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## Examining the well-being and creativity of schoolchildren in France

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### Abstract

This article builds theoretically and empirically on the concepts of *creativity* and *well-being* within the schooling context, focusing on 855 preadolescents attending primary schools in France. Following and testing a line of argumentation delineated in educational research, creativity is defined as conceptually distinct from, but closely related to, student well-being. We define “creativity” as a high level of adaptability and flexibility of thought, the key to developing novel ideas, and “well-being” as both the presence of positive affect and the absence of negative affect (*hedonic* components), as well as a high level of engagement and feelings of competence (*eudaimonic* components). Empirically, we test operationalizations of multi-dimensional concepts of creativity and well-being using factor analysis techniques and consider the relationships between these variables and pupils’ academic success taking into account the potential moderating effects of gender and parental involvement. We find that these associations are complex and vary considerably between components of well-being and creativity.

**Keywords:** creativity; well-being; children; primary school; France

## **Introduction**

A large literature has evolved concerning the well-being of adults. Measures of happiness, life satisfaction, positive and negative affect, and momentary experiences of mood have been studied and tracked extensively over the past twenty years (Diener, Suh, Lucas, & Smith, 1999; Jayawickreme, Forgeard, & Seligman, 2012; Kahneman & Krueger, 2006). The experienced well-being of children has also been the subject of a significant, but less pronounced, focus in recent years (McLellan & Steward, 2015; Tomy, Tamir, Stokes, & Dias, 2015). One of the most important early conclusions, reflecting similar findings in early developmental psychology research, is that children's well-being cannot be assumed to directly reflect adult's well-being, and "research into adult well-being cannot be extended uncritically to children... children themselves need to say what issues affect their well-being directly" (McLellan & Steward, 2015, p. 312). This goes beyond the simple necessity of adapting questions to children's lower literacy skills, as is commonly done in psychological research (Tomy, Fuller, Tyszkiewicz, & Cummins, 2013). The first step, therefore, in investigating the well-being of children, requires defining the well-being of children.

### ***Measuring children's well-being***

As part of a recent large-scale survey project in the UK, researchers have developed a questionnaire based on the experiences of pupils at school aiming to capture their well-being within this context. Entitled the '*How I Feel About Myself and School*' questionnaire, it is "designed to capture children and young people's perceptions of their well-being in the school context that is based on sound psychological (and other) theory" (McLellan & Steward, 2015, p. 308). The researchers aim to capture pupils' well-being by asking about their feelings regarding various aspects of their experience at school, such as if they feel good about themselves, valued, cared for, miserable, bored, noticed, happy, etc. The items reflect children's own ideas about what defines a positive experience in the schooling context, and are much more specific than questions used in previous large-scale survey studies. For example, the Health Behaviour in School-aged Children (HBSC) study, a project conducted for the World Health Organization, used a more global measures based on life satisfaction.

Another international survey project, the '*Personal Well-being Index – School Children*' (PWB), also examines children's (and adults') well-being in a multi-faceted approach. Researchers working with this questionnaire have outlined eight domains, including "standard of living, health, achieving in life, relationships, safety, community-connectedness, future security, and religion/spirituality" which they argue represents "the first level deconstruction of the global question, 'How satisfied are you with your life as a whole?'" (Tomy et al., 2013, p. 914). The questions designed for children were adapted in terms of language abilities, but the substance of the items from the adult survey were retained. The researchers concluded that the questionnaires were equivalent among both child and adult populations, as well as across national contexts (Tomy et al., 2015). These researchers posit that a single construct underlies these domains: namely, well-being.

As part of an on-going comprehensive study in Australia, a team of researchers has focused explicitly on conceptualising children's well-being at school. While recognizing key findings from the literature on the determinants of well-being, such as the importance of "positive adult-child relationships, a sense of belonging, positive self-esteem and opportunities to be given responsibility and be involved in decision-making," they emphasize the need to find out how pupils themselves understand their well-being in the school context (Graham, Powell, Thomas, & Anderson, 2017, p. 441). Using recognition theory, the researchers theoretically derive self-confidence ('cared for'), self-respect ('respected'), and self-esteem ('valued') as potential core dimensions of well-being, which they then tested empirically. They found that the relational aspects of well-being were most central for pupils,

and that their definitions of well-being closely mirrored the three theoretical modes of recognition (Graham et al., 2017).

Other measures of children's well-being at school have also been proposed, such as the 'School Children's Happiness Inventory' (SCHI) (Ivens, 2007), the 'Scale of Positive and Negative Experience' (SPANE) (Martin-Krumm et al., 2018) and the 'Children's Overall Satisfaction with Schooling Scale' (COSSS) (Randolph, Kangas, & Ruokamo, 2009). These existing survey instruments differ in important ways, for example, some focus on self-esteem, depression, and affect, while others focus on general satisfaction. Thus, there is a "lack of consensus regarding the nature and structure of youth's school-specific subjective well-being" (Renshaw, Long, & Cook, 2015, p. 536). However, all approaches incorporate multiple sub-components of well-being that comprise a larger meta-construct.

The focus on specific subcomponents within the study of the well-being of both children and adults has arisen from diverse theoretical streams which are typically subsumed under the categorization of *eudaimonic* or objective-list accounts of well-being (Jayawickreme et al., 2012). These are Carol Ryff's schema of psychological well-being (PWB), Martha Nussbaum's adaption of Amartya Sen's capability approach (CA) into a list of ten central capabilities, and, more recently, Martin Seligman's PERMA<sup>1</sup> conceptualization of *flourishing*. Each of these approaches emphasizes the plurality of ingredients necessary for an individual to attain well-being, and underscores that subjective satisfaction alone is not sufficient when deciding if someone is doing well. These three approaches (Nussbaum, 2011; Ryff & Keyes, 1995; Ryff & Singer, 2006; Seligman, 2011) take adults as their focus, but – through in-depth qualitative investigation – have been found to extend in many ways to children as well, with autonomy and self-efficacy playing a central role for all individuals regardless of their age (Galton & Page, 2015; Kern, Waters, Adler, & White, 2014; Unterhalter, 2003).

Children's well-being within schooling and learning contexts has been defined in the literature in diverse manners. Some examine children's realization of their unique potential through social- and self-development (Gordon & O'Toole, 2015), while others focus on a positive state of mind involving children's whole life experience (Tomynt et al., 2015). Still others define children's well-being as consisting of various components, such as a multi-dimensional construct "with physical, psychological, social, spiritual and cultural aspects all interdependent" (Priest, MacKean, Davis, Briggs, & Waters, 2012) or a trio of "general happiness, relationships with teachers and intellectual stimulation" (Gibbons & Silva, 2011). More generally, some investigate "an abstract construct that includes both feeling good and functioning well" (Kern et al., 2014, p. 263). Almost all these definitions portray well-being as a multi-dimensional metric, citing both theoretical and practical reasons for doing so. In particular, the utilization of subcomponents allows researchers to investigate the impact of individual dimensions of well-being and to "identify groups with specific strengths and weaknesses" (Kern et al., 2014, p. 263).

### ***Measuring children's creativity***

Children's creativity has been investigated in various ways, including large psychological surveys. Initially, these surveys relied on the 'Torrance Test of Creativity' (TTCT), created in the late 1950s in the US. Most studies have been conducted in North America and the UK, and this specific capacity to produce something new has received greater interest in this context. This is likely shaped by the fact that child development research is more personality-centred in the Anglophone than the French cultural context (Osborne et al., 2003).

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<sup>1</sup> Positive emotions (P), engagement (E), relationships (R), meaning (M), and accomplishment (A).

Although definitions vary, there is general agreement of key components of creativity across studies. The essence of creativity can be summed up as the capacity to resolve a problem in a novel way (Runco, 2008). Furthermore, creativity is defined as a process involving both cognitive traits, including specific strategies such as transferring a specific skill in a new environment, and non-cognitive traits, including intrinsic motivation and openness to experience (Lubart, 2003). Creativity measures have been explored in many ways, including: psychometric tests which measure performance, behaviour and work assessments, and self-assessment measures aimed at comparing children's self-representation of specific personality traits.

The effect of school context on children's creativity has mainly been discussed at a theoretical level. On the one hand, schools are likely to value and reward repetition and the respect of rules (Sternberg, 2012). On the other hand, the school experience also provides resources that are necessary to be creative, such as specific knowledge and expertise. The effect of the schooling experience on creativity also depends on the characteristics of the specific schooling environment (Besançon & Lubart, 2008). In the French context, this theoretical research generally argues that the typical or "traditional" schooling experience may have a negative effect on children's creativity, given that the main objectives attributed to the educational system likely have a negative impact on creativity development (Dirani, 2016). At an empirical level, some research in the American context shows a slump in creativity, most significantly after the fourth grade, which might be due to the school context (Runco & Cayirdag, 2006). The way teachers valorise or inhibit certain behaviours and curricular activities may be key factors that impact pupils' creativity.

We focus on two important, but non-exhaustive, creativity dimensions that are likely to be linked with well-being in the school context. These two dimensions are an Interest in New Things and Intrinsic Motivation, which have been suggested as important to student well-being in the research (Fenouillet, Chainon, Yennek, Masson, & Heutte, 2017). These dimensions of creativity do not attempt to capture the construct of creativity as a whole, contrary to the scale proposed by Runco et al. (2001), for example, but these dimensions are frequently introduced in creativity measures (Dirani, 2017).

### ***Creativity, well-being, and success at school***

Creativity is associated with excellence. In fact, creativity has even been associated with the figure of the genius in research in sociology (Elias, 1991) and in psychology (Csikszentmihályi, 1996). We also know that the creative process depends on a certain quantity of knowledge and a certain level of expertise (Tricot & Sweller, 2014).

Although there is an association between scholastic performance and creativity, the creativity of weaker pupils in the French context is also of significant interest to researchers. First, since the 1950s, attempts to measure creativity have emerged as a response to the call to find another way to measure intelligence (Guilford, 1967). Whereas most of the evaluations implemented in the school system intend to evaluate the pupil's capacity to find one correct solution, "creativity" is the capacity to propose something original (Dirani, 2017). The empirical analysis of the links between creativity and standard measures of intelligence are inconclusive (Leboutet, 1970); in most empirical studies, academic grades and creativity are not correlated (Donggun & Runco, 2016). Thus, we can logically conclude that a change in the measurement of this construct would transform the shape of the hierarchical classification of pupils based only on academic evaluations.

Even though the French educational system emphasizes passive learning and memorization and rarely focuses on creativity in coursework or evaluations (Besançon, Fenouillet, & Shankland, 2015), this characteristic is often implicitly valorised and viewed as a component of being a 'brilliant' and successful student (Bourdieu & Passeron, 1964) who

has access to the highest positions in the educational system. In fact, many class activities require creativity in an implicit way. This may, however, be all the more problematic because we know that creativity and independence are fostered to lesser extent in underprivileged social classes compared with other social backgrounds (Duru-Bellat & Van Zanten, 2006). These expectations guide our analyses of the relationship between creativity and academic success.

Numerous researchers in the Anglophone context have suggested that well-being enhances children's performance at school, and, indeed, many policy documents and policies are based on this idea. Research has suggested that "satisfaction with school may be an important predictor of the pupils' academic achievement" (Kelly, Molcho, & Gavin, 2012, p. 90) and that emotional development is "an important contributing factor to subsequent success at school" (White, Connelly, Thompson, & Wilson, 2013, p. 88). Well-being interventions at the school level have been linked to positive results for both pupils and teachers (Waters & White, 2013). Looking further still, to children's later adult lives, research has shown that "happiness and enjoyment in childhood are similarly correlated with economic and emotional well-being later in life" (Gibbons & Silva, 2011, p. 312). Beyond this, children's well-being and creativity are certainly valued intrinsically as well.

Student well-being in France is notoriously low: Indeed, France scores 40<sup>th</sup> out of the 64 OECD countries regarding the percentage of pupils who 'feel good' at school (Fenouillet et al., 2017). However, research at several levels focusing on the link between well-being and academic achievement has increased in recent years. In addition to having an impact on economic and labour market factors (Gibbons & Silva, 2011), well-being in school is also a major predictor of differences in academic achievement. While pupils who are satisfied with their school life are more likely to develop effective learning strategies, pupils with a low level of school well-being tend to be dissatisfied with their life in general and to develop psychological difficulties that may affect academic achievement (Randolph, Kangas, & Ruokamo, 2009).

The links between the various dimensions of well-being and academic success thus appear to be multiple and complex, because pupils' levels of well-being seem to influence many intermediate variables important for school achievement, such as individual and social development. Due to the complexity of this process, research dealing with school well-being, social skills and school climate often converge both theoretically and empirically. These topics are now political priorities in France, and efforts to improve school environments have logically led political actors and academic researchers examine the problematic of school well-being. Few studies have been conducted to date, but some rare French data exist stemming from the school climate surveys carried out by Eric Debarbieux and his team. These results point to the existence of a significant number of pupils who are negatively apprehensive about school in France, and international surveys (such as PISA) confirm these findings (Guimard et al., 2015).

We know that some dimensions of creativity are clearly linked with well-being (Fenouillet et al., 2017). This is supported theoretically by Fredrickson's (2001) *broaden-and-build* theory, which suggests that positive emotions broaden the thought repertoire and thus lead to higher levels of creativity in problem solving. To go further into the analysis of the link between creativity and well-being in the school context, we hypothesize that this relationship varies according to pupils' characteristics. We assume, based on the literature, that gender (Martin-Krumm et al., 2018) and parental involvement (Mellou, 1996) are two individual variables that may explain the different shapes of the relationship between creativity and well-being in the school context. In fact, the literature shows that an independence-focused style of parenting that valorises autonomy enhances the development of children's creativity (Runco & Cayirdag, 2006), which could also encourage well-being.

Thus, children experiencing a less autonomous education at home may be less well equipped to access a higher level of well-being in the school context.

Although there are no clear differences by gender if we consider previous surveys examining various ways of measuring creativity, some dimensions of creativity, such as openness to experience, which are of great interest in this study, might be higher among girls (Baer & Kaufman, 2008). Moreover, we suggest that girls may benefit less strongly from the positive interaction between creativity and well-being. In fact, the constraints found in many girls' socialization, like the necessity to respect rules instead of acting originally (Gendron, 2010), seem to limit the development of their creativity (Baer & Kaufman, 2008).

### ***Aims of the current study***

The present study builds on these concepts of *creativity* and *well-being* emerging from the research explored above. We operationalize 'well-being' as both the presence of positive affect and the absence of negative affect (*hedonic* components), as well as high levels of engagement and feelings of competence (*eudaimonic* components). We define 'creativity' as a high level of adaptability and flexibility of thought, the key to developing novel ideas. Empirically, we focus our study on data collected using survey methods from 855 preadolescents attending primary schools in France. In our analyses, we test operationalizations of multi-dimensional concepts of creativity and well-being using factor analysis techniques, and illustrate the relationships between these variables and pupils' academic success while considering the potential moderating effects of gender and parental involvement.

Furthermore, we illustrate that these two concepts map more broadly onto the meta-construct of '*flourishing at school*,' which comprises the ability of students to develop and realize their unique potential in the context of thriving through school both in terms of well-being and creativity, keys to forming a future life that they will have reason to value. Thus, well-being at school is shown to be influenced not only by socio-economic and socio-emotional familial factors, as convincingly argued by previous research, but also by children's integration of these inputs into a creative engagement with the learning process in the school context.

In order to accomplish these research objectives, this study focuses on four main research questions:

- 1) How can children's well-being and creativity at school be defined and operationalized in the French educational context?
- 2) What is the dynamic relationship between pupils' well-being and creativity in this same context?
- 3) How are children's well-being and creativity associated with their academic success at school in France?
- 4) How do gender and parental involvement influence (moderate) these two relationships?

### **Research methodology**

#### ***French primary school context***

This study is situated in the French context, and more specifically in the region of Burgundy. Our target population is primary school pupils in the French public-school system. The data used in our study come from another research project studying the effect of social skills on student achievement in school (Fanchini, 2016). This project collected questionnaire data directly from primary school pupils, as well as further information from their teachers. The context and data collection are described briefly below.

The individuals involved in this study are French pupils enrolled in the third cycle of primary school. Specifically, the sample includes pupils in CE2, or the second basic course (who are on average 8 years old, which is equivalent to year 4 (UK) or third grade (US)); in CM1, or the first middle course (who are on average 9 years old, which is equivalent to year 5 (UK) and fourth grade (US)); and in CM2, or the second middle course (who are on average 10 years old, which is equivalent to year 6 (UK) and fifth grade (US)). For a description of the French education system, the reader can consult the following box.

### ***French public education***

Overseen by the national Ministry of Education, the French public education system provides free and compulsory education for children aged six to 16 years old. The first level of education, called “elementary school,” which includes 6,808,900 pupils<sup>2</sup>, is composed of the *école maternelle* (three non-compulsory grades for children from three to six years old) and the *école élémentaire* (five compulsory grades for children from six to 11 years old). These five obligatory primary school grades include: preparatory class (CP), first year of basic classes (CE1), second year of basic classes (CE2), first year of middle classes (CM1), and second year of middle classes (CM2). In 2014, France had 31,883 public elementary schools and 5,126 private schools (which are run under contract with the Ministry). The class curricula are national and compulsory for all teachers and pupils.

The primary school courses are designed in cycles of 3 years, with a cycle of “fundamental learning” (CP, CE1, CE2) and a cycle of “consolidation” (CM1, CM2 and the first year of high school). All obligatory schooling follows the “Common Knowledge, Skills and Culture Foundation,” which refers to the learning, skills, and school culture that pupils must have acquired by age 16.

Secondary education is also composed of two cycles. The first cycle is the middle school or *collège* (3,325,400 pupils) and lasts 4 years. At the end of this first cycle, pupils must obtain a national certificate that has a success rate of 87.3%. The second cycle of secondary education is called the *lycée* and lasts for three years. This level of schooling includes pupils enrolled in general (2,264,600) or vocational education (665,800 pupils). At the end of this second cycle, pupils pass the *baccalauréat* (professional, general or technical) or another secondary certificate, which allows them access to higher education. For the current generation, 78.6% of pupils obtained the baccalaureate.

### ***Questionnaire***

The questionnaire was designed in two distinct parts: questions relating to pupils’ socio-demographic and educational characteristics and questions assessing their behaviour. To give more information on pupils’ level of performance for their grade, teachers also assigned an overall score for each pupil.

Among the tools advocated by researchers, we have chosen the self-assessment questionnaire to reach a sample of significant size and to meet the demands of quantitative research. The self-assessment questionnaire also provides accurate and statistically usable responses. Although it nevertheless has certain limits such as social desirability or reference biases (Duckworth & Yeager, 2015), self-evaluation makes it possible to understand the individual’s feelings, emotions, aptitudes, motivations and beliefs. The self-assessment questionnaire remains the most widely used tool in educational research measuring behaviours.

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<sup>2</sup> The numbers of pupils given in this box are the most recent official departmental figures (2017).



We thus constructed a self-assessment questionnaire of social behaviours. Each behaviour is first assessed with a minimum of three items. On the one hand, this procedure reduces the problems of comprehension and interpretation of the questions. Two students may, in fact, understand a question differently, their answer no longer referring to the same phenomenon. The approach of asking several questions to measure the same dimension reduces this risk by confirming the answer given. On the other hand, the item multiplication procedure limits the risk of random responses because the probability that a student answers randomly on several items measuring the same phenomenon is more restricted than for a single item. Given the age of the respondents, all questions were constructed in first person singular, in order to allow the children to rapidly identify with the questions posed. Furthermore, as often as possible, the survey provided a scenario or example of the behaviour being assessed. Finally, in regards to the research protocol, we administered all of the questionnaires ourselves, with the aim of limiting evaluator bias and standardizing the data collection. This measurement tool produced a significant amount of data that has been subjected to exploratory analyses to confirm its methodological reliability.

We chose to measure several social skills and behaviours, which are mainly found in the Big Five personality traits classification. Following principal component analyses (PCA) performed on the collected data and internal consistency tests, we built measures for interpersonal and intra-individual social skills and behaviours. These different measures are also accompanied by a self-evaluation of school engagement, self-image and neuroticism. In line with recommendations in the literature, we strove to have a balanced number of positive and negative (reversed) items (Ivens, 2007). The measurement of creativity and well-being through this questionnaire is detailed below in the findings sub-section describing the constructs and indicators.

*Data collection.* Data collection was organized in two clear steps: at the start of the school year and at the end of the school year to map student progress. The survey was conducted during school time and according to the ethical rules respecting the anonymity of individuals and institutions.

*Sampling and generalizability.* The sample consists of 855 pupils in 16 public schools in the same city (which represents 44 classes). It is distributed equitably between girls and boys (48.2% of the sample are girls and 51.2% boys), which is representative of the reference population of France, where 48.9% of the pupils enrolled in primary education are female. The average age is 9.24 years (*median* = 9, *SD* = 1.01, *min* = 7, *max* = 12) and the most represented ages are 8 years (23.7%), 9 years (27.1%) and 10 years (37.4%), which corresponds with the three grades selected for the sample.

To describe the data concerning the occupational status of the pupils' parents, we notice that the most represented categories for mothers are mothers who are employees (39.2%), mothers who are not active in the labour market (18.9%), and mothers who exercise intermediate professions (15.4%). For fathers, unskilled workers (28.9%), employees (20.8%), and managers (11.7%) are most represented in the sample. Compared with the French population, mothers and fathers employed as professionals are overrepresented in our sample. We also see that the mothers in our sample exhibit a higher rate of unemployment than in the total French population, while unemployed fathers are less represented. In addition, the sample includes a very small number of retired parents, which is due to the considerable difference between the average age of the first childbirth for women (28 years and 30 years) and the average age of retirement (around 61 years). Finally, the other professional categories are fairly representative of the French population.

To continue the description of the sample representativeness in regards to family composition, we observe that 32.7% of the pupils in the sample are part of a family with two children and 27.5% with three children. In regards to birth order, 30.3% of the sampled pupils are youngest children, 29.6% are middle children, 27.5% are oldest children, and 11.5% are only children. Concerning grade repetition, 11.1% of pupils in our sample have already repeated a year during their schooling. This figure is markedly higher than the average rate of repetition (only one percent) in the reference population. Finally, according to the pupils' statements, 78.1% of parents are involved in their children's schooling. Parental involvement is measured in this study only from the angle of parental accompaniment of schooling, which can be measured by many indicators, such as parental relations with the school, parents' help and control of pupils' work, communication between parents and children, and participation in homework, etc. In this study, we measure the dimensions of communication between parents and children about school, parents' interest in their child's schooling, and help given for homework. In doing so, we try to capture the extent to which the parents are involved in the child's education and their social proximity to the culture and activities of the school.

*Dependent variables.* Although this research project was developed to investigate the impact of social skills on student achievement at school, and more specifically the impact of the Big Five personality traits, many of the questionnaire items included relate to the concepts of well-being and creativity, as described above. First, we found items highly relevant to student well-being, in particular mirroring the “*How I feel about Myself and School*” research study, which played a role in inspiring this research (McLellan & Steward, 2015). Second, we consider creativity as a multi-dimensional competence that requires different interpersonal and intra-individual behaviours that can be measured through pupils' self-reported adaptability and flexibility. This allowed us to develop a robust measure of these dimensions of creativity using the questionnaire items and data.

Through this approach, we consider children as the actors of their own development. We find support for this position in the work of Florin (2011 a/b), who emphasizes the importance of helping children develop cognitive and social skills while promoting well-being. The challenge of using this approach centres on the joint development of well-being and social skills. The analysis of different definitions of well-being shows the close link between these two factors: The development of a child's well-being is also strongly linked to the development of social skills. Viewed as a multi-dimensional construct, the pupils' well-being affects both their relationship with themselves and their social environment, which is strongly interrelated with several dimensions commonly considered to be social skills (Priest, MacKean, Davis, Briggs, & Waters, 2012; Tomy & al, 2015).

## ***Findings***

### ***Constructs and indicators***

*Well-being.* Using this extensive and detailed social skills questionnaire (Fanchini, 2016), multi-item composite measures of creativity and well-being were constructed. The measurement of well-being was designed to respond to three main criteria: firstly, to be child-specific; second, to take into consideration the school context; and thirdly, to include both *hedonic* and *eudaimonic* aspects of well-being. Furthermore, as mentioned above, we were inspired by the ‘*How I feel about Myself and School*’ research study (McLellan & Steward, 2015).

Using the this measurement model developed by McLellan and Steward (2015) as a reference, which was in turn influenced by the work of Huppert and So (2013), items were chosen from our questionnaire survey that were very similar to those used in existing studies of children's well-being (see Table 1). More specifically, we focused on items that mirrored

those found in the ‘*How I Feel About Myself and School*’ questionnaire piloted by McLellan and Steward (2015). These items included questions measuring positive emotion, peer relationships, engagement with learning, competence, self-esteem, resilience and negative emotion. We tested the overall construct of *well-being at school* using exploratory factor analyses on items selected for their theoretical value. Items were mainly binary, with yes/no responses, and those with multiple responses possible were recoded to a binary scale.<sup>3</sup> We therefore conducted a principal component analysis (PCA) with Varimax rotation on the tetrachoric correlation matrix, and measured the reliability of our components using the Kuder-Richardson Formula 20 (KR-20). Twelve indicators that loaded onto four interpretable factors (Table 1; loadings>0.30) were retained in the PCA, consistent with previous findings that sub-components exist within the construct of well-being (Hupport & So, 2013; McLellan & Steward, 2015). However, the overall KR-20 of the original scores of all twelve well-being indicators together was 0.62, showing a moderate level of internal consistency for *well-being at school* as a whole.

The components forming the construct of *well-being at school* were as follows: Negative Emotion, Engagement, Competence, and Positive Emotion (see Table 1). These components mirror those found elsewhere in the literature on well-being and, more particularly, on flourishing (Hone et al., 2014). Negative Emotion showed the strongest internal consistency (KR-20=0.56), with three items reflecting pupils’ feelings of sadness and the sensation of ‘feeling bad about oneself.’ Engagement taps into children’s motivation within the learning context, with both original and reversed items showing pupils’ energy, interest, and ease in the classroom. The third component, Competence, is essentially a measure of pupils’ self-confidence in the academic context: items measure pupils’ self-reported beliefs that they are able to succeed and that they can solve problems. Finally, Positive Emotion mirrors the classic measure of hedonic well-being, measuring pupils’ feelings of happiness. Each of these components are consistent with the literature on well-being and flourishing (Hone, Jarden, Schofield, & Duncan, 2014) and also closely align with the findings of McLellan and Steward (2015). The sole and principal difference between our findings based on the rotated component matrix and those of the ‘How I Feel About Myself and School’ study was our component of ‘Engagement’ in comparison with their component of ‘Interpersonal’ well-being. These differing findings likely reflect the difference in item wording between the questionnaires (the items are not exactly the same, and moreover were presented in different languages) as well as potential differences resulting from the classroom and schooling contexts in the UK and France. The French classroom as a context for *well-being at school* was explored in more depth in the literature review section.

When examining the construct of *well-being at school* as a whole, it was most strongly associated with the reversed item tapping into ‘feeling bad about oneself’. The other items with the strongest loadings were the reversed items concerning feelings of sadness and boredom and original items measuring feelings of happiness and energy. Self-confidence in one’s ability to succeed was not as central to this construct, although one’s ability to solve problems did load strongly, potentially also reflecting children’s optimism. Since this construct as a whole, as well as its components, is theoretically interpretable, we analyse pupils’ levels of well-being using each individual component and the construct of *well-being at school*, examining differences by gender and parental involvement, and examining how well-being relates to both creativity and academic success.

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<sup>3</sup> Therefore, the PCA was conducted on the tetrachoric correlation matrix of the variables in Stata.

Table 1 – The construct of *well-being at school*

<b>Construct of well-being (12 items)</b>				
<i>Measures</i>				<b>Loading (construct)</b>
<b>Component</b>	<b>Item</b>	<b>Loading</b>	<b>KR-20</b>	
<i>Negative emotion</i>	1. “I feel bad about myself.”	0.38	0.56	0.67
	2. “I am often sad at school or at home.”	0.59		0.61
	3. “When I find myself alone, I think about sad things.”	0.52		0.49
<i>Engagement</i>	4. “In class, I am full of energy.”	0.43	0.55	0.47
	5. “I feel bored at school.”	0.59		0.46
	6. “I feel safe and comfortable with the teachers at my school.”	0.45		0.44
	7. “When someone asks me to do something, I’m lazy.”	0.49		0.42
<i>Competence</i>	8. “I am just as capable at succeeding at school as the other pupils.”	0.55	0.36	0.39
	9. “I can succeed at whatever I put my mind to.”	0.66		<i>ns</i>
	10. “When I face a problem, I know what to do.”	0.40		0.49
<i>Positive emotion</i>	11. “I am happy with my life.”	0.53	0.33	0.72
	12. “I am always happy.”	0.72		0.52
<b>Construct KR-20</b>			<b>0.62</b>	

*Note:* Twelve indicators that loaded onto four interpretable factors (Table 1; loadings>0.30) were retained in the PCA: Items mapping onto the emotional experience of well-being, including the presence of positive emotion and the absence of negative emotion (*hedonic* measures, see items one, two, three, 11 and 12); feelings of competence, including navigating individual and social challenges (see items eight, nine and 10); and engagement, including involvement, participation and interest in one’s life and activities (see items four, five, six and seven). These components have been highlighted as important both in the literature on children’s and adults’ well-being.

*Creativity.* Much of the research on creativity includes conative components in the measure of creativity, beside the cognitive components, such as expertise in a specific domain, as suggested in a literature review (2017, date). These components, such as individual values and personality are linked with the expressive part of creativity. Some tools, such as the creativity personality scale (CPS; Gough, 1979) or the Runco ideational behaviour scale (RIBS; Runco et al., 2001), concentrate on these transversal personality traits that are required in any creative process.

Among these conative components, we focus more specifically on two dimensions of the creative process that have been previously linked with well-being in the school context. These two dimensions are ‘Interest in New Things’ and ‘Intrinsic Motivation.’ The role of ‘Interest in New Things’ has been emphasized in the literature as key to any creative process. It includes curiosity and openness to experience. Numerous empirical analyses have also emphasized the important role of ‘Intrinsic Motivation’ in the creative process, such as in the production of an artistic creation. Thus, our creativity indicator is built upon these two components, and when we discuss creativity scores below, we are referring to the score built upon these two dimensions. Next, we illustrate the internal coherence of our creativity measure.

Table 2 – The construct of *creativity at school*

<b>Construct of creativity (8 items)</b>				
<i>Measures</i>				<b>Loading (construct)</b>
<b>Component</b>	<b>Items</b>	<b>Loading</b>	<b>KR-20</b>	
<i>Interest in new things</i>	1. “I like learning new things at school.”	0.44	0.64	0.82
	2. “I am interested when the teacher begins a new lesson.”	0.44		0.55
	3. “When I work hard in class, I do it because I want to learn as much as I can.”	0.54		0.89
	4. “When I work hard in class, I do it because I want to see if I understand it.”	0.42		0.60
	5. “I like doing lots of different things in one day.”	0.35		0.57
<i>Intrinsic motivation</i>	6. “When the teacher talking about something and I want to know more, I ask questions.”	0.58	0.50	0.68
	7. “I like to ask the teacher questions when (s)he’s talking about something that interests me.”	0.69		0.60
	8. “When I work hard in class, I do it because the required work interests me.”	0.36		0.53
<b>Construct KR-20</b>		<b>0.68</b>		

As in the analyses described above concerning *well-being at school*, we again used exploratory factor analyses followed by a principal component analysis (PCA) with Varimax rotation. Using this approach, we built two creativity components. The first component, which exhibits fairly good internal coherence (KR-20=0.64) consists of the following items: “I like learning new things at school,” “I am interested when the teacher begins a new lesson,” “When I work hard in class, I do it because I want to learn as much as I can,” “When I work hard in class, I do it because I want to see if I understand it,” and “I like doing lots of different things in one day.” This component covers the dimensions of creativity linked with one’s interest in new things (or curiosity) that creates a positive relation with situations that enables one to learn new things. This dimension likely enhances individuals’ ability to adapt to new environments. In fact, this capacity for adaptation is necessary in any creative process, where one must be able to adapt to a new environment and find a coherent answer (Cohen & Ambrose, 1999).

The second component of creativity, which shows moderate internal coherence (KR-20=0.50) is comprised of the following items: “When the teacher is talking about something and I want to know more, I ask questions,” “I like to ask the teacher questions when (s) he’s talking about something that interests me,” “When I work hard in class, I do it because the required work interests me.” This component covers the dimensions of creativity linked with intrinsic motivation, which guides the pupils’ behaviour in the school context when they are personally interested in a subject. Intrinsic motivation is well established in any creative process even if the relation between both processes is complex (Auger & Woodman, 2016). This aspect of creativity at school underscores that pupils have developed personal interests that find an echo in the school context. Furthermore, this interest is not determined by the rules of the school system.

## Analyses

### 'Flourishing' at school

These two concepts map more broadly onto the meta-construct of '*flourishing at school*' tested here through confirmatory factor analyses (CFA) using structural equation modelling (SEM).<sup>4</sup> This broader notion is situated at the juxtaposition of these two constructs: the ability of students to develop and realize their unique potential in the context of thriving in and through school, both in terms of well-being and creativity. Pupils' well-being at school thus interacts with their creative engagement with the learning process in the school context. We see this both through the significant values of the covariance terms between all components of well-being and creativity (see Figures 1 and 2), as well as the significant values for the covariance between constructs (0.30, not shown). These findings are consistent with the literature (Fenouillet et al., 2017). This model of the interrelationships between the components of well-being and flourishing shows good model fit ( $RMSEA=0.03$ ;  $CFI, TLI=0.97$ ), providing evidence that there is indeed a meta-construct underlying these two related constructs and their respective components.

Figure 1 – Path diagram showing interrelations within well-being and creativity constructs

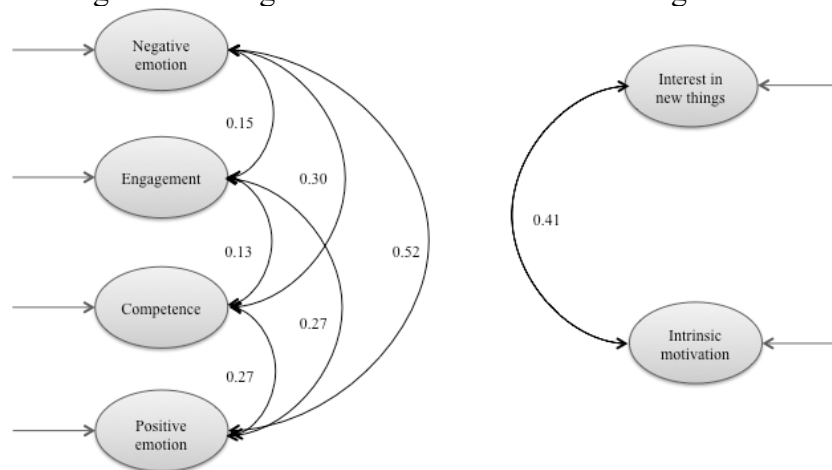
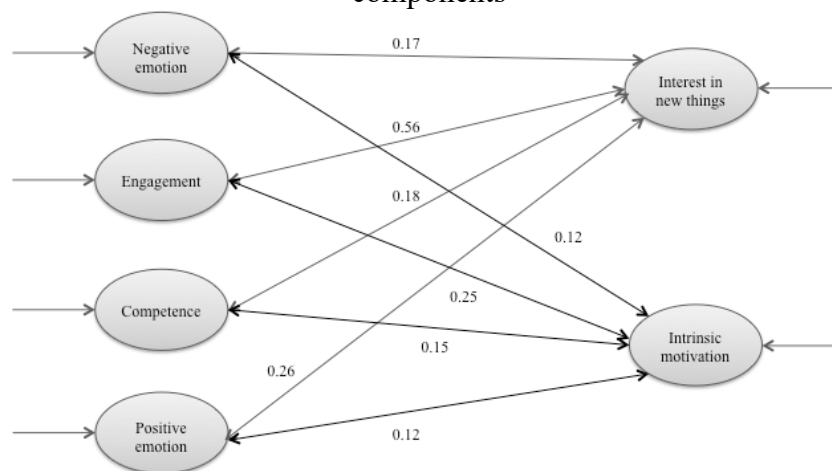


Figure 2 – Path diagram showing interrelations between well-being and creativity components



<sup>4</sup> The CFA was conducted on the tetrachoric correlation matrix of the variables in R.

### ***Differences in well-being and creativity amongst pupils***

In order to describe our data and to examine the links between the components of well-being and creativity and student achievement, we conduct several sets of analyses. Firstly, a description of the distributions of these variables is necessary to begin to observe differences in creativity and well-being according to various student characteristics, and in particular their academic level. We focus specifically on gender and parental involvement in schooling because we know from the literature that these variables are strongly implicated in the explanation of differences in school achievement and levels of creativity, which likely also have an effect on well-being. We thus make the assumption that these two socio-familial variables are potential moderating variables that contribute to explaining differences in the levels of well-being and creativity of pupils. Table 3 summarizes the descriptive statistics of the variables in standardized form (and we also use the standardized scores in the following analyses). Although we do not test the significance of the differences in these variables at this stage, these preliminary results already provide some interesting information about the levels of well-being and creativity in our student sample.

*Gender.* The first fact that stands out in our data is that girls have significantly higher mean scores than boys on the well-being scales, except for the Competence scale. Indeed, we know that boys tend to self-evaluate more positively than their female classmates (Hue et al., 2009). Creativity scores are lower for girls for the Interest in New Things subscale but higher for the Intrinsic Motivation subcomponent, confirming the fact that there is no creativity gender gap for the construct as a whole (Baer & Kaufman, 2008). Examining the items that make up this component, we see here possible evidence for the fact that girls more successfully embody the role of being a student than boys (Gendron, 2010). While the gender variable is most clearly an explanation for differences in academic achievement, its influence also appears in well-being and creativity scores. Thus creativity dimensions that best fit the French schooling context seems to benefit girls more. Further analysis is needed to confirm or disconfirm this trend.

*Parental involvement.* When analysing the parental involvement variable, we consider the potential effect of family culture on pupils' well-being and creativity. For example, we might ask if pupils who report that their parents help them with their schoolwork tend to have higher levels well-being and creativity at school. A simple examination of the distributions seems to indicate a clear tendency in this direction: except for "Negative Emotion," all the scores of well-being and creativity are on average higher for the pupils accompanied by their parents in their schooling. This result invites us to explore the influence of an autonomous parenting style when dealing with expectations related to school. Contrary to what we observe in the educational process at home, where creativity is higher when parents give a high level of autonomy to their children (Runco & Cayirdag, 2008), parental involvement and involvement seems to enhance children's likelihood of behaving creatively in the school context. This trend is reversed for Negative Emotion, and could be explained by the pressure felt by pupils whose progress is followed closely by their parents.

*Academic achievement.* Table 3 also lists the average levels of well-being and creativity by student grades at the beginning of the school year and at the end of the year. In this case, no obvious trend seems to emerge and further analysis is needed.

Table 3 – Descriptive statistics of well-being and creativity scales by gender, parental involvement and grades at the start and the end of the school year

Scales	Subcomponents	N = 855	Gender		Parental involvement		Grades at the start of the school year			Grades at the end of the school year		
			Girls	Boys	Yes	No	Low	Average	High	Low	Average	High
			n = 417	n = 438	n = 668	n = 159	n = 184	n = 380	n = 199	n = 114	n = 366	n = 283
Well-being	Negative Emotion	-.0013 (1.6498) Min -2.79 Max 4.46	.1818 (1.7437)	-.1763 (1.5366)	-.0313 (1.6710)	.1200 (1.5791)	-.0595 (1.86049)	.0451 (1.6484)	-.0816 (1.4405)	.0731 (1.7982)	.0348 (1.7755)	-.1075 (1.4032)
	Engagement	.0106 (2.5954) Min -7.53 Max 2.14	.2620 (2.5375)	-.2284 (2.6300)	.1173 (2.4710)	-.5421 (2.9712)	-.0340 (2.4826)	.0478 (2.7089)	-.1049 (2.5281)	.1210 (2.2272)	.0290 (2.6379)	-.1165 (2.7093)
	Competence	.0058 (1.9892) Min -4.78 Max 2.18	-.1795 (2.0053)	.1842 (1.9593)	.0914 (1.9490)	-.3682 (2.1403)	-.2263 (2.1018)	-.0074 (2.0205)	.2404 (1.8096)	-.2980 (2.2965)	-.0863 (1.9841)	.2431 (1.8480)
	Positive Emotion	.0027 (1.2413) Min -4.35 Max 1.21	.0725 (1.1922)	-.0634 (1.2839)	.0299 (1.2105)	-.0773 (1.3474)	-.1916 (1.1759)	.0212 (1.2471)	.2268 (1.2491)	-.2929 (1.1100)	.0263 (1.2628)	.1470 (1.2365)
Creativity	Interest in New Things	-.0104 (2.6340) Min -11.27 Max 4.10	-.0929 (2.4402)	-.1119 (2.8107)	-.1391 (2.4624)	-.6971 (3.2960)	.0790 (2.6400)	-.0626 (2.6205)	-.0777 (2.6604)	.1685 (2.3387)	.0296 (2.5773)	-.1857 (2.7962)
	Intrinsic Motivation	-.0075 (2.1280) Min -6.24 Max 1.47	-.1967 (2.2022)	.1723 (2.0417)	.0254 (2.0737)	-.1520 (2.3315)	-.4112 (2.2222)	.0088 (2.1901)	.2877 (1.8789)	-.0315 (1.9167)	-.1227 (2.1801)	.1351 (2.1376)

Note: The means are presented for each standardized variable and the standard deviations are presented in parentheses.



### ***Moderating effects of gender and parental involvement***

Our examination of the distributions seems to indicate a close relationship between our well-being and creativity components and the variables of gender and parental involvement, which have been used to explain differences in academic achievement in the literature. We next test the effect of children's well-being and creativity on their grades at the end of the school year using ANOVAs. The results of these analyses for the components of well-being and creativity by gender and parental involvement are presented in Table 4.

Table 4 – ANOVAs of well-being and creativity components by gender and parental involvement

	<b>Subcomponents</b>	<b>Gender</b>	<b>Parental involvement</b>
<b>Well-being</b>	Negative Emotion	10.052 (.002)	1.062 (.310)
	Engagement	7.525 (.006)	8.222 (.005)
	Competence	7.051 (.008)	6.711 (.017)
	Positive emotion	2.555 (.295)	.958 (.741)
<b>Creativity</b>	Interest in New Things	1.831 (.027)	2.170 (.006)
	Intrinsic Motivation	5.971 (.015)	.828 (.363)

*Note:* The F-values are presented with the *p*-values in parentheses and these are separate models.

ANOVAs conducted to understand the effect of gender and parental involvement on the well-being and creativity scores show very interesting results. First of all, there are significant main effects for gender, which influences the Negative Emotion, Engagement, Competence, Interest in New Things and Intrinsic Motivation scales. Simple linear regressions demonstrate that girls present higher scores on Negative Emotion (coef. = .109; *p* value = .002) and Engagement (coef. = .095; *p* value = .006) than boys. In contrast, the boys in our sample tend to have higher scores on Competence (coef. = -.091; *p* value = .008) and Intrinsic Motivation (coef. = -.087; *p* value = .015) than girls. Furthermore, regarding the effect of parental involvement in children's schooling, the results are significant for three subscales and in the same direction: pupils who report being supported by their parents present higher well-being scores on Engagement (coef. = -.100; *p* value = .004) and Competence (coef. = .091; *p* value = .010), and higher creativity scores on Interest in New Things (coef. = .123; *p* value = .001).

In order to further this line of inquiry and to detail the links between well-being and creativity and our variables of interest, we examine graphically pupils' average well-being and creativity scores by the categories of gender and scholastic achievement. We thus present graphs that summarize the averages of the standardized scores on each of the components of well-being and creativity based on grades obtained at the end of the school year and gender or parental involvement in schooling. Following this reasoning, we first describe the well-being scores by gender and grades at the end of the school year to see if, for example, girls with a strong academic level are those who have higher well-being scores.

Figure 3 – Means of well-being component scores by grades and gender

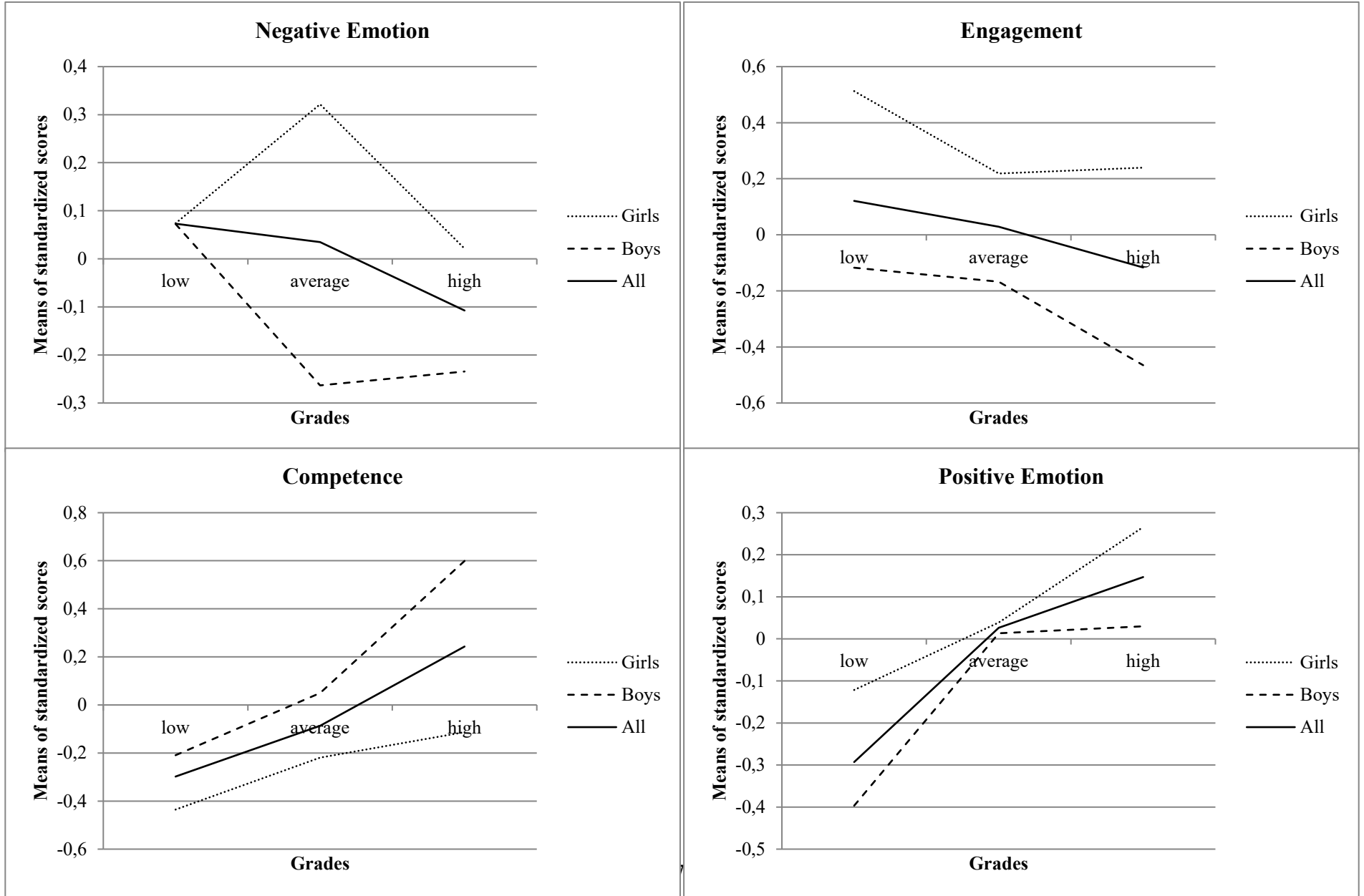
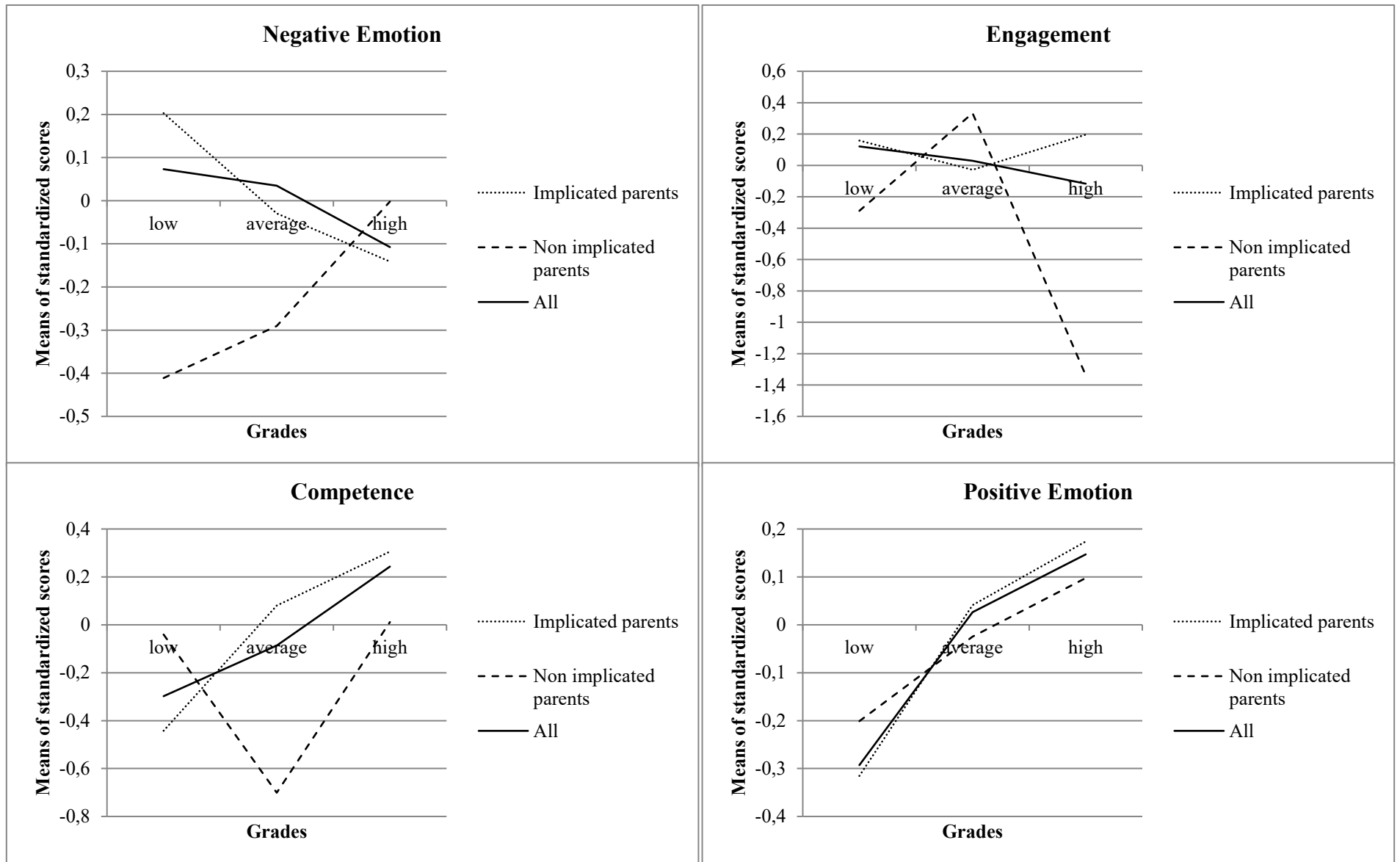


Figure 4 – Means of well-being component scores by grades and parental involvement



*Differences in well-being amongst pupils.* We first note that for the four components, the differences between boys and girls are relatively clear. Specifically, these figures confirm that on average girls have higher scores than boys for Negative Emotion, Engagement and Positive Emotion, and that they have lower scores for Competence. Prior research in France has shown that girls report more negative emotions and less positive emotions than boys on average (Martin-Krumm et al., 2018). Thus, these findings are only partly consistent, but suggest that a pupil's gender does indeed have an influence on pupils' well-being, with girls reporting more Negative Emotion across studies.

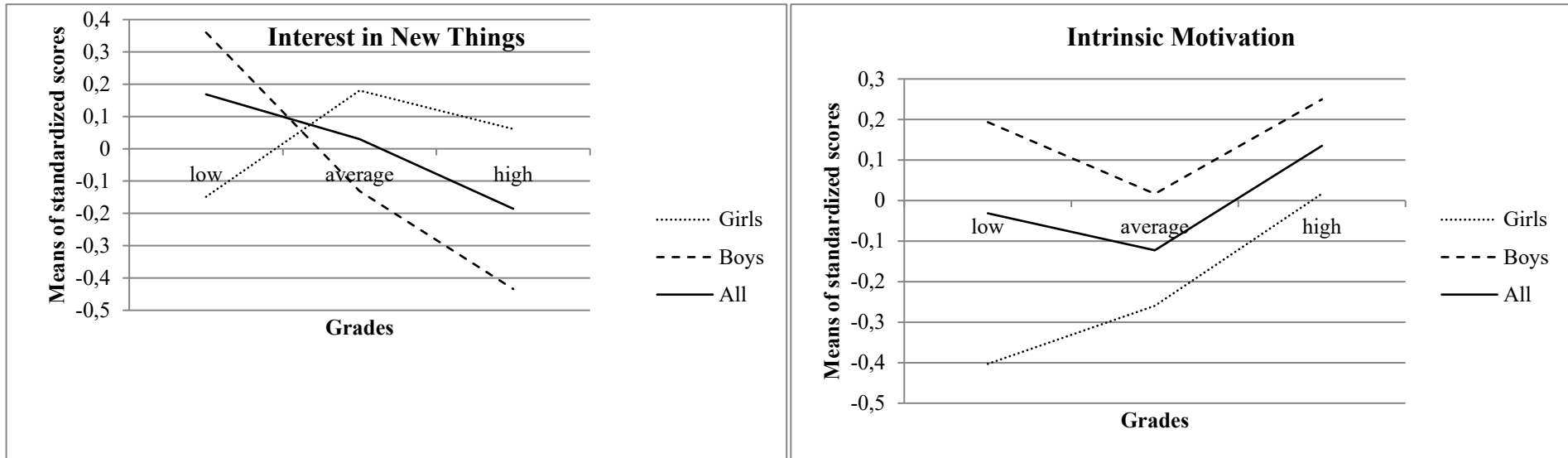
Furthermore, we find that levels of well-being are not linearly correlated with the academic level of pupils: although high levels of Competence and Positive Emotion seem to be more common amongst good pupils (who received grades above 15/20), Engagement is stronger amongst pupils with a low academic level and these pupils' levels of Negative Emotion are not the highest. This suggests both that high achieving pupils may feel pressure to succeed within this schooling context, and that low performing students may be more engaged by the challenge of learning.

We next examine grades at the end of the school year as related to student levels of well-being by parental involvement in schooling, which is another important variable in explaining differences in academic achievement. We find that pupils with low grades and implicated parents report the highest levels of Negative Emotion, which is likely due to the pressure they feel to perform better in order to meet their parents' expectations. This is reversed for those children with non-implicated parents: they report very little Negative Emotion. These results are different from those found in the literature for older students, where parental expectations played a more positive role for lower achieving students (Rania, Siri, Bagnasco, Aleo, & Sasso, 2014). Younger children may be more sensitive to parental input (Mellou, 1996). These contrasting results are hidden in the "all" category, where we see only that Negative Emotion decreases in the categories where grades increase.

Somewhat similar results come to light concerning Engagement and Competence. Those children with non-implicated parents and high grades report the lowest levels of Engagement, while children with average grades and non-implicated parents report the lowest levels of Competence. For the children with implicated parents, both high and low grades are associated with greater Engagement. Thus, parents appear to significantly contribute to well-being at school, has been found with creativity as well (Mellou, 1996). Feelings of Competence increase as might logically be expected for these children as well: Stronger grades are associated with higher levels of this well-being component.

Positive Emotion shows a clear linear pattern across all three categories. Those with the lowest grades show the lowest levels of Positive Emotion, those with average grades show a middle level of Positive Emotion, and those with the highest grades also report the highest levels of Positive Emotion. Thus, unlike for Negative Emotion, parental involvement does not moderate the association between grades and Positive Emotion. Furthermore, we see clearly how school performance and Positive Emotion co-vary for children in the French schooling context.

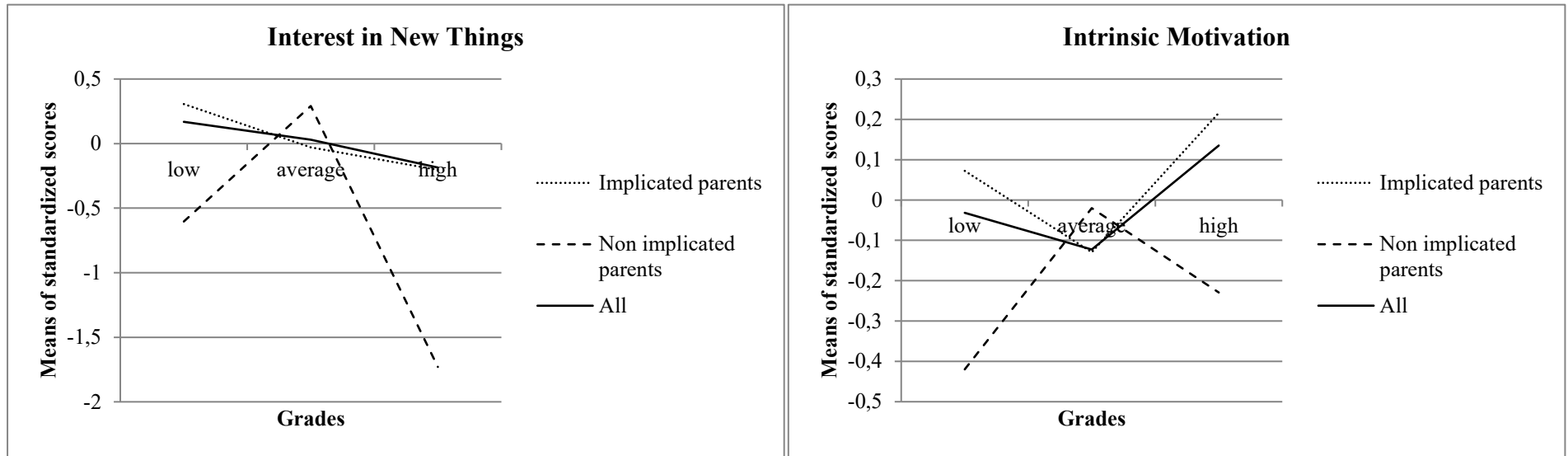
Figure 5 – Means of creativity subcomponents scores by grades and gender



*Differences in creativity amongst pupils.* Next we examine graphically pupils' average creativity scores by the categories of gender and scholastic achievement. This second series of graphs clearly indicates that groups are distinguished by gender. Concerning the Interest in New Things component, we find that the link between this variable and grades varies according to gender. In fact, for girls, we see that pupils with low grades have a low Interest in New Things score whereas pupils with high grades have a high Interest in New Things score. For boys, on the contrary, there is a negative relationship between the interest scores and school grades. The influence of the Interest in New Things score on school grades does not seem to play the same role for boys and girls in the schooling context. Girls' success in this context seems to be more dependent on this creativity dimension. It is possible that girls have to demonstrate more interest and initiative in the school context in order to succeed, whereas boys might be more self-confident with the same level of ability. Boys' higher levels of Competence on the well-being measure are also consistent with this finding. These results appear to confirm differences in self-confidence according to gender (Gendron, 2010).

In regards to the Intrinsic Motivation component, there is an absolute difference in level according to gender: The average level of Intrinsic Motivation is higher amongst the boys than amongst the girls. However, the relationship between school grades and the Intrinsic Motivation score takes the same shape for both boys and girls. Intrinsic Motivation is also higher amongst the highest performing pupils. This suggests that Intrinsic Motivation plays a role in the academic success, regardless of gender. This component might therefore be a condition for academic success. Lower performing pupils seem to lack Intrinsic Motivation, which is measured as a personal interest for the activities that take place in the school context.

Figure 6 – Means of creativity subcomponents scores by grades and parental involvement



The relationship between the subcomponents of creativity and school grades also vary according to the level of parental involvement, as illustrated below in Figure 4. With low parental involvement, the Interest in New Things score is lower amongst the highest performing pupils, whereas the Interest in New Things score is very high amongst the lowest performing pupils with highly implicated parents. Parental involvement seems to strengthen a linear and negative relation between Interest in New Things and school performance. At the same time, parental involvement appears to play a role in reducing inequalities in interest scores between high- and low-performing pupils.

Regarding the Intrinsic Motivation score, it is higher amongst the higher-performing pupils, as compared with the lower-performing pupils. This result suggests that intrinsic motivation is implicated in school performance, as suggested in the literature (Leroy et al., 2013). Parental involvement seems to foster Intrinsic Motivation for pupils with both high and low grades. Thus, parental involvement appears to have a positive effect on both of the creativity components that we consider in the school context. It might be that less implicated parents do not express high expectations in regards to school, which is transformed into lower Intrinsic Motivation by their children in the school context (Mellou, 1996). Children's Interest in New Things and Intrinsic Motivation in the school context depend on parental involvement in their schooling, which is an important result to consider in any reflection on how to enhance children's creativity in the school context.

## **Discussion**

Through our analysis of the present data, we find that a multi-component understanding of well-being is clearly supported. The literature on both adult and children's well-being suggests that this construct is multi-dimensional, and our factor analyses demonstrate empirical support for this contention. Furthermore, we find evidence for an underlying meta-construct that we term '*flourishing at school*'. This is consistent with prior research finding that well-being at school comprises multiple components that load onto a common broader factor (Fenouillet et al., 2017; Fenouillet, Heutte, Martin-Krumm, & Boniwell, 2015; Martin-Krumm et al., 2018; Renshaw et al., 2015). However, it contradicts previous findings in France that suggested that there is no significant relationship (and in some cases a negative relationship) between creativity and well-being in the schooling context (Besançon et al., 2015).

We find that academic success is more strongly linked to some components of well-being than others. For example, there is a positive relationship between academic success and both Competence and Positive Emotion, but an inverse relationship with Engagement and an unclear relationship with Negative Emotion. We also find that there are significant differences in well-being by both gender and level of parental involvement. Furthermore, these variables interact with academic success, potentially moderating the relationship between well-being and school grades. These possible interaction effects nuance any attempt to describe the association between well-being and level of academic performance. Overall, our study suggests that well-being is multi-dimensional and indirectly impacts academic success depending on gender and parental involvement. However, more analyses are necessary to explore the exact nature of the interactions between these variables.

Additionally, two dimensions of creativity have been empirically emphasized: Interest in New Things and Intrinsic Motivation. These components show significant correlations with the well-being dimensions. We find that the links between academic success and creativity vary according to the dimension of creativity that is considered, according to gender and according to the level of parental involvement. We find that boys report higher levels of Interest in New Things than girls in this academic context, which has also been



found in the literature (Besançon et al., 2015). Parental involvement reduces the effect of interest on school performance. Based on this effect, it seems that parental involvement encourages children to focus their interest on subjects that fit the expectations of the school system.

The second component of creativity, Intrinsic Motivation, seems to have a positive impact on academic grades, and this is consistent with other research finding that intrinsic motivation has a positive impact on academic success (Lambert, 2012). Parental involvement fosters this effect of intrinsic motivation on school grades. Thus, we see the importance of designing a public education policy that involves parents in attempting to foster both children's Interest in New Things and Intrinsic Motivation, which each have implications for both well-being and school success.

### ***Limitations***

Our study is limited by the fact that although our questionnaire maps fairly closely onto the items measuring children's well-being and creativity in prior research, the survey was not designed with this aim in mind. Thus, our constructs require further testing in a French context using an instrument specifically designed to measure well-being and creativity. Such research is currently being undertaken in France (Fenouillet et al., 2017; Martin-Krumm et al., 2018).

Furthermore, to deepen our analysis, even though the reliability of each construct is satisfactory, it would have been preferable to use more items for each given construct, if more items had been available. To better understand the link between creativity scores and school performance, future research should attempt to investigate precisely how children's Interest in New Things and Intrinsic Motivation are mobilized within the school system using classroom observations. Further empirical models, such as, for example, further structural equation models (SEM) will allow future studies to go further into the analysis of the interaction of creativity and well-being in the school context while taking into account gender and parental involvement moderating effects.

### ***Conclusion***

This study tested a new way of measuring children's well-being and creativity and how non-cognitive skills such as these influence school performance. We find that it is also necessary to take into account the gender of children and the level of parental involvement, which appear to have a moderating effect on the relationship between well-being and creativity scores and school performance. Creativity and well-being, through their distinct components, appear to be a shared competence between schools and families that relate significantly to student success. We therefore suggest that putting policies in place to both encourage parental involvement and foster creativity and self-confidence in terms of feelings of competence for both girls and boys, but particularly girls in the French primary school context, is a necessary step forward. The way ahead for the implementation of further recommendations and policies for promoting the well-being and creativity of pupils in the French school system requires further research; however, there is already movement in this important direction, and even better chances for the enriched creativity and well-being of future generations.

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