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The Evolution of Motivation to Learn in the Context of the Transition to Secondary School: Developmental Trajectories and Relational Determinants

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Abstract: This article examines fluctuations in motivation to learn over the primary to secondary school transition. Students (N = 323) in Quebec, Canada were surveyed at the end of their final year of primary school and at the beginning and end of their first year of secondary school regarding their expectancies for success and the value they placed on learning. The objectives were: 1) to measure general changes, using a conventional approach, 2) to distinguish different trajectories, using a group-based semi-parametric approach, and 3) to examine the link between relational dimensions and these trajectories. The results show that on average, expectancies and value declined. More specifically, three developmental trajectories were identified for both expectancies and value. Positive relationships with peers and the teacher before the transition were associated with relatively positive trajectories of expectancies and value. Thus, social relationships may serve as a protective factor during this transition, at least for motivation to learn.

Keywords: Transition to Secondary School, Trajectories, Motivation to Learn, Relational Predictors

Introduction and Background

The shift to adolescence not only marks a key stage in physiological development, but is concomitant with major psychological changes. Young teens generally acquire new cognitive and affective potentialities, and begin to assert themselves more and demand greater autonomy (Steinberg 2013). While coping with these changes, they must also navigate a new academic environment which may not be familiar to them (Eccles and Midgley 1989). Leaving behind primary school, they start to integrate into secondary school and discover an environment with its own characteristics. Secondary schools are typically larger and have a more heterogeneous student population (Anderson et al. 2000). In addition, rather than having to meet the expectations of just one classroom teacher, students must discern and assimilate those of multiple subject matter specialists who are responsible for multiple groups (Eccles and Roeser 2009). What is more, these teachers are reputed to have a less flexible classroom management style and to offer fewer opportunities for students to express themselves and assume responsibilities (Caprara et al. 2008). Secondary school is moreover criticized for being more impersonal and making scant effort to help students consolidate a relational network that may be jeopardized during this transition. Students also discover a more elaborate educational program and paradoxically may struggle to find the help that could support their learning (Caprara et al. 2008). Hence, they experience many changes during their transition to secondary school, with potential repercussions on their functioning at school (Ratelle et al. 2004). According to Eccles and Roeser (2009), students are especially at risk of experiencing a drop in motivation during this

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stage. This study precisely examines the various ways students' motivation may evolve within this transition context.

An Expectancy-Value Conceptualization of Motivation to Learn

Different conceptualizations have been put forward to study the complex dynamic of motivation to learn. A number of these conceptualizations fall under a socio-cognitive paradigm. This is the case of expectancy-value conceptualization, which has served as a basis for some studies carried out in the specific context of this transition. This conceptualization is not used to identify the nature of this motivation, but rather to analyze its functioning. As such, it helps gain insight into individuals' evaluation of their likelihood of success and the value of learning situations (Schunk, Pintrich, and Meece 2008). These last components are considered likely to decisively shape students' choice to engage and persist in learning (Schunk, Pintrich, and Meece 2008). A variant of this conceptualization, proposed by Pintrich and Schrauben (1992), allows for documenting students' assessment of their academic competence, as well as the interest and importance they attribute to learning and the related goals they set for themselves. These dimensions are explored in the present study, which is precisely based on this last conceptualization.

Sense of competence is a dimension which, by itself, reflects students' assessment of their likelihood of success (Pinxten et al. 2014). Indeed, students continually think about their ability to act effectively (Bouffard and Vezeau 2015) and when they come to a positive conclusion in this respect, they can be expected to display favorable expectancies for success (Eccles and Wigfield 1995). It is worth adding that an optimistic assessment of competence often corresponds to rather favorable judgments on the value of learning (Law, Elliot, and Murayama 2012). This particular assessment is based on the following criteria. First, interest designates a temporary or lasting psychological state that may be experienced during contact with certain characteristics of the learning environment, for example a given area of learning or specific situations that spark the student's curiosity (Renninger and Hidi 2011). Interest is believed to cover emotional and cognitive dimensions, since it is associated with an experience of enjoyment and the adoption of behaviors conducive to learning (Renninger and Hidi 2011). A second criterion, perceived usefulness, refers to the importance and personal meaning associated with learning, and the adoption of certain behaviors that help make this learning possible (Wigfield, Tonks, and Klauda 2016). Perceived usefulness can be linked to short-term or more long-term goals (Wigfield, Tonks, and Klauda 2016). In addition, the goals can vary depending on individual needs, level of competence, and situational requirements, and constitute the final indicators of value placed on learning (Putwain, Larkin, and Sander 2013). More specifically, students can pursue mastery (or learning) goals and will then exhibit positive attitudes toward school and the learning process (Gorges, Kandler, and Bohner 2012), and may attempt to expand their knowledge and develop their skills. Students may also pursue performance (or ego-involved) goals, in which case they will instead seek to set themselves apart by demonstrating their skills or will want these skills to be socially validated (Grant and Dweck 2003). It should be mentioned that these two types of goals may be pursued simultaneously. Of course, at the opposite, students may be disengaged from their learning and pursue work avoidance goals. The present study enriches the model of Pintrich and Schrauben (1992) by taking this negative orientation into account. Students who pursue this type of goal typically show little interest in learning and a careless attitude toward the quality of their achievements (Kaplan and Flum 2010). Consequently, they apply a minimum of effort (King and McInerney 2014) as a defensive strategy, possibly in response to a negative judgment on their skills (Dowson and McInerney 2001).

General Evolution of Expectancies for Success and Value Placed on Learning

Many studies have focused on the changes these motivational resources may go through in the more specific context of the primary to secondary school transition. Most have found that these resources deteriorate. Indeed, negative changes have repeatedly been documented regarding expectancies for success, whether in terms of perceived competence (Cantin and Boivin 2004), school self-concept (Zanobini and Usai 2002), or self-esteem, a dimension related to school self-concept (Eccles et al. 1989; Grolnick et al. 2000; Seidman et al. 1994; Wigfield and Eccles 1994; Wigfield et al. 1991). This said, stable results (Chung, Elias, and Schneider 1998; Fenzel 2000; Grolnick et al. 2015; Tonkin and Watt 2003) and gains (Kakavoulis 1998; Midgley, Anderman, and Hicks 1995; Seidman et al. 1994) have also been observed. These last findings are of course marginal, but highlight that not all students necessarily experience a decline in motivation during the transition. In fact, in a favorable context, some may be able to preserve or even consolidate positive dispositions.

Changes, especially negative, have also been found with respect to various dimensions of value placed on learning. Students could experience less and less positive emotions in connection with their schooling (Anderman 1999), and increasingly struggle to perceive the benefits of academic activities (Kakavoulis 1998; Schneider et al. 2008) and demonstrate less interest in learning (Chouinard et al. 2012; Dotterer, McHale, and Crouter 2009). Likewise, students may be less inclined to expand their knowledge and develop their skills (Anderman and Anderman 1999; Duchesne, Ratelle, and Feng 2014; Fischer and Theis 2014; Midgley, Anderman, and Hicks 1995; Paulick, Watermann, and Nückles 2013; Shim, Ryan, and Anderson 2008).

Potential Influence of Warm and Supportive Relationships?

The primary to secondary school transition thus appears to be a period of major fluctuation when it comes to motivational resources. The Ministry of Education of Quebec (in Canada) seems to have been sensitive to this issue when it released an information document setting forth avenues to better support students during the transition (Ministry of Education of Quebec 2012). One of these avenues was to have school stakeholders give special attention to the quality of students' relationships with their peers and teachers and parents. This suggestion may have been inspired by an observation of Eccles and Roeser (2009) that these relationships may be a valuable source of comfort and support during this transition period. It is well known, of course, that teenagers give great importance to relationships with their peer groups, which may influence their feelings, thoughts, behaviors, and adaptation to various situations (La Greca and Harrison 2005). Hence, peer groups may legitimately be posited to have a protective effect during this period. It is also known that students want to free themselves from the influence of adults, but still appreciate knowing that they are available to offer them support if they need and request it.

Some data offers an overview of the influence of social relationships, described as warm and supportive, on expectancies for success and value placed on learning, in the context of this transition. It has been noted that warm and supportive relationships with peers may be positively correlated with positive self-perceptions (Cantin and Boivin 2004; Chung, Elias, and Schneider 1998; Fenzel 2000; Newman Kingery, Erdley, and Marshall 2011). Likewise, it has been shown that students well-integrated among their peers were less likely to question the importance of learning (Anderman 1999; Goldstein, Boxer, and Rudolph 2015), and may increasingly want to develop their knowledge and skills (Fischer and Theis 2014). This said, another dimension, perception of support provided by peers, did not necessarily predict better assessment of value of learning (Schneider et al. 2008).

The available date in regards to relationships with teachers and their influence on the evolution of motivation is limited. It has already been mentioned that primary students may give more importance to these relationships than secondary students do (Anderman 1999). Moreover,

the link between sense of relatedness to these actors and academic engagement may grow stronger over time (Furrer and Skinner 2003). In a similar vein, Midgley, Feldlaufer and Eccles (1989) noted that students who felt more and more supported by their teacher sometimes expressed a growing interest in mathematics learning.

Research findings on parental influence go in the same direction. There appears to be a link between the quality of students' relationships with their parents, on one hand, and their perception of their academic competence (Cantin and Boivin 2004) and the value of learning (Schneider, Tomada, Normand, Tonci, and de Domini 2008) on the other. In fact, as Gniewosz, Eccles and Noack (2012) have noted, parents constitute a stable and reassuring source of information in the context of this transition and may therefore be expected to exert a positive influence on such perceptions.

The Present Study

This transition has thus been examined from several angles. Some studies have specifically looked into the fluctuations of different dimensions of the motivation to learn. The wide majority have concluded that such dimensions undergo negative changes. However, as Ratelle et al. (2004) have noted, these interpretations are based on assessments of average changes. As a result, they suggest that the near-totality of students have a difficult experience during this transition stage in terms of motivation, whereas subgroups may be able to preserve and even consolidate their resources.

If motivation could evolve heterogeneously, it would be worthwhile to look at students' perceptions of the quality of their relationships with the individuals they frequent on a regular basis. Indeed, data indicates that their perceptions may shape their motivational orientation. The present study thus sets out to specify and nuance past observations. To do so, it conducts a thorough analysis of the different trajectories of the motivation to learn in the context of the primary to secondary school transition, taking into consideration the respective contributions of different relational dimensions. The specific objectives of the study are as follows:

1. To document the general evolution in expectancies for success and value placed on learning between the end of sixth grade in primary school and the end of the first year of secondary school;
2. To distinguish different developmental trajectories regarding expectancies for success and value placed on learning;
3. To examine the link between perceived relationships and the identified trajectories.

Method

Participants

Three hundred and twenty-three (323) students were followed during their transition between seventeen primary and twelve secondary public schools, all francophone, in Quebec. Of this number, 170 were girls (52.6%) and 153 were boys (47.4%), and most were starting secondary school at the normal age of twelve years old (M = 12.83 years, SD = 0.70). Losses of participants occurred between the beginning and the end of the first year of secondary school, when schools decided to withdraw from the study. This attrition could have been problematic insofar as the students, at times one and two, could have had a distinct motivational profile compared to students on whom data was collected at all three times as planned. However, as the results of a multivariate analysis of variance (MANOVA) with repeated measures have shown, these two groups were indistinguishable at these two measurement times with respect to the measured dimensions of motivation ($F_{(6.280)} = .33$, $p = .92$).

Measurements

Students' perceptions of their likelihood of success, the value of learning, and their relationships with people in their social circles were documented using a questionnaire written in French. The questionnaire was composed of six-point Likert subscales ranging from 1 (completely disagree) to 6 (completely agree).

Students' general assessment of their abilities and, their likelihood of success, was first documented using the only "sense of overall competence at school" subscale (four items, α = .85; e.g., "I am as good as others at school"), designed and validated by Harter (1982) and translated by Pierrehumbert et al. (1988).The general value students attributed to learning was documented using five subscales inspired by the work of two groups of researchers. Students' interest in and value placed on learning were respectively documented using "interest in schooling" subscales (four items, α = .79; e.g., "What we learn in school interests me") and the "perceived usefulness of schooling" (four items, α = .89; e.g., "What we learn in school will be useful in life") proposed by Ntamakiliro, Monnard, and Gurtner (2000). Students' goals were also documented using subscales developed and validated by Harackiewicz et al. (2008). These subscales helped measure the pursuit of mastery goals (three items, α = .77; e.g.,: "The most important thing for me at school is to learn as much as possible"), performance goals (four items, α = .82; e.g., "It's important for me to be better than other students") and work avoidance (three items, α = .70; e.g., "I always try to do as little work as possible at school").

Different relational dimensions were also documented. Two scales stemming from Janosz et al. (2004) were used to measure quality relationships with peers (seven items, α = .88; e.g. "I am treated with the same respect as other student") and friends' school attitudes (three items, α = .88; e.g. "My friends like going to school"). Moreover, four dimensions of social adjustment were documented using scales devised by the same group of researchers: sense of belonging (five items, α = .80; e.g., "I feel like I'm part of a big family at this school"), sense of acceptance (three items, α = .80; e.g., "It's hard for people like me to be accepted here"—reversed item), social isolation (four items, α = .81; e.g., "Others rarely choose me for group work"), and social anxiety (four items, α = .59; e.g., "I am nervous when someone watches me do something in class"). Quality of teachers' support (three items, α = .78; e.g., "My teachers are usually interested in my progress") and parents' support (three items, α = .65; e.g., "My parents encourage me to go to school") were documented using scales originating from the same source (Janosz et al. 2004). Finally, a scale developed by Pianta and Steinberg (1992) was used to measure quality of student-teacher relationships (three items, α = .68; e.g., "I feel respected by my teachers").

Procedure

A three-stage quantitative analytical approach was adopted to meet the study objectives. First, a multivariate analysis of variance (MANOVA) with repeated measures was used on different motivational dimensions (sense of competence, interest and perceived usefulness, as well as mastery, performance and work avoidance goals) to evaluate general temporal changes in these dimensions. Second, unconditional trajectory analyses (Nagin 2005) were conducted on a dimension reflecting expectancies for success and an aggregate score reflecting value placed on learning measured at the end of the sixth year of primary school (T1) and the beginning (T2) and end (T3) of the first year of secondary school. These analyses helped ascertain the number of latent trajectories concealed behind the general orientations identified with the variance analyses. It should also be mentioned that this semi-parametric method has proven its effectiveness in circumstances where a common growth process is not naturally at work and it is highly likely that subgroups display different reactions (Raudenbush 2001). Third, trajectory models with co-variables, i.e., relational dimensions (senses of belonging and acceptance, social isolation, social anxiety, relationships with peers, friends' school attitudes, relationships with teacher, and teacher's and parents' support) measured at the end of sixth grade, were tested. This analytical

work helped estimate the probability that the students would be assigned to different latent trajectories based on the above-stated dimensions (Jones, Nagin, and Roeder 2001).

Results

General Trajectories of Inherent Dimensions of Expectancy and Value Components

As previously mentioned, a multivariate analysis of variance (MANOVA) with repeated measures was firstly used to measure the general trajectories associated with the inherent dimensions of expectancies for success (sense of overall competence at school) and value placed on learning (interest in schooling, usefulness of schooling, and mastery, performance and work avoidance goals). Only time served as the independent variable for this analysis. The result of the multivariate test (Wilks' lambda) shows a significant effect for this factor alone ($F_{(12.215)} = 3.95$, $p<0.001$) on the stated dimensions. The univariate results (see Table 1) show the significant effects.

Table 1: General Evolution of Expectancies for Success and Value Placed on Learning: Means (M) and Standard Deviations (SD) and Values of *F*, Significances and Effects Sizes (η_p^2)

Variable		**Mean and Standard Deviation**				**Value of *F*, significance and effect size**
		T1	*T2*	*T3*		*Time*
Sense of overall competence at school	M SD	4.73 1.05	4.77 1.01	4.53 1.15	1-2 1-3 2-3	.75 (.00) 10.33** (.04) 17.18*** (.07)
Interest in schooling	M SD	4.35 1.03	4.22 1.08	4.07 1.05	1-2 1-3 2-3	4.36* (.02) 17.45*** (.07) 6.88** (.03)
Perceived usefulness of schooling	M SD	5.38 .85	5.40 .71	5.22 .83	1-2 1-3 2-3	.26 (.00) 6.32* (.03) 13.11*** (.06)
Mastery goal orientation	M SD	5.41 .77	5.31 .80	5.19 .79	1-2 1-3 2-3	3.49 (.02) 12.87*** (.05) 6.89** (.03)
Performance goal orientation	M SD	3.45 1.26	3.40 1.21	3.30 1.24	1-2 1-3 2-3	.48 (.00) 3.50 (.02) 2.10 (.01)

Variable		Mean and Standard Deviation				Value of *F*, significance and effect size
		T1	*T2*	*T3*		
Work avoidance goal orientation	M SD	1.71 .91	1.78 .82	1.98 .83	1-2 1-3 2-3	1.55 (.01) 18.27*** (.08) 14.34*** (.06)

* $p < .05$ ** $p < .01$ *** $p < .001$

Source: Smith et al.

In terms of expectancies for success, a decline was found for the only dimension that is revealing of this component, namely sense of competence. Indeed, sense of competence deteriorated between the end of the sixth year of primary school and the end of the first year of secondary school. More specifically, it deteriorated the most between the beginning and end of the first year of secondary schooling. As for the inherent dimensions of the component of the value of learning, a decrease was noted in students' interest in schooling, between the end of sixth grade and the beginning of the first year of secondary school, and between the beginning and end of the first year of secondary school. Thus, a significant decline was observed between the first and third times of measurement. Concerning the perceived usefulness of studies and mastery goals, the decreases were found between the end of the last year of primary school and the end of the first year of secondary school, and once more, the most marked drop was during the first year at this new level of study. Finally, an increase can be seen in work avoidance goals between the end of sixth grade and the end of the first year of secondary school. Once more, a considerable gain was noted in the course of the first year of secondary schooling. Partial eta squared coefficients (η_p^2) help estimate the size of the observed effects. According to Cohen (1988), a coefficient of less than 0.01 indicates a negligible effect size, a result equal or superior to 0.01 and below 0.06 is indicative of a small effect size, a result equal or superior to 0.06 and inferior to 0.14 indicates a medium effect size, and a result above 0.14 is indicative of a large effect size. Thus, according to these indications, the observed effects are small and medium in size, given that they range from 0.02 to 0.08.

Latent Trajectories of Expectancy and Value Components

Second, two developmental trajectory analyses were conducted, the first on the only dimension to reflect expectancies for success and the second on an aggregate score reflecting value placed on learning, in order to determine if these two motivational components might have distinct evolutions. These analyses, carried out on a censored normal distribution, allowed for distinguishing the optimal number of developmental trajectories and their distinct form.

Models with two, three, and four groups were tested. The Bayesian Information Criterion (BIC) was used to select a relevant model. This criterion is commonly used and is known to take into consideration both the fit and complexity of a model (Myung 2000). The highest result was sought, i.e., the one closest to 0, since this criterion always has a negative value (Vrieze 2012). Indeed, a model was deemed different, and potentially better, when the addition of a group resulted in an increase of 3.00 points or more for this criterion (Nagin 1999). Naturally, it was important to look into whether a model's complexification made it more precise (Boyle and Willms 2001). In addition, an estimation and a significance test respectively helped determine, for each identified trajectory, whether a change occurred, and if so, whether it was significant. Finally, it should be noted that a visual examination of the distributions and theoretical considerations helped guide the choice of a solution.

Regarding expectancies for success, after having tested two-group models (BIC = -1252.37), three-group models (BIC = -1230.81) and four-group models (BIC = -1234.92), a three-group model was selected (see Table 2 and Figure 1). This model's BIC suggested a better adjustment to the collected data. It should be pointed out that the four-group model redistributed the students presenting the most positive expectancies for success into two similar groups. The solution thus did not make for better inferences, and most importantly, showed a lower BIC.

Table 2: Model Parameters for Trajectories of Expectancies for Success
(Standards Errors in Parentheses)

Expectancies for Success	Lower and Declining	Moderate and Stable	Higher, but Declining
Intercept	3.57*** (.22)	4.14*** (.15)	5.63*** (.10)
Linear slope	-.39*** (.11)	-.04 (.07)	-.11* (.04)

* $p < .05$ ** $p < .01$ *** $p < .001$

Source: Smith et al.

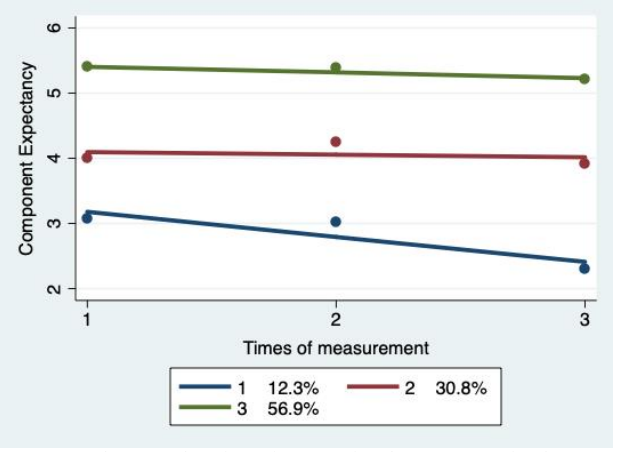

Figure 1: Developmental Trajectories Associated to Expectancies for Success
Source: Smith et al.

Each of the estimated trajectories was given a name reflecting its base level and fluctuations. Thus, a first group was named "lower and declining expectancies." This group contained students (12.3% of the sample; n = 40) who, from the first time of measurement, demonstrated lower expectancies for success than the students assigned to the two other groups. Notably, this gap visibly grew during the transition. The curve representing this group's expectancies followed a negative linear trajectory and the decline was statistically significant ($p < .001$). The expectancies for success of a second group, accounting for 30.8 percent of the sample (n = 99), were labelled "moderate and stable." These students preserved relatively favourable expectancies across the three measurement times ($p = .54$). Finally, the expectancies for success of a third group of students (56.9% of the sample; n = 184) were "higher, but declining." Their expectancies remained higher than those of students in the two other groups, even if they decreased ($p < .05$). In sum, these analyses indicate that expectancies for success decreased in 69.0 percent of students.

Censored normal models with two groups (BIC = -769.00), three groups (BIC = -735.98), and four groups (BIC = -731.94) were also tested to find a solution that would best represent the gathered data with respect to the component of value placed on learning. Although the four-group solution had a slightly higher BIC, a three-group solution was, here again, selected. In fact, the first of these two scenarios redistributed the students who expressed themselves least favorably into two very small groups. Moreover, during the three-group simulation, when a

stability constraint was specified for students with more pessimistic expectancies, a BIC of -733.60 was noted. The adjustment gap between this solution and the four-group solution thus fell below 3.00. It was therefore justified to retain the three-group solution (see Table 3 and Figure 2), which seemed most optimal.

Table 3: Model Parameters for Trajectories of Value Placed on Learning
(Standards Errors in Parentheses)

Value Placed on Learning	Lower, but Stable	Moderate, but Declining	Higher, but Declining
Intercept	3.74*** (.21)	4.82*** (.08)	5.29*** (.07)
Linear slope	-.09 (.11)	-.16** (.04)	-.07* (.03)

* $p < .05$ ** $p < .01$ *** $p < .001$
Source: Smith et al.

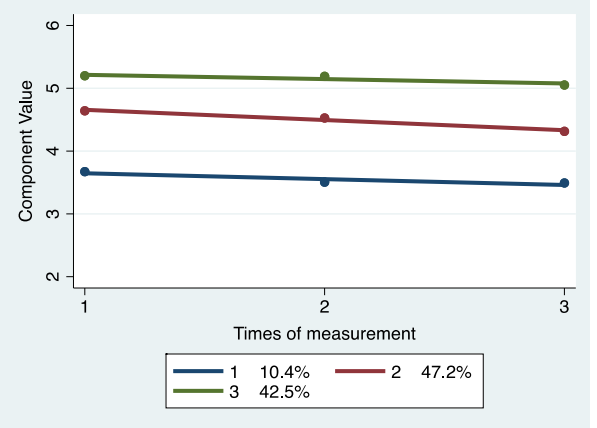

Figure 2: Developmental Trajectories Associated with Values Placed on Learning
Source: Smith et al.

Regarding the different profiles identified, a first group entitled "lower and stable value" included students (10.4% of the sample; n = 34) who, from the end of primary school, questioned the value of learning. These students' statements were more negative than those of their peers assigned to the two other trajectories. This said, they showed a relatively stable result over time ($p = .38$). Although they gave learning a slightly higher value than students in the first group, the students in the second group (47.2% of the sample; n = 152), named "moderate and declining value" and a third group (42.5% of the sample; n = 137) named "higher but declining value" for their part exhibited deteriorating perceptions. Indeed, negative linear trajectories were identified for these last two groups (moderate and declining value = $p < .001$; higher but declining value = $p < .05$). It is important to emphasize that the perceptions of each of these groups maintained their relative advantage throughout the study. In light of these results, it also appears that the value placed on learning decreased in almost 90 percent of students.

Predictive Role of Relational Characteristics (At the End of 6th grade in Primary School)

In a third and final stage, the developmental trajectories analyses were performed anew, individually and jointly testing the role of the relational dimensions (senses of belonging and acceptance, social isolation, social anxiety, quality of relationships with peers, friends' school attitudes, quality of relationships with and support provided by the teacher, and parents' support) measured before the transition (T1), in assigning the different trajectories of expectancies for

success and value placed on learning. To compensate for the complexification of the models, only covariables offering better adjustment to the collected data were selected (Boyle and Willms 2001).

As for expectancies for success, the combination of five relational dimensions considerably improved the BIC (which fell from -1230.81 to -1113.46): sense of acceptance, friends' school attitudes, quality of relationships with and support from the teacher, and parents (see Table 4).

Table 4: Model for Trajectories of Expectancies for Success Considering the Predictive Effect of Relational Dimensions (Pre-Transition): Estimates, Standard Errors, Tests and Significances

Category of Reference: Lower and Declining Expectancies					
Group	*Parameter*	*Estimate*	*Standard error*	*Test*	*Significance*
Moderate and stable expectancies	Constant	.03	2.32	.01	.99
	Sense of acceptance	.25	.16	1.54	.12
	Friends' school attitudes	-.08	.26	-.32	.75
	Relationship with the teacher	-.16	.34	-.46	.65
	Teacher's support	.52	.38	1.39	.17
	Parents' support	-.27	.43	-.64	.53
Higher, but declining expectancies	Constant	-6.17	2.31	-2.67	.01**
	Sense of acceptance	.61	.16	3.78	.00***
	Friends' school attitudes	.25	.24	1.05	.30
	Relationship with the teacher	-.47	.31	-1.49	.14
	Teacher's support	1.00	.36	2.78	.01**
	Parents' support	.23	.41	.57	.57
Category of Reference: Higher, but Declining Expectancies					
Moderate and stable expectancies	Constant	6.19	1.67	3.71	.00***
	Sense of acceptance	-.35	.12	-2.84	.00**
	Friends' school attitudes	-.34	.17	-2.03	.04*
	Relationship with the teacher	.31	.21	1.46	.14
	Teacher's support	-.47	.24	-1.94	.05
	Parents' support	-.50	.29	-1.73	.08

* $p < ,05$ ** $p < ,01$ *** $p < ,001$

Source: Smith et al.

As in the case of a regression analysis, for each dimension introduced, the analysis of trajectories with covariables yields a regression coefficient (β) making it possible to establish whether a relationship exists between a considered dimension and a trajectory, and, if applicable, its direction. Based on this coefficient, it is easy to determine the odds ratio (OR) which specifies the possibility that a student is affected by one or another of the identified trajectories. A value superior to 1.00 for this indicator indicates that a predictor increases the odds that a student is affected by one or another of the trajectories in question. As its name indicates, the indication of significance helps determine whether a relationship is significant. At this stage, the trend results ($p < 0.1$) were taken into account, as they could help interpret why the components of expectancies for success and value placed on learning displayed different orientations.

Hence, it emerges that students who felt most accepted by their peers were 1.8 times more likely to exhibit higher expectancies ($b = 0.61$, OR = 1.84, $p < 0.001$) than lower expectancies. They were also 1.4 times more likely to present higher expectancies ($b = .35$, OR = 1.42, $p < .01$) than moderate expectancies. Moreover, students who made very positive statements on friends' school attitudes were 1.4 times more likely to be in the group with higher expectancies ($b = 0.34$, OR = 1.40, $p < 0.05$) than the group with moderate expectancies. Additionally, the students who felt significantly supported by their teacher were 2.7 times more likely to be in the group with the highest expectancies ($b = 1.00$, OR = 2.72, $p < 0.01$) than the one reporting the lowest expectancies. As for the quality of relationships with the teacher and parents' support, even if they improved the model, they did not allow for predicting assignment to one or another particular trajectory (or trajectories).

Regarding the trajectories for value placed on learning, taking these three dimensions into account generated a model better adjusted to the data: sense of acceptance, friends' school attitudes and support provided by the teacher (see Table 5). A -735.98 to -620.85 gain was indeed noted for the BIC.

Table 5: Model for Trajectories of Value Placed on Learning Considering the Predictive Effect of Relational Dimensions (Pre-Transition): Estimates, Standard Errors, Tests and Significances

Category of Reference: Lower and Stable Value					
Group	*Parameter*	*Estimate*	*Standard Error*	*Test*	*Significance*
Moderate, but declining value	Constant	-4.29	1.45	-2.95	.00**
	Sense of acceptance	.27	.18	1.52	.13
	Friends' school attitudes	.95	.25	3.89	.00***
	Teacher's support	.33	.22	1.53	.13
Higher, but declining value	Constant	-13.14	2.18	-6.02	.00***
	Sense of acceptance	.26	.20	1.31	.19
	Friends' school attitudes	1.79	.31	5.83	.00***
	Teacher's support	1.34	.31	4.28	.00***
Category of Reference: Higher, but Declining Value					
Moderate, but declining value	Constant	8.85	1.74	5.08	.00***
	Sense of acceptance	.01	.13	.06	.96
	Friends' school attitudes	-.84	.21	-3.94	.00***
	Teacher's support	-1.01	.25	-3.97	.00***

* $p < .05$ ** $p < .01$ *** $p < .001$

Source: Smith et al.

It appears more specifically that the students who expressed themselves favorably on friends' school attitudes were respectively 2.6 and 6.0 times more likely to find themselves in a group that placed a moderate value ($b = 0.95$, OR = 2.59, $p < 0.001$) or higher (but declining) value ($b = 1.79$, OR = 5.99, $p < .001$) on learning than the group that accorded it a lower (and stable) value. Also regarding these attitudes, when they were described positively by students, the students were 2.3 times more likely to give learning a higher value ($b = .84$, OR = 2.32, $p < .001$) than a moderate one. In addition, the students who expressed themselves very favourably on their teacher's support were respectively 3.8 and 2.8 times more likely to be in the group that attributed a higher valued learning than the groups that attributed a lower value ($b = 1.34$, OR = 3.82, $p < .001$) or moderate value ($b = 1.01$, OR = 2.75, $p < .001$) to learning. Moreover, even if sense of acceptance improved this model, it did not allow for predicting assignment to one or more particular trajectories.

Discussion

General Evolution of Motivation to Learn

As described above, a general decline can be observed with respect to sense of competence, which suggests that, on average, students make a lower assessment of their likelihood of success during this transition context. This result is consistent with past observations (Cantin and Boivin 2004; Eccles et al. 1989; Grolnick et al. 2000; Seidman et al. 1994; Wigfield and Eccles 1994; Wigfield et al. 1991; Zanobini and Usai 2002). Indeed, various dimensions that are reflective of expectancies for success tend to deteriorate. When looking at the transformations between each time of measurement, an observation similar to those made by Chung, Elias and Schneider (1998), Tonkin and Watt (2003), Cantin and Boivin (2004), and Grolnick et al. (2015) can be noted. In these last studies as well as in ours, it appears that perceptions of academic abilities remained relatively stable between the end of primary and the beginning of secondary school. This suggests that the students who participated in our study were not as negatively affected as the participants of other similar studies (Cantin and Boivin 2004; Eccles et al. 1989; Grolnick et

al. 2000; Seidman et al. 1994; Wigfield and Eccles 1994; Wigfield et al. 1991; Zanobini and Usai 2002). Having said this, a look at the changes that occur specifically during the first year of secondary school reveals that expectancies for success did not increase, as has been noted previously (Eccles et al. 1989; Seidman et al. 1994; Wigfield and Eccles 1994; Wigfield et al. 1991), but rather, they decreased. Importantly, even if such a decline cannot be observed at the start of secondary school, but a little later during the same school year, it does corroborate the observation that different dimensions that can be associated with expectancies for success fluctuate downwards following the transition to secondary school. This may be attributable to the fact that students are attempting to adjust to a new school with different ways of functioning and different requirements (Queen 2013; Symonds 2015), or that they experience adolescence-related changes that lead them, among other things, to be more introspective and to view themselves more critically (Harter 2006). In fact, declines appear not just during but also before and after this transition (Fredricks and Eccles 2002; Jacobs et al. 2002; Marsh 1989; Watt 2004). This may also be attributable to both of these causes, with teenagers perceiving their new environment as poorly adjusted to the developmental needs they express during this period (Eccles and Midgley 1989). Indeed, this last developmental perspective is named the stage-environment fit theory. It has often been cited to explain similar results.

These last avenues could explain the negative general changes identified for several dimensions inherent to value placed on learning. Indeed, the results reveal that interest in studies deteriorated between each time of measurement. Likewise, even if the perceived usefulness of schooling and mastery goals remained relatively stable between the end of sixth grade of primary school and the beginning of the first year of secondary school, and between this last time of measurement and the end of the first year of secondary school, it was declining. In a similar vein, the use of work avoidance goals remained stable between the end of sixth grade and the beginning of the first year of secondary school, but increased between this second time of measurement and the end of the first year of secondary school. In all three cases, this produced significant differences between the first and third time of measurement.

This data is in keeping with recently shared findings to the effect that perceptions of the interest and importance of learning (Anderman 1999; Chouinard et al. 2012; Dotterer, McHale, and Crouter 2009; Schneider et al. 2008) and perceptions related to their fit with pursued goals (Chouinard et al 2012; Paulick, Watermann, and Nückles 2013; Shim, Ryan, and Anderson 2008) worsen during this transition phase. In fact, they decline throughout schooling (Dotterer, McHale, and Crouter 2009; Fredricks and Eccles 2002; Jacobs et al. 2002; Watt 2004). This said, these researchers have noted clear decreases between the end of primary school and the beginning of secondary school, whereas, as previously pointed out, our results indicate some degree of stability during this same time interval. Once more, the students primarily questioned the value of learning during their first year of secondary school. It should also be mentioned that students' use of performance goals remained stable. This is consistent with the fact that gains (Duchesne, Ratelle, and Feng 2014; Midgley, Anderman, and Hicks 1995) and declines (Duchesne, Ratelle, and Feng 2014; Paulick, Watermann, and Nückles 2013; Shim, Ryan, and Anderson 2008) have been noted for this last dimension during this transition context. This would suggest that students are not inclined to favor or to abandon such an orientation. In contrast, mastery goals (Anderman and Anderman 1999; Fischer and Theis 2014; Midgley, Anderman, and Hicks 1995; Paulick, Watermann, and Nückles 2013; Shim, Ryan, and Anderson 2008) seem to have a clearer (declining) orientation.

Specific Evolutions of Motivation to Learn

The above results indicate that expectancies for success and value placed on learning sustain damage during this transition context. Moreover, the results of subtler analyses uncover that not all students experience a deterioration in their motivational resources. This suggests that developmental and school-related changes do not necessarily give rise to negative reactions.

More specifically, more than two thirds of the students displayed a lower outlook on likelihood of success, and this was primarily the case for those who expressed themselves most favorably on this component, and also, to a lesser extent, those who expressed themselves least favorably. Likewise, nine out of ten placed lower value on learning and, once more, the three above hypotheses may be linked to this finding. In fact, learning was devalued by almost as many who displayed more enthusiasm as those who displayed moderate enthusiasm. These results of more sophisticated analyses go in the same direction as those of the first analysis. Moreover, the analysis more specifically dealing with the value component echoes recent data from Duchesne, Ratelle, and Feng (2014), indicating that learning-related intentions deteriorated in 80–100 percent of students. However, our results also indicate that a considerable proportion of students (almost one third) were able to fully preserve their expectancies for success. Similarly, a notable proportion (one tenth of students) held a relatively stable view of the value of learning over time. The stability of these perceptions has been demonstrated previously by other researchers (Chung, Elias, and Schneider 1998; Fenzel 2000; Grolnick et al. 2015; Tonkin and Watt 2003). Regarding the value placed on learning, the declines are a common finding of researchers, but contradictory data has also been uncovered, possibly explaining the identified orientations. More specifically, aside from some findings indicating an increase in the use of performance goals (Anderman and Anderman 1999; Duchesne, Ratelle, and Feng 2014; Kakavoulis 1998; Midgley, Anderman, and Hicks 1995) and one finding suggesting a gain associated with mastery goals (Kakavoulis 1998), the pattern of change is generally negative (Anderman 1999; Chouinard et al. 2012; Dotterer, McHale, and Crouter 2009; Fischer and Theis 2014; Paulick, Watermann, and Nückles 2013; Schneider et al. 2008; Shim, Ryan, and Anderson 2008). These opposing findings may therefore explain why these two components can remain stable or show a declining orientation.

Contribution of Different Facets of Relationships with Peers, Parents, and Teachers

Relational dimensions measured at the end of the final year of primary school were used to interpret the different evolutions just described. It emerged, first, that students who felt the most socially accepted were more likely to demonstrate higher expectancies than low or moderate ones. This result brings to mind a finding recently brought to light by Newman Kingery, Erdley and Marshall (2011). This team had observed that students who felt well accepted by their peers and had several close friends during this transition could assign themselves higher personal value. On the other hand, Tonkin and Watt (2003) and Cantin and Boivin (2004) observed that perceptions of academic abilities could remain stable or deteriorate, while sense of being accepted could grow, suggesting that the students who had taken part in these studies may have chosen to engage with their peers to the detriment of school activities. The results of our study suggest that the participants did not make a similar forced choice, and seem to have found motivational support in their peers. If this is indeed the case, it brings into question the value of the "forced choice dilemma" hypothesis that students could experience an inner conflict leading them to choose to put most of their energy in learning or conversely to focus more on the quality of relationships with their peers (Jung, McCormick, and Gross 2012).

Moreover, it appears that the students who expressed themselves more positively on friends' school attitudes were more likely to demonstrate higher expectancies than moderate expectancies. This observation fits with data shared by Molloy, Gest and Rulison (2011) who suggested that students' sense of competence and academic engagement corresponded to those of their friends. Ladd, Herald-Brown, and Kochel (2009), pondering this situation, did not necessarily view it as a desire to adopt common perceptions and attitudes. In their view, different circumstances may lead students to frequent peers similar to them (Juvonen and Knifsend 2016). For example, they may be required or encouraged to do so by school staff, or feel naturally attracted to people with similar attributes or aspirations. As they spend time together, they may develop similar perceptions (Juvonen and Knifsend 2016). At the very least, our results indicate that students who placed equal value on academic activities gave a similar assessment of their

likelihood of success. This also shows that peers did not play a distracting role that undermined their personal perceptions (Koekoek and Knoppers 2015), at least about their abilities.

Finally, the students who felt most supported by their teacher were more likely to display higher than lower expectancies. This result is consistent with the observations of a number of researchers (Danielsen, Breivik, and Wold 2011; Murdock, Anderman, and Hodge 2000; Murdock and Miller 2003; Sánchez, Colón, and Esparza 2005) according to whom students who report adequate support can demonstrate greater confidence in their academic abilities. On this topic, Bandura (1997) pointed out that teacher perceptions and behaviours could shape and reinforce, or conversely weaken and destroy, students' confidence in their abilities.

In sum, students who at the end of primary school reported a high sense of acceptance and a positive outlook on friends' school attitudes and the support provided by their teacher were likely to present higher expectancies for success during this transition phase, rather than lower ones, with both orientations declining. The students who preserved moderate expectancies for success over time, for their part, did not distinguish themselves from the students reporting lower expectancies. Compared to those reporting higher expectancies, they expressed themselves less favorably on their sense of acceptance and friends' school attitudes. These results suggest that students who feel well integrated into and supported by their social circles are more likely to show a certain level of confidence in their abilities.

Most of the dimensions that help predict the assignment of different trajectories of expectancies for success also seem to predict relative value placed on learning. This said, when examining the effects specific to each variable, it emerges that sense of belonging improves the model, but does not allow for predicting different perceptions surrounding value of learning. In fact, according to the tested model, this value appears to be influenced only by perception of friends' school attitudes and support provided by the teacher. The students who expressed themselves very favorably on friends' school attitudes were indeed more likely to place high or moderate value on learning than lower value, and a higher value than a moderate value. Value placed on learning thus seems to be proportionally linked to perception of friends' school attitudes. Once more, this would appear to support the hypothesis that students' stance on learning may mirror those they infer from or clearly observe in their friends (Nelson and DeBacker 2008). It has been recognized the students tend to frequent peers who resemble them (Kindermann 2007; Ladd, Herald-Brown, and Kochel 2009) and that students may constitute a valuable source of support for one another (Kindermann 2007). This may explain why their motivational dispositions tend to evolve along similar lines.

As we have seen, quality of support provided by the teacher at the end of primary school also appears to play a role in these trajectories, in fact a very positive role. Indeed, students who reported higher support were much more likely to place much higher value on learning rather than low or moderate value. This result is consistent with those reported over 20 years ago by Midgley, Feldlaufer, and Eccles (1989). This team had observed, in the context of the same transition, that support provided by teachers could be favorable to students' higher interest in learning in specific academic subjects. Taken together, these findings offer support for Eccles and Roeser (2009) to the effect that it is beneficial for students to receive advice and support from adults other than their parents. This is strongly suggested by the positive links with meaning and value placed on learning. Hence, students who at the end of primary school expressed themselves positively on the school attitudes of their friends and on support provided by their teacher were likely to assign higher value to learning than low or moderate value. These results suggest, similarly, that students who feel connected to and supported by their social circles are likely to give relatively high value to learning.

Conclusion

This study has shown, once more, that most students' motivation tends to decline during the primary-secondary transition, and more specifically, the most significant change occurs not

between the end of primary school and the beginning of secondary, but rather during the first year of secondary school. These results are all the more revealing in that they show the existence of different latent trajectories behind these general changes. With respect to expectancies for success as well as value placed on learning, three developmental trajectories were identified, two declining and one stable. This confirms that not all students report a deterioration in their motivation. Moreover, more complex modelling taking into account the contributions of different relational dimensions leads to the observation that quality of relationships may correspond to degree of motivation. The more students feel integrated into and supported by their social circles, the more positively they describe their likelihood of success and the value of learning.

It is worthwhile here to discuss the contributions and limitations of this research. In terms of scientific contribution, this study was able to set forth a much more detailed interpretation of changes in motivation during the transition context at hand, and to do so, employed a rigorous analytical approach that has scarcely been used in education research. Other researchers may wish to use the same analytical method to explore the role of independent variables not considered in changes to motivation, whether in the context of the transition dealt with here or in another context entirely. As regards the relational dimensions that served as independent variables in the present study, it would be important to underline that several of them have rarely been linked with motivation. The data thus degenerated could be helpful to researchers interested in studying these links.

It is also worth citing an important contribution for intervention. Our data may encourage school stakeholders to pinpoint the students experiencing relational difficulties and who, concomitantly, may show signs of demotivation. Our data may prompt them to reflect on actions that could help students cultivate and develop warm and supportive relationships, given that this seems to be a key determinant of a quality transition.

Although this study was conducted rigorously, it also has limitations. The first is the composition of the sample. The students followed during the transition all belonged to a public school system. If students from the private sector had also been recruited, in addition to enabling generalizable conclusions, this may have helped identify and emphasize the protective role of different relational dimensions. A second limitation is that some students withdrew from the study during the period in question, and others supplied incomplete data. Fortunately, the students who left the study did not have a distinct motivational profile compared to their peers who were surveyed as planned. This attrition therefore does not seem to have influenced the results. A third limitation has to do with the models of the trajectories, including the covariables that were tested. It was only possible to take into account the contributions of the determinants at the first time of measurement, i.e., at the end of sixth grade. Indeed, it would have been mathematically illogical to calculate trajectories taking into account determinants emerging just as the components under study were undergoing transformation.

Naturally, reflecting on the study's limitations brings us to avenues that would be deserving of exploration. For example, since the evolution of motivation in the context of this transition seems to be associated with characteristics specific to the students and their school environment, it would appear advisable to examine the influence of these characteristics. Additionally, given that particularly significant links have emerged between motivation and relational dimensions, it would be wise, in future efforts, to take into account as many of these dimensions as possible in order to fully assess their potential protective role. These relational dimensions could be introduced into models taking into account the link between the changes that affect them and the different changes that occur in motivation (Nagin 2005).

Also regarding the models, and to conclude, if such a study were reproduced, it would be desirable to collect the data at four or more different times. This would help develop models with greater power, precision, and validity than linear models (Raudenbush and Xiao-Feng 2001).

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