, and of first semester emotional engagement on second semester behavioral engagement (Model 2). These cross effects were not significant, and their inclusion did not improve model fit (X^2 difference = 4.303; $df=2$; $p=.12$; see: Satorra & Bentler, 1999). Therefore, we proceeded without cross effects. In Model 1, we found that the observed covariance between emotional engagement and

performance was not sufficiently explained by the model parameters. A modification index indicated that inclusion of a direct effect of first semester emotional engagement on second semester performance would improve the model fit significantly. After this modification, the post-transition model was established (Model 3). To this model, we added pre-transition measures of engagement: prior emotional engagement and prior behavioral engagement (Model 4). Modification indices suggested that the fit could be further improved by inclusion of crossed effects of prior emotional engagement on first semester behavioral engagement, and of prior behavioral engagement on first semester emotional engagement (Model 5). Last, we added the background variables *age*, *gender*, *ethnicity*, *SVE sector*, *SVE level*, and *prior education* one by one. However, none of these variables yielded significant effects, so we did not include those in the final model. Figure 1 shows the parameter estimates of the final model, Model 5, which we discuss in the next section.

Table 3: fit results of structural equation models

Model	Description	X²	df	RMSEA	C.I. of RMSEA
1	no cross effects emotional engagement and behavioral engagement	74.695	25	.056	.042 - .071
2	cross effects emotional engagement and behavioral engagement	72.194	23	.058	.043 - .074
3	direct effect emotional engagement 1 st semester on performance 2 nd semester	56.577	24	.046	.031 - .062
4	inclusion prior emotional and behavioral engagement without cross effects	123.454	42	.056	.044 - .067
5	inclusion prior emotional and behavioral engagement with cross effects	92.197	39	.047	.034 - .059

Note: n=628; N=55.

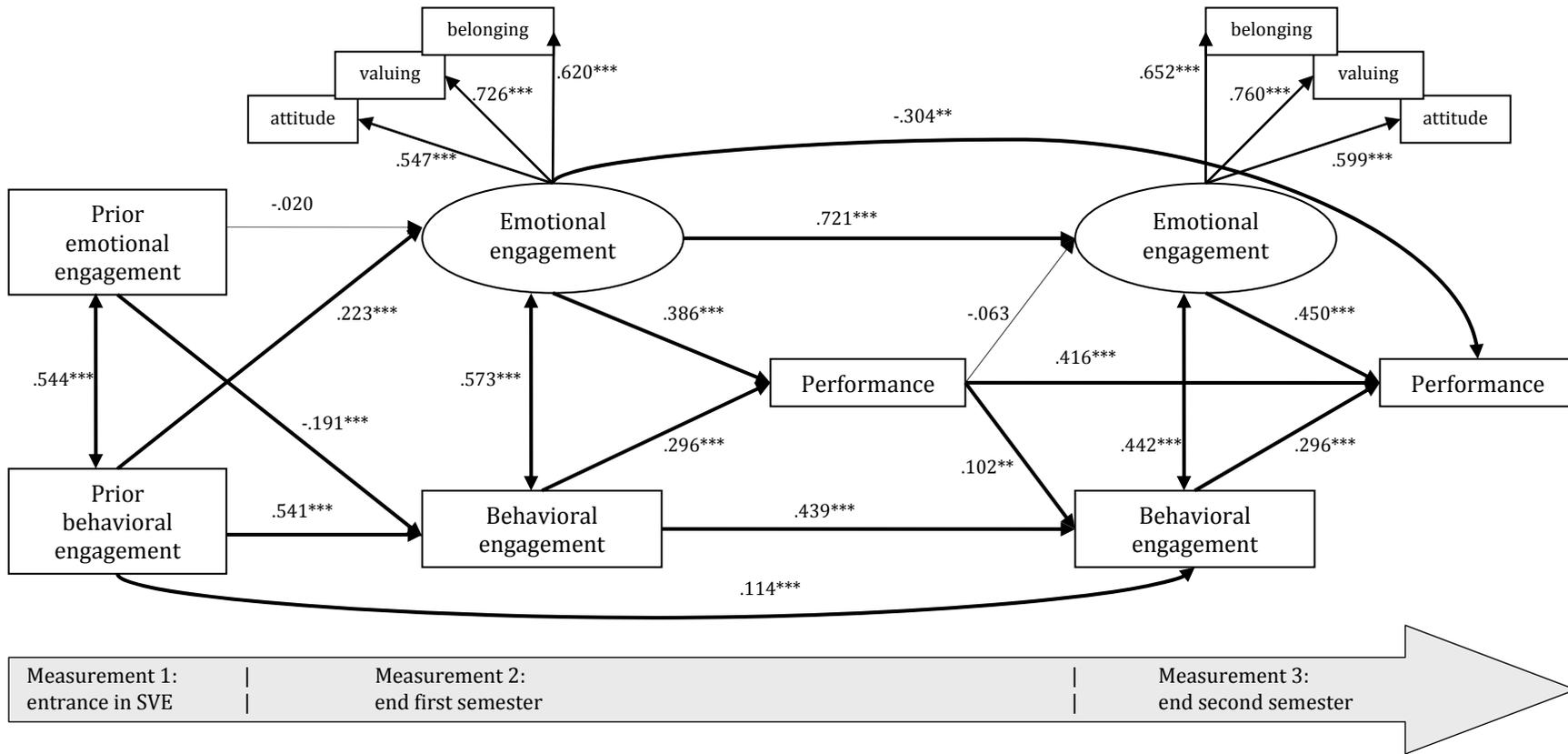
X² = chi square

df = degrees of freedom

RMSEA = root mean square error of approximation

C.I. of RMSEA = 90% confidence interval of RMSEA

Figure 1: standardized parameter estimates of multilevel path model describing the interplay of engagement and performance across the transition to Dutch senior vocational education



Note: n= 628; N=55; * p<.05; ** p<.01; *** p<.001; X²= 92.197; df=39; RMSEA = .047. Not shown: residual variances.

DISCUSSION

The importance of emotional engagement for performance in SVE

Emotional engagement was successfully identified as a latent construct consisting of three dimensions. The dimension *attitudes* has a lower factor loading than *belonging* and *valuing*. This is probably due to a difference in context-dependency: *belonging* and *valuing* relate to the particular school and program that students attend, whereas *attitudes* refers to students' orientation towards education in general.

Emotional and behavioral engagement are significantly correlated, but both dimensions of engagement make a unique and substantial contribution to performance in SVE. While the participation-identification model does not include a direct effect of emotional engagement on performance (Finn, 1989), our findings indicate that emotional engagement has a direct effect on performance that is larger than the direct effect of behavioral engagement on performance. The strong direct and indirect effects of emotional engagement on performance even necessitate inclusion of an additional, negative, effect of emotional engagement in the first semester on performance in the second semester, to correct for an overestimation of the total effect. Performance has a mediating role in the relationship between behavioral and emotional engagement. However, other than the participation-identification model suggests, it is not the effect of behavioral engagement on emotional engagement, but the effect of emotional engagement on behavioral engagement that is partially mediated by performance. Other than hypothesized in the participation-identification model, a model with a direct cross effect of emotional engagement on behavioral engagement did not fit our data well. Our results confirm the important influence of behavioral engagement on school performance, but they attest to the direct impact of emotional engagement on school performance in particular.

Interpretation from the perspective of the context and design of this study

We need to consider the nature of the performance measure in our study as well as the specific context of SVE when interpreting the differences between our findings and previous findings about the role of emotional engagement in students' performance. First, as SVE does not employ standardized test scores or grades, we used a self-report measure of performance. Previous studies have shown that self-reported performance is a reliable indicator of students' actual performance (Samdal et al., 1999). Nevertheless, self-report performance measures are subjective, and are therefore more affect-laden than grades or test scores. This may explain why the performance variable in our study is more closely related to the emotional engagement measure (see also: Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Second, the transition to SVE marks a transfer from a more

general vocational curriculum in secondary education to a specific job-oriented program that prepares students for the labor market. This specialization may enhance students' emotional engagement, as the relevance of the curriculum for students' future career becomes more evident. Moreover, this specialization may reinforce the role of emotional engagement as a prerequisite for students' performance in SVE. Students choose to enroll in an SVE program that suits their professional plans and interests. If a student cannot identify with the curriculum, there are more opportunities to opt out and transfer to another program in SVE than in secondary education.

An important next step in our research will be to link the current findings to students' persistence records. The design of the current study required respondents' presence in a program until the third measurement at the end of the second semester. As many students drop out or transfer to another program or school over the course of the first year in SVE, this requirement results in an underrepresentation of students who dropped out before the end of the year. Examining differences between students who persisted and students who quit the program can shed more light on the relationship between engagement and persistence in school.

Continuity and change in engagement across the transition

Our findings underline that a school transition is not an isolated event, but is embedded in the educational life course of students (Elder Jr et al., 2003; Pallas, 2003). In the case of behavioral engagement, our study emphasizes the continuity in engagement across time and contexts. If students were behaviorally engaged in a previous program, they are more likely to be engaged in their new program, emotionally as well as behaviorally. Not only does pre-transition behavioral engagement affect behavioral engagement shortly after the transition, it has an additional direct effect on behavioral engagement at the end of the first year after the transition, net of its effects on earlier post-transition engagement. The transition to a new school or program seems a relatively small step in a continuous trajectory of behavioral engagement. In the case of emotional engagement however, we see a more complex picture. Whereas emotional engagement in the first semester is highly predictive of emotional engagement in the second semester, our findings indicate that emotional engagement in a new context is not related to emotional engagement in a previous context. Hence, in terms of emotional engagement, a transition to a new school environment serves as a fresh new start. However, if students were emotionally engaged in their previous school, the transition to a new school or program is met with a slight drop in behavioral engagement. We did not find an effect of pre-transition attainment to post-transition engagement and performance.

Monitoring and enhancing school engagement

Given the prominent role of emotional engagement in performance, it is recommended that schools monitor and enhance students' emotional engagement. However, whereas behavioral (dis)engagement can be monitored by teachers and parents, for instance by keeping track of students' class attendance, on-task behavior, and homework completion, emotional (dis)engagement is more difficult to detect. Behind a facade of regular participation in school, a process of emotional disengagement may unfold (Janosz et al., 2000). Instead of assuming emotional engagement on the basis of students' behavior in school, it is more helpful to ask students directly whether they feel at home at school, and whether they think that what they learn in school helps them to achieve their goals. If the answer is negative, schools need to discuss with students how their emotional engagement could be enhanced. The high ICC's indicate that students' emotional engagement is more affected by the class environment earlier in the school year. While the decreasing ICC's over time suggest that students' emotions become more independent over the course of the year, emotional engagement earlier in the school year is highly predictive of emotional engagement later in the school year. Once established, students' level of emotional engagement appears to remain highly constant over time as long as they stay in the same environment. However, as our findings indicate that emotional engagement in a new context is not related to emotional engagement in the previous context, a transfer to a different class or program can prevent emotionally disengaged students from losing the connection with school to the point that they drop out of school. Contrary to emotional engagement, behavioral engagement in a previous context does predict students' engagement in a new context. This finding demonstrates that it is important for schools to learn about students' prior school experiences, and to discuss with them ways to continue or redirect their educational pathway in a positive direction. This longitudinal study has a limited time frame of one year, using retrospective measures to assess students' pre-transition experiences. A more extended time frame would yield more insight in the development of engagement and performance across multiple school years and contexts.

Emotional engagement, behavioral engagement and performance interact in a self-reinforcing cycle (Finn, 1989). Our findings indicate that school transitions can be little more than a small hurdle in this cycle, that might slightly frustrate the positive course of school engagement for a while. At the same time, we find that transitions can form a turning point for students who wish to jump over their own shadow and make a fresh new start. Identification of the key moments in students' school careers that allow some students to break out of a spiral of disengagement, while helping others to maintain or re-establish their engagement with school, is crucial to enable all students to keep the wheel spinning in the right direction.