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RESEARCH PAPER

Subjective School Experience and Well-Being during the COVID-19 Pandemic

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Abstract
School life is an important determinant of adolescents' subjective well-being. While there is now an extensive literature on the impact of the COVID-19 pandemic on adolescents' well-being, adolescents' school experience during the pandemic and how it relates to different dimensions of their subjective well-being has received little attention. This study addresses this gap by examining the relationship between young people's school experience and their cognitive and affective subjective well-being during the COVID-19 pandemic in Luxembourg. We rely on a unique two-wave panel dataset that contains granular information about young people's lives shortly after the onset of the pandemic in July 2020 and one year later in July 2021. Our study extends the current scientific knowledge on the COVID-19 pandemic by highlighting that while school experience has a weak relationship with affective subjective well-being (i.e., happiness), it is strongly associated with cognitive subjective well-being (i.e., life satisfaction), particularly one year after the pandemic outbreak for those with more negative feelings about school. Our study also reveals that our results on cognitive well-being are stratified by social status.

Keywords Subjective well-being · COVID-19 · School experience · Youth · Longitudinal studies

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1 Introduction

Current empirical evidence robustly demonstrates the short-term adverse effects of the COVID-19 pandemic on young people (WHO, 2020). While children and adolescents experienced lower rates of severe forms of COVID-19 compared with other age groups (WHO, 2020), the pandemic heavily disrupted their education and socialization at school (Meinck et al., 2022; Van de Graaf et al., 2021). The COVID-19 pandemic has predominantly resulted in negative psychological consequences for most young people, including increased levels of anxiety and depression (Hawes et al., 2022), stress (Jiang, 2020), and feelings of isolation and disconnection from peers (Groarke et al., 2020).

During the pandemic, young people also had to cope with drastic changes in their school routines. Education systems were severely impacted by the emergency response to the COVID-19 pandemic, necessitating a sudden shift to online learning, a reduction in educational offerings, and the management of costs associated with this transition. For instance, secondary students in OECD countries experienced, on average, a loss of approximately 60% of total instruction days between January 2020 and May 2021.

School life has long been recognized as a central domain in shaping young people's subjective well-being (Sirgy, 2021; Hascher & Hadjar, 2018). On the one hand, school fosters feelings of security, belonging, accomplishment, and purpose, shaping academic and career aspirations, as well as interpersonal connections with peers, which can positively affect future outcomes. On the other, negative school experiences, such as excessive workload, burnout, and bullying can detrimentally impact students' well-being. However, one area that has received little scholarly attention is how young people's school experiences were related to differences in their subjective well-being over the course of the COVID-19 pandemic. One reason for this gap in research may be the scarcity of panel data on school experiences during the COVID-19 pandemic.

Against this background, the present study aims to extend the existing literature by examining how young individuals' subjective school experiences during the COVID-19 pandemic relate to their cognitive and affective well-being, and how this association changes with the evolution of the pandemic, when initial uncertainty decreases, and adaptive behaviors emerge in response to the new circumstances.

The extent to which the disruption of normal school life during COVID-19 was primarily related to the cognitive (evaluative) and the affective (hedonic) aspects of subjective well-being has received limited attention in the literature. Distinguishing between these two dimensions during critical periods of uncertainty, insecurity and social isolation is important, as they pertain to distinct psychological functions (Layard, 2010; Seligman and Csikszentmihalyi, 2000).

An additional contribution we make is to examine heterogeneity by socioeconomic status. Families mobilize their cultural and economic resources to cope with negative school experiences (Bernardi, 2014), and different responses may have contributed to shape the relationship between school experience and subjective well-being during the pandemic.

The study relies on the 'Young People and COVID-19' (YAC) dataset, a unique ad-hoc two-wave panel study on a representative sample of young individuals living in Luxembourg. This small and rarely studied EU country consistently ranks among the world's wealthiest (World Bank, 2023) and happiest nations (Helliwell et al., 2022) and has a unique multilingual educational system (Kirsch & Aleksić, 2021). The two data collections were

conducted a few months following the outbreak of the COVID-19 pandemic (July 2020) and one year later (July 2021), respectively. We compare these two different temporal contexts to investigate how school experience influenced well-being after one year into the pandemic.

In the following section, we provide a comprehensive review of the literature on our variables of interest and derive our research questions. Next, we describe the case of Luxembourg, outline the panel data used, and describe the analytical strategy. Finally, we present the empirical results, provide a discussion, and offer concluding remarks.

2 Theoretical Framework

2.1 Students' Life Domains and Subjective Well-being

Overall life satisfaction and happiness represent the cognitive and affective evaluations of various life domains in a holistic manner (Diener & Seligman, 2004; Seligson et al., 2003). While happiness or affective well-being captures momentary and short-term emotional states experienced in everyday life, overall life satisfaction is more retrospective and long-term, reflecting an individual's comprehensive life experience (Layard & De Neve, 2023). Particularly in the last two decades, scholars in the social sciences have extensively debated which life domains are most relevant and at what stages of life they hold the greatest significance for well-being (Brockmann & Fernandez-Urbano, 2024). These debates are rooted in early foundational works by Cummins (1996) and Huebner (1994), which were based on surveys conducted with the general population.

Recent scholarship has increasingly focused on identifying the life domains that constitute the subjective well-being of youth and adolescents, considering both their cognitive and affective dimensions (Casas, 2011). Five domains are generally recognized as crucial: personality factors, physical and health-related factors, familial and environmental factors, sociocultural factors, and school factors (Proctor et al., 2017). The aggregation of individual judgments within these domains forms the basis of students' subjective well-being. Overall, these life domains are interrelated, with positive or negative experiences in one domain potentially influencing others and, by extension, overall subjective well-being (Rojas, 2006).

Personality traits appear to account for a substantial portion of the variance in adolescents' well-being (Diener, 1996). High levels of life satisfaction and happiness are strongly associated with traits such as optimism (Gilman & Huebner., 2006; Froh et al., 2008; Rincon Uribe et al., 2022), self-esteem (Dew & Huebner, 1994), a high internal locus of control (Huebner et al., 2001), an adaptive attributional style (Rigby & Huebner, 2005), and extraversion coupled with social self-efficacy (Fogle et al., 2002). Furthermore, research on youth suggests that social interests, such as the willingness to participate in extracurricular activities, are strongly correlated with subjective well-being (Gilman, 2001; Trainor et al., 2010).

Physical and health-related factors also play a considerable role in shaping well-being. Health-risk behaviours such as substance abuse (Zullig et al., 2001; Valois et al., 2010), violent and aggressive behaviours (Callahan et al., 2003), and eating disorders (Halvorsen & Heyerdahl, 2006) are typically associated with lower subjective well-being. In contrast, prosocial peer interactions (Martin & Huebner, 2007), a healthy diet (Piko, 2006), and regular

physical exercise (Mangerud et al., 2014; Janssen & LeBlanc, 2010) have been positively linked with subjective well-being.

Familial and environmental factors constitute another critical domain in the well-being of youth. Authoritative parenting (Suldo & Huebner, 2004), perceived parental support (Young et al., 1995; Davis et al., 2015), the quality of parental attachment (Ma & Huebner, 2008; Greenbreg et al., 1983), cohesive family relationships (Manzi et al., 2006), and the availability of family resources (Dinisman & Ben-Arieh, 2016) are all strong predictors of well-being. On the other hand, negative experiences such as parental separation or divorce (Demo & Acock, 1996), a lack of paternal involvement (Davids et al., 2017; Flouri & Buchanan, 2002), and issues such as parental alcoholism and adolescent pregnancy (Braithwaite & Devine, 1993) can diminish youth well-being, although specific living circumstances may play a more crucial role than family status. The quality of the physical and social environment, including housing conditions and neighbourhood characteristics, also significantly influences youth well-being (Nickerson & Nagle, 2004; Visser et al., 2021).

Furthermore, cultural and socioeconomic differences, such as neighbourhood quality and social cohesion, can significantly and positively influence both affective and cognitive well-being (Milfont & Denny, 2017;). However, perceived discrimination can adversely affect both dimensions of well-being (Liebkind & Jasinskaja-Lahti, 2000; Seaton et al., 2010). Scholarly interest in this area was initially sparked by concerns about the psychological well-being of immigrant youth and their adaptation processes (e.g., Tanaka et al., 2005; Runarsdottir & Vilhjalmsson, 2019).

Finally, school plays a central role in determining children's and adolescents' subjective well-being (Clark et al., 2018). The school life domain encompasses all students experiences in the school context, including interactions with teachers and peers (i.e., class environment). School provides a sense of security, belonging, accomplishment and purpose by encouraging academic and career aspirations (Huebner et al., 2014). It also facilitates interpersonal relationships with peers (Oberle et al., 2011), positively impacting future life outcomes (Bond et al., 2007). Moreover, positive school practices promote student's inner resilience (Ungar et al., 2019).

Conversely, negative school experiences, such as such as excessive workload (Yangdon et al., 2021), burnout (Walburg, 2014), and bullying (Borualogo & Casas, 2021) can harm students' subjective well-being and jeopardize their attachment to educational settings, increasing dropout risks (Stearns et al., 2007). These disruptions, along with the positive experiences mentioned, are not isolated; they interact with other life domains, influencing each other and acting as buffers or amplifiers for students' well-being levels and present/future life outcomes.

2.2 School Experience and Subjective Well-being

There is a growing body of empirical research focusing on the relationship between school experience and subjective well-being. School experience generally includes young people's perceptions of their academic competence, their feelings toward their educators, and their general attitudes toward their educational institutions (Valeski & Stipek, 2001). Scholars have usually explored this broad concept by examining the positive impact of specific school-related factors on subjective well-being, including but not limited to educational attainment (Powdthavee et al., 2015), satisfaction with grades (Trzcinski & Holst, 2008),

academic engagement (Datu & King, 2018; Lewis et al., 2011), and academic performance (Wu et al., 2020). Suldo et al. (2006) highlight how youths' life satisfaction is significantly correlated with multiple school experience-related factors such as general school climate, ability grouping at school, academic achievement, and evaluation of one's happiness with school.

Beyond the analysis of specific school-related factors, there are few empirical studies focusing directly on the relationship between subjective assessments of overall school experience and subjective well-being. So far, existing studies have shown that overall subjective school experience can highly correlate with both affective and cognitive well-being (Suldo et al., 2006). However, most scholarly attention has been on the cognitive dimension.[1] Empirical research shows that school experiences are associated with varying levels of life satisfaction among young people (Huebner et al., 2014) and that high life satisfaction is related to positive attitudes toward school in general as well as towards teachers, GPA, and participation in extracurricular activities in particular (Proctor et al., 2017). For instance, in the United States, two studies (Gilman & Huebner, 2006a; Huebner & Gilman, 2006) find that positive school experiences correspond to high life satisfaction in secondary school students. In Poland, Strózik et al., (2016) report a strong correlation between subjective school experience and life satisfaction for young kids aged 8 to 12. Similar results are found in Finland by Katja et al. (2002).[2]

2.3 Socioeconomic Background, School Experience and Subjective Well-being

An extensive sociological literature attests that socioeconomic background, which encompasses social class, educational attainment, and life experiences (Locke et al., 1999), plays a central role in how students perceive their school experiences and its relationship with their well-being, showing the interconnections between family environment and the school domain. On average, students from more affluent backgrounds have access to better schools, educational materials, and extracurricular activities, giving them an advantage in academic achievement; they also make more ambitious educational investments than peers with similar achievement levels (Jackson, 2013). High-SES families invest in education as a means of maintaining their privileged social position (Breen et al., 2014). Even when faced with negative school experiences, high-SES families are more likely to effectively mobilize their resources to cope with the challenges without compromising their educational aspirations (Bernardi, 2014). Higher-SES families may have more resources and time to participate actively in their children's education by attending school events, assisting with homework, and fostering positive attitudes toward learning (Lareau, 2018).

On the other hand, schools may be more attuned to the cultural expectations of high-SES students than those of low-SES students (Lareau, 2014). The mismatch between cultural expectations and the school environment can affect students' engagement and sense of belonging. Students' socioeconomic status can influence teachers' expectations (Batruch et

[1] The examination of positive subjective well-being of youths is a relatively recent phenomenon (Huebner et al., 2014). Traditionally it was preferred to examine negative mental outcomes only as well as to avoid youths' own assessment of their conditions in favor of expert or parental perspectives (Ben-Arieh & Shimon, 2014).

[2] A different but complementary literature focuses on the related concept of school climate: Waaler et al. (2013) in Norway, Newland et al. (2014) in the U.S., Steinmayr et al. (2018) in Germany, found strong positive correlations between perceived school climate and both cognitive and affective well-being.

al., 2023; Triventi, 2020), which in turn influence future achievement (Fedeli & Triventi, 2023). Additionally, empirical evidence suggests that students tend to experience higher subjective well-being when their parents hold high educational expectations for them (Eryılmaz, 2011; Lippman et al., 2011), provided these expectations are note perceived as excessive by the students (Lu et al., 2021).

2.4 The Effects of the COVID-19 Pandemic

The COVID-19 pandemic negatively impacted young people's subjective wellbeing (WHO, 2021). The literature highlights several factors contributing to this decline, including increased screen time and sedentary behaviour (Munasinghe et al., 2020); exposure to parent-child conflict (Schmidt et al., 2021); and various other stressors such as the loss of daily routines, reduced social and physical interactions with peers, and increased frustrations arising from restricted freedoms (Courtney et al., 2020. One study from Germany (Neugebauer et al., 2023) found a significant decline in the life satisfaction of high school students during the pandemic, with a drop three times more pronounced than in the general population. The gap persisted on the medium run and was even stronger among women, students with migration background, and with less educated parents.

Simultaneously, protective factors, such as family support (Luthar et al., 2021), (online) peer relationships (Ellis et al., 2020) and self-efficacy strategies (Hussong et al., 2021; Iterbeke & De Witte, 2022), played a crucial role in mitigating the impact of stressors during the COVID-19 pandemic. The experience of the COVID-19 pandemic exemplifies therefore how different life domains are interconnected, creating simultaneous stressors and protective factors.

Despite recognizing these stressors and protective factors, understanding the relationship between subjective school experience and youth's subjective well-being at different stages of the COVID-19 pandemic remains an open question. On one hand, the positive contribution of school to young people's subjective wellbeing was generally jeopardized from the outbreak of the pandemic (e.g., see: Janssen et al., 2020; Magson et al., 2021), generating a climate of uncertainty and insecurity together with the significant loss of instruction days.

However, school staff and students progressively deployed more effective coping strategies to continue fulfilling their educational obligations (Klapproth et al., 2020; Delvecchio et al., 2022). Some scholars argue that the temporary suspension of the normal school routine resulted in a perception of a more relaxed workload and more flexible schedules for some students (Luthar et al., 2021). Moreover, the switch to online schooling decreased in-person bullying (Bacher-Hicks et al., 2022).

Nevertheless, it remains unclear how these dynamics play out after one year in a pandemic situation and how youths' initial experiences with school life transformed, considering the potential divergent adaptation responses and the continuous changes in the pandemic's objective situation and regulations, such as periods of partial or full returns to face-to-face teaching.

2.5 Research Questions

Against this background, our study addresses the following research questions:

1) How did subjective school experiences influence students' subjective well-being during the COVID-19 pandemic? (*Research Question 1)*

School may have temporarily lost its centrality in students' lives because of the pandemic response (e.g., school closures and online instruction), with uncertain and potentially long-lasting consequences for their well-being and educational outcomes.

2) Did individuals with more negative subjective school experiences encounter greater distress in the later stages of the pandemic compared to the early months after the outbreak? (*Research Question 2)*

After an initial period characterized by a sense of detachment and relief from the school environment, those with negative school experiences may have found it more challenging to adapt to the new learning environment and the eventual return to normal school life.

3) Which dimension of subjective well-being was most affected? (Research Question 3).

Cognitive well-being refers to individuals' evaluations of their life satisfaction, while affective well-being includes their emotional experiences. Although the literature often combines these dimensions, distinguishing between them enhances our understanding of young people's subjective experiences during the COVID-19 pandemic. Immediate emotional responses to challenges such as isolation, uncertainty, and disruption of daily routines may be more sensitive to external changes, whereas cognitive evaluations of well-being may become increasingly salient as the pandemic progresses.

4) How do socioeconomic status and other individual characteristics moderate the influence of school experiences on students' well-being throughout the various stages of the pandemic? (*Research Question 4*)

Students from diverse socioeconomic backgrounds may have navigated the disruptions in school experiences differently, affecting their overall well-being both during the initial upheaval and in the subsequent phases of adapting to the new learning environment.

3 The Luxembourg Context

In terms of GDP per capita (World Bank, 2023) and happiness (Helliwell et al., 2022), Luxembourg is among the top countries in the world. However, the country has one of the highest rates of working poverty in the EU (11.9%), with most of working-poor individuals being between the ages of 18 and 24 (Danescu, 2021), which may be associated with feelings of economic insecurity among the youth.

The Luxembourgish educational system is unique within OECD countries due to its multilingual approach and international student body. Per-student public spending on educa-

tional institutions is more than twice the OECD average (OECD, 2022). With about two thirds of the students born abroad, Luxembourg socio-economic inequalities in education interact with the cultural diversities of the countries of origin (Chauvel & Schiele, 2021).

Figure 1 below displays the timeline of secondary school closures together with the dynamics of the pandemic in Luxembourg. The country experienced similar daily new confirmed cases and deaths in July 2020 and 2021.[3] These percentages were relatively low compared to other epidemic peaks. Similar patterns were observed in the neighboring countries (Germany, France, or Belgium).[4]

Between January 2020 and May 2021, Luxembourg experienced an average of 48 days of full closure for pre-primary schools, primary schools, and lower secondary schools, while upper secondary general schools were closed for an average of 34 days, lower than the OECD average (OECD, 2022, 2021). Gradual reopening of schools began in May 2020, with students attending school on an alternating basis before gradually returning to full in-person classes under specific health protocols. One additional period of complete school closure started at the end of the 2020–2021 Christmas break until the second half of April 2021, and then alternating attendance continued until the end of the school year for secondary students. There is some limited evidence that the second school closure presented fewer institutional challenges compared to the first round of lock-down (Chauvel & Schiele, 2021).

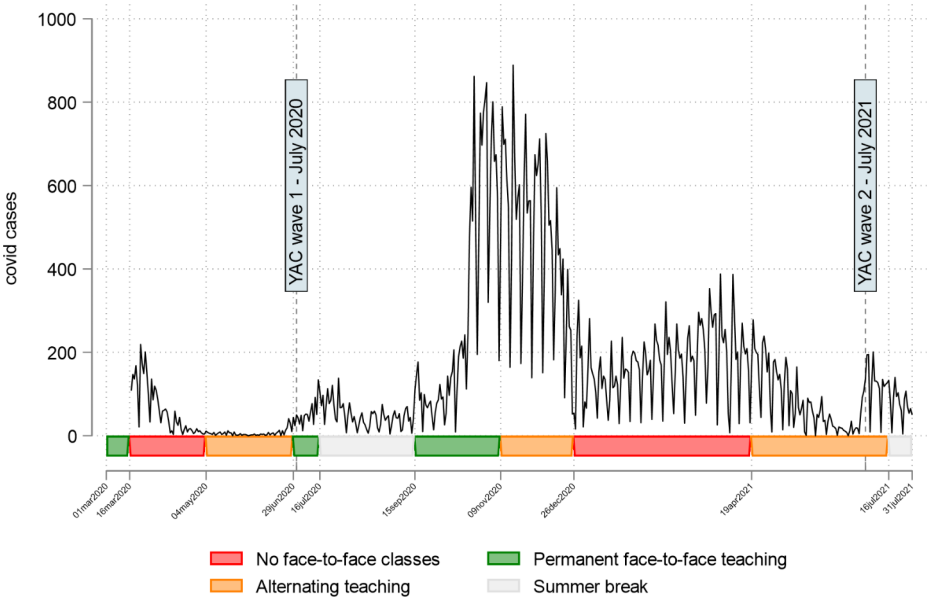

Fig. 1 School closures timeline and pandemic dynamics, *Note*: YAC data were collected at two different point in time when the objective effects of the pandemic in terms of new infections and restrictions were relatively low compared to other pandemic moments. *Data Source*: authors own elaboration from OECD and Luxembourg Ministere de la Sante' datasets

[3] Open data available at: gouvernement.lu // Le gouvernement luxembourgeois.

[4] For more information on the incidence of the pandemic on youth individuals, see (Schomaker et al., 2021 reference excluded to ensure anonymity).

4 Methodology

We first examine changes in cognitive well-being (life satisfaction) associated with the evolution of the pandemic, that is, a few months after the outbreak and one year later (*Research Question 1*). Then, we focus on disparities related to subjective school experience and how its role has changed in the midst of the evolution of the pandemic (*Research Question 2*). The same strategy is applied to investigate changes in affective well-being (happiness), allowing us to distinguish between well-being dimensions (*Research Question 3*). We then explore group differences by individual characteristics, focusing on subjective social status (*Research Question 4*).

4.1 Data

We use representative panel data of young individuals between the ages of 12 and 29 in Luxembourg. The data was collected from July 2020 (three to four months after the outbreak of the pandemic) until July 2021 (one year later; see Fig. 1).

The participants were selected from the national registry of natural persons using a stratified random sampling procedure, with individuals as the unit of analysis. The survey was conducted online in two waves (2020 and 2021) through personalized postal invitations (for further details please refer to Schomaker et al., 2021). The survey was available in the five most widely spoken languages in the country (French, Luxembourgish, German, Portuguese and English) and participants received a voucher upon completion.

4.1.1 Main Variables

We focus on the two main measures of cognitive and affective subjective well-being. The first measure is self-reported life satisfaction, assessed using Diener's Satisfaction with Life Scale (Diener et al., 1985), which has evolved into the primary indicator of cognitive subjective wellbeing in studies of subjective well-being in the social sciences (Layard & De Neve, 2023). This scale typically includes the following question, "How satisfied are you with life overall, taking everything into account?", with a 10-point answer scale.

We also consider the affective dimension of subjective well-being, which is usually measured by asking individuals to rate how happy they have recently felt (Layard, 2010). Subjects rated the frequency of feeling happy and in a good mood over the past two weeks, with respondents selecting one of six options ranging from "never" (0) to "all the time" (5) to indicate how often they experienced that emotion during that time. Within the YAC survey, the happiness question is part a broader set of questions constituting a composite well-being item, namely the WHO 5 SWB Index (Bech et al., 2003). This index encompasses various affective dimensions, including sentiments of peace, activity, freshness, and interest in various aspects of life.

Perceived school experience was measured through a subjective overall assessment of school life. This evaluation is undertaken through a specific question presented as follows: *'How do you currently feel about school?'* Respondents are then presented with a four-point Likert scale ("I like it a lot", "I like it a bit", "I don't like it very much" or "I don't like it at all"). This assessment is adapted from the module on school experience by the WHO's Health Behaviour in School-aged Children questionnaire (Cosma et al., 2022).

Finally, we track the evolution of the pandemic with a dummy variable. It is either coded 0 to represent the initial wave in July 2020 (short run) or 1 to reflect the subsequent second wave in June or July of the following year (mid run).

In the main models, we control for self-reported subjective health (5-point Likert scale), which is considered a main determinant of youths' subjective well-being (Sirgy, 2021). As a robustness check (see Sect. 4.5), we also run models adjusting by additional time-varying factors that may have an impact on well-being. More specifically, we include in the models 8 additional items derived from the Family and Friend support Scale (Procidano & Heller, 1983), and one 4-point scale of perceived school pressure.

4.1.2 Group Differences

For each subject, we also record gender, age, and social status. The measurement of subjective social status (SSS) is captured with the youth version of the MacArthur Scale of Subjective Status, which has been extensively employed in previous research (Amir et al., 2019; Goodman et al., 2001). In accordance with existing literature (Amir et al., 2019; Andersson, 2018; Speer, 2016; Kraus et al., 2012), individuals are categorized into three distinct groups based on their responses on a 0–10 scale: low (0–4), middle (5–7), and high subjective social status (8–10).

4.1.3 Unbalanced Sample and Attrition Analysis

The 2020 data collection included 3,533 individuals, of whom 1,652 were enrolled in primary, secondary, or vocational school. Of the 1,652 individuals, 754 (45.6%) participated in the second wave. In 2021, 79% of the compliant subjects were still enrolled in school. Among the remaining one-fifth of the compliant sample, we derive two types of profiles by incorporating the information on highest educational attainment collected in the YAC survey: (i) high school graduates who are no longer enrolled in school and declared a secondary educational attainment (15.5%); (ii) high school dropouts who were also no longer enrolled in school but did not declare a secondary educational attainment (5.4%). In these last two cases, school experience is undefined because the individuals are no longer enrolled in school. Missing cases on school experience for compliant students in 2021 are limited to 4.2% (S1 File Table S1.2).

Table 1 shows the observed patterns of missing cases on subjective well-being measures in our data. Due to attrition, we do not have information on subjective wellbeing for 54.3% of the sample. Missing rate is also substantial for students with unobserved school experience in 2021 and school dropouts. The number of missing cases is instead limited for students with observed school experience in 2021 (5.6% and 4.7% for life satisfaction and happiness, respectively) and for graduates (5.9% and 6.8%).

As a result, the balanced sample consists in 653 individuals that appears in both waves and provided information on both measures of subjective wellbeing. Table 2 compares the sociodemographic characteristics of the balanced sample with those of individuals who are missing on our main outcomes of interest. Missing individuals are slightly less likely to be female (0.54 vs. 0.57), and more likely to be non-native speakers (0.43 vs. 0.41) and of low social status (0.30 vs. 0.27).

Table 1 Patterns of missingness on subjective well-being measures

Pattern	Missing Variable	*N* missing	Total	Percent missing	Percent missing over total *N*
Student in 2021, Observed school experience	Life satisfaction	32	564	5.67	1.94
	Happiness	27	564	4.79	1.63
Student in 2021, Unobserved school experience	Life satisfaction	27	32	84.38	1.63
	Happiness	27	32	84.38	1.63
Graduated (undefined school experience)	Life satisfaction	7	117	5.98	0.42
	Happiness	8	117	6.84	0.48
School dropout (undefined school experience)	Life satisfaction	35	41	85.37	2.12
	Happiness	34	41	82.93	2.06
Non-compliant (unobserved school experience and subjective well-being measures)	Life satisfaction	898	898	100	54.36
	Happiness	898	898	100	54.36
Total	Life satisfaction	999	1,652	60.47	60.47
	Happiness	994	1,652	60.17	60.17

Data source: 'Young People and COVID-19' (YAC), Luxembourg

Notes: We observe five different patterns of missingness in our main outcomes for individuals who were students in the first wave: (i) students in both waves with observed school experience; (ii) students in both waves with missing school experience in 2021; (iii) no longer students who hold a high school diploma in 2021; (iv) no longer students who do not hold a high school diploma in 2021 (we refer to this group as dropouts); and finally, (v) non-compliant individuals who drop out of the survey in 2021

Table 2 Characteristics by status in the second wave (observed vs. non-observed outcomes)

Variables	Observed Life Satisfaction	Unobserved Life Satisfaction
Female	0.57	0.54
Age	16.59	16.95
Non-native speaker	0.41	0.43
Social Status		
Low	0.27	0.30
Medium	0.43	0.42
High	0.30	0.27
Total N	653	999

Data source: 'Young People and COVID-19' (YAC), Luxembourg

Notes: The table compares the sociodemographic characteristics of the balanced sample against those of individuals that are missing on our main outcomes of interest. Missing individuals are slightly less likely to be females (0.54 vs. 0.57), and more likely to be non-native speakers (0.43 vs. 0.41) and low social status (0.30 vs. 0.27)

4.1.4 Balanced Sample Characteristics

Table 3 presents the descriptive statistics for the balanced sample. Life satisfaction has an average value of 7.3 in 2020. This value is consistent with the country's pre-pandemic levels reported by the World Happiness Report of the United Nations (Helliwell et al., 2022). In 2021, one year into the pandemic, life satisfaction has decreased by 0.86 points. A similar

Table 3 Descriptive statistics. Balanced sample ($N=653$), unweighted

Variable	Mean (s.d.) 2020	Mean (s.d.) 2021
Age (2020)	15.59 (2.85)	16.59 (2.85)
Gender		
Female	0.57	0.57
Native speaker		
Yes	0.41	0.41
SSS groups		
Low	25.73	25.73
Middle	41.96	41.96
High	29.4	29.4
Missing	2.91	2.91
Time-varying vars:		
Life Satisfaction	7.03 (1.94)	6.44 (1.98)
Happiness	3.35 (1.17)	3.16 (1.16)
School experience	1.67 (0.92)	2.13 (0.78)
Subjective health	1.56 (0.7)	1.7 (0.77)

Data source: 'Young People and COVID-19' (YAC), Luxembourg

Table 4 Subjective well-being and School Experience across waves. Unweighted balanced sample ($N=653$)

Variable	Life satisfaction (mean)			Happiness (mean)		
	2020	**2021**	**Diff.**	**2020**	**2021**	**Diff.**
I like it a lot	6.46	4.81	-1.65	2.99	2.43	-0.56
I like it a bit	6.62	5.73	-0.89	3.17	2.81	-0.36
I don't like it very much	7.16	6.47	-0.68	3.40	3.14	-0.26
I don't like it at all	7.79	7.20	-0.59	3.77	3.47	-0.30

Data source: 'Young People and COVID-19' (YAC), Luxembourg

decrease is observed in happiness. The mean value of school experience is 1.67 in 2020, while it increases to 2.13 in 2021.

Table 4 below illustrates the distribution of life satisfaction for the different levels of school experience few months after the outbreak of the pandemic (Wave 1: 2020), and after one year (Wave 2: 2021). As the pandemic unfolded, a noticeable decrease in overall subjective well-being is evident for all levels of school experiences. However, individuals who reported a positive school experience exhibit consistently higher levels of subjective well-being in both waves.

4.2 Analytical Strategy

While the high attrition rate in our study can be partially attributed to institutional constraints during data collection[3], subjects with (unobserved) low levels of subjective well−being may also have been more likely to drop out of the sample in 2021. To address potential biases introduced by non−random missingness, inverse probability weighting (IPW) is often used as a corrective measure (Seaman & White, 2013). In practice, IPW assigns more weight to the cases which are less likely to be complete. We estimate the probability of being in the second wave with a logistic regression that includes gender, age, language background (being a native Luxembourgish speaker or not), social status, and school status in 2020

(student, graduated, and school dropout). S2 File shows the estimated coefficients from the response model (Table S2.1) and the distribution of the IPW (Table S2.2).We use the IPW adjusted sample to fit a series of nested fixed effects linear regressions. Initially, we examine the correlation between school experience and subjective well-being. Subsequently, we quantify the degree of decline in subjective well-being attributable to the persistence of the COVID-19 pandemic from 2020 to 2021. We evaluate the full model as follows:

$$SWB_{it} = \beta_0 + \delta_0 Covid_t + \beta_1 SE_{it} + \beta_2 (Covid \times SE)_{it} + \beta_3 health_{it} + \alpha_i + \epsilon_{it},\ t = 1{,}2 \quad \text{(Eq. 1)}$$

where SWB_{it} represents the subjective well-being of individual i in wave t, $Covid_t$ the dummy variable that identifies the two waves during the COVID-19 pandemic (i.e. July 2020 and July 2021), and SE_{it} indicates the i^{th} subject's school experience during the COVID-19 pandemic in wave t. β_2 captures changes in SWB associated with the interaction between SE and the development of the pandemic. The vector $health_{it}$ represents subjective health. Finally, α_i represents the individual fixed effect and ϵ_{it} the stochastic error term. Given that there are time-invariant individual characteristics that need to be controlled for and that there is potential correlation between individual unobserved fixed characteristics and school experience, FE models is the appropriate choice. As a robustness check, Table S4.1 in S4 File (Supplementary Information) reports the result from the Hausman test, which rejected the null hypothesis of equality between random and fixed effects, thereby we used fixed effects given that are more efficient (Allison, 2009).

We subsequently test different models based on the nested series of Eq. 1. First, we provide results when the dependent variable is the cognitive subjective well-being (i.e., life satisfaction) as well as affective subjective wellbeing (i.e., happiness). Second, we explore the three-way interaction between the COVID-19 dummy, school experience, and specific individual characteristics by splitting the sample for gender, age, and subjective social status. While the small sample size does not allow us to reach definitive conclusions on the heterogeneity analysis, we briefly comment the results in Sect. 5.3.

5 Results

In the following sections, we address the main research questions outlined in the theoretical section. We begin by examining how our measure of subjective school experience relates to cognitive well-being (life satisfaction) and how this relationship is sensitive to the mid-term effects of the COVID-19 pandemic (Sect. 5.1). These analyses address *Research Questions 1* and *2*. We then turn to *Research Question 3* by applying the same models to examine affective well-being (happiness) in Sect. 5.2. Subsequently, we explore how these relationships vary across subjective social status groups (Sect. 5.3), addressing *Research Question 4*. Finally, we summarize the key findings from our robustness checks in Sect. 5.4.

5.1 School Experience, COVID-19 Mid-term Effects and Life Satisfaction

Table 5.1 presents the result of the nested regressions, as described in Sect. 3.2. School experience during the COVID-19 pandemic is positively correlated with life satisfaction after accounting for individual covariates and the mid-term effects of the COVID-19 pandemic (Model 2 and Model 3). Model 3 shows the interaction between the mid-term of the

Table 5.1 Regression results for life satisfaction. OLS fixed-effects regression models adjusted by IPW

Variables	Model 1	Model 2	Model 3
School experience	−0.046	0.184**	0.063
	(0.074)	(0.075)	(0.09)
Mid-term effects of COVID-19 pandemic		−0.613***	-1.212***
		(0.086)	(0.279)
Mid-term effects of COVID-19 pandemic x			0.306**
School experience			(0.132)
Subjective health (Ref: Very good health)			
Good		−0.469***	−0.493***
		(0.151)	(0.149)
Fair		−0.658**	−0.645**
		(0.291)	(0.292)
Poor		-1.485**	-1.422**
		(0.656)	(0.626)
Very Poor		-5.224***	-5.02***
		(0.219)	(0.241)
Constant	6.862***	6.974***	7.183***
	(0.138)	(0.141)	(0.164)
Observations	1,134	1,134	1,134
Observations (individuals)	629	629	629
R-squared	0.001	0.157	0.168

Standard errors are in parentheses; *** $p<.01$, ** $p<.05$, * $p<.1$

Data source: 'Young People and COVID-19' (YAC), Luxembourg

COVID-19 and school experience. The interaction coefficient is positive and statistically significant (0.306, $p<.01$), suggesting that the relationship between school experience and life satisfaction has gained importance in the mid-term of the COVID-19 pandemic. Figure 2 below graphically illustrates the result.

School experience significantly moderate the mid-term effects of the COVID-19 pandemic (*Research question 1*). Compared to 2020, life satisfaction in 2021 drops by 1.5 points for students with negative school experience. The relationship between school experience and cognitive subjective well-being seem to matter more during the mid-term of the COVID-19 pandemic than a few months after its outbreak. Overall, our analysis suggests that individuals with more positive school experience tended to be less negatively affected by the pandemic (*Research question 2*). This result is in line with our expectations that positive psychological factors can buffer the impact of external stressors.

5.2 Affective Dimension of Subjective Wellbeing: Happiness

Table 5.2 below shows the set of nested regressions with the affective dimension of subjective wellbeing (i.e., happiness) as dependent variable, showing that school experience is not associated with significant changes in happiness levels (*Research question 3*). We observe a decrease in happiness in the second phase of COVID-19 pandemic (2021). However, while those with negative perceptions of school still experience the largest decrease, the interaction with school experience is not significant (Fig. 3).

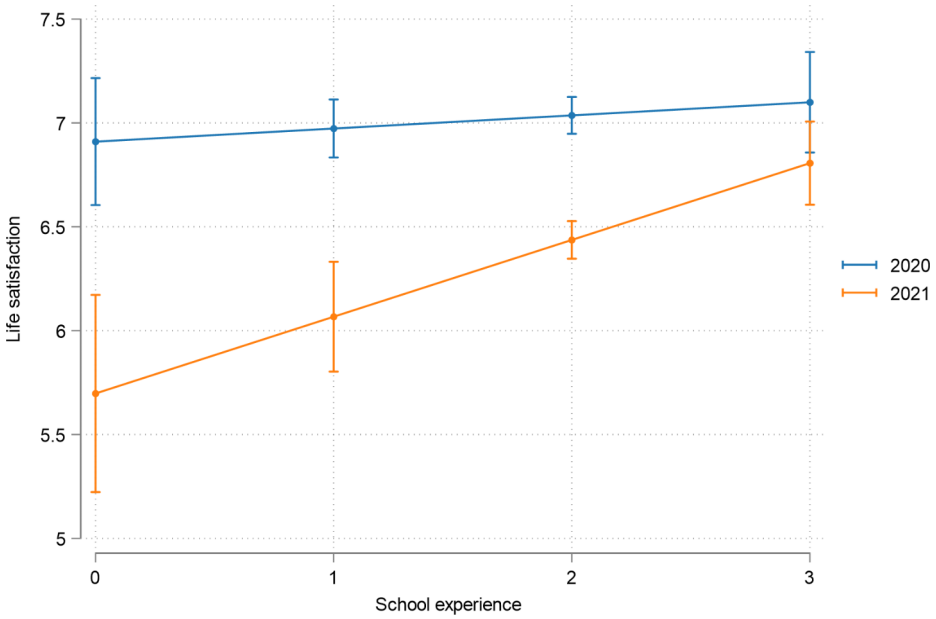

Fig. 2 Estimated levels of life satisfactions by school experience at the two stages of the pandemic (2020 and 2021). Whiskers show 95% confidence intervals. Data source: 'Young People and COVID-19' (YAC), Luxembourg

5.3 Subjective Social Status

As anticipated in Sect. 3, we run separated analyses for three different groups of social status.[5] Table S1.1 in S1 File (Supplementary Information) shows means and standard errors of life satisfaction and feelings about school in the short term (July 2020) and mid-term (June–July 2021) of the COVID-19 pandemic outbreak by subjective social status. High-social status enjoy the highest levels of life satisfaction throughout both the pandemic stages. Table 6.1 and Table 6.2 show the results for each subjective well-being dimension (life satisfaction and happiness) by social status groups. In S4 File (Supplementary Information), we run robustness checks for one alternative 4-group specification of social status (Table S4.4a) on life satisfaction (TableS4.4b) and happiness (Table S4.4c) and find no substantial differences with the 3-group specification.

The strength of the association between school experience and both dimensions of subjective well-being has increased in the mid-run of the pandemic for subjects with high social status. The interaction coefficient is also positive for young people with middle social status.

Figures 4 and 5 graphically illustrate the moderation effect of school experience in the mid-term of the pandemic. While young subjects with high social status generally enjoy the highest levels of life satisfaction, they are the ones who respond most strongly to the mid-term effects of the COVID-19 pandemic. Among high-SSS subjects with negative school experience, life satisfaction drops of 1.5 points in 2021. The more negative school experience is perceived, the greater the gap in life satisfaction between the short and medium term

[5] Different operationalizations of SSS (e.g., one or more dimensions, categorical or continuous variable) can have implications for the outcomes of interest (Meraviglia et al., 2016).

Table 5.2 Regression results for happiness. OLS fixed-effects regression models adjusted by IPW

Variables	Model 4	Model 5	Model 6
School experience	−0.014	0.058	0.033
	(0.047)	(0.052)	(0.064)
Mid-term effects of COVID-19 pandemic		−0.198***	−0.325
		(0.063)	(0.213)
Mid-term effects of COVID-19 pandemic x			0.065
School experience			(0.098)
Subjective health (Ref: Very good health)			
Good		−0.311***	−0.316***
		(0.1)	(0.101)
Fair		−0.779***	−0.776***
		(0.162)	(0.161)
Poor		−0.964***	−0.951***
		(0.324)	(0.321)
Very Poor		−0.229	−0.187
		(0.144)	(0.163)
Constant	3.292***	3.452***	3.495***
	(0.088)	(0.095)	(0.117)
Observations	1,135	1,135	1,135
Observations (individuals)	629	629	629
R-squared	0	0.081	0.082

Standard errors are in parentheses; *** $p<.01$, ** $p<.05$, * $p<.1$

Data source: 'Young People and COVID-19' (YAC), Luxembourg

of the COVID-19 pandemic for this group. A similar but milder pattern is observed among individuals with medium SSS. Above all, our results show that perceptions of liking school in relation to the mid-term of the pandemic and life satisfaction are stratified by social status.

S3 File (Supplementary Information) provides additional results for group differences in terms of gender (Tables S3.1a and S3.1b) and language proficiency (Tables S3.2a and S3.2b) for life satisfaction. We find that, while the direction of the interaction term is positive for all groups, the coefficient is not significant for the model including only males and only non-native speakers. Results from these analyses should be treated cautiously given the sample size.

5.4 Robustness Checks

We perform several robustness checks. Detailed results are presented in S4 File (Supplementary Information). First, we run the main models on the unweighted balanced data (Table S4.2a and Table S4.2b). We find no significant differences, as the results are consistent with those from the main analysis. Second, we include a set of additional time-varying variables in the analysis to check for potential confounders. Table S4.3 shows that our main results hold when additional time-varying controls (perceived school pressure, peer support, and parental support) are included in the models. Finally, we further check for patterns of missingness by analysing retrospective school experience. The wording of the question is: "How did you feel about school before coronavirus/Covid-19?" The question was included only in wave 1 (2020). Students in 2020 that are present in the balanced sample were more likely

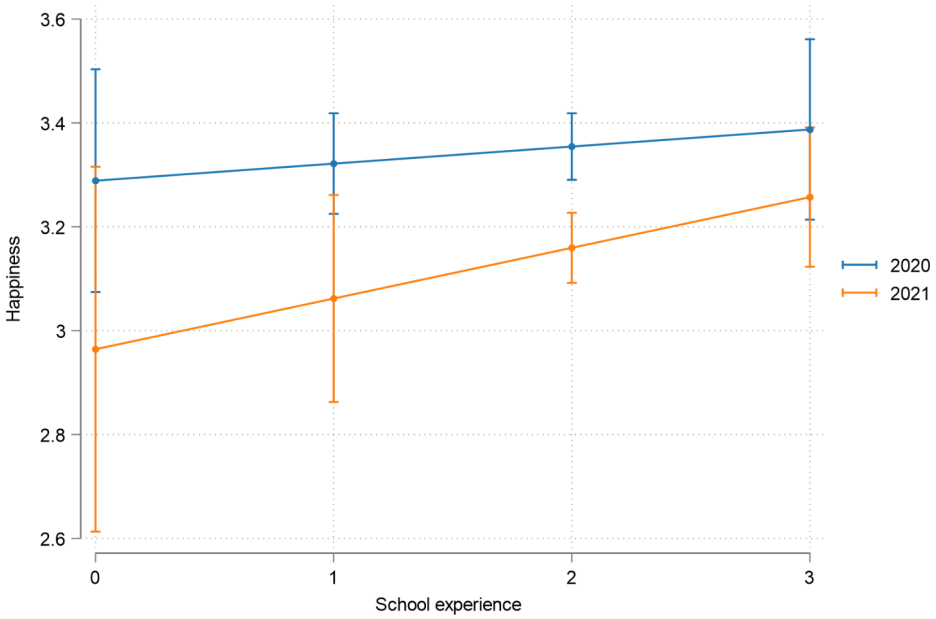

Fig. 3 Estimated levels of happiness by school experience at the two stages of the pandemic (2020 and 2021). Whiskers show 95% confidence intervals. Data source: 'Young People and COVID-19' (YAC), Luxembourg

to declare a decline in school experience if compared to non-compliant subjects (Table S4.5a), but we do not find substantial differences in subjective well-being measures for individuals with different retrospective school experiences (Table S4.5b). We explore this issue further by running Model 3 with random effects (instead of fixed effects) at the individual intercepts, adjusted for school experience before COVID-19. The results presented in Table S4.5c confirm our main results.

6 Discussion and Conclusions

This paper examined the relationship between subjective school experience and the subjective well-being of young people in secondary education in Luxembourg, focusing on both the short- and mid-run impacts of the COVID-19 pandemic. We considered the two main dimensions of subjective well-being: cognitive (i.e., life satisfaction) and affective (i.e., happiness). These dimensions engage with different psychological functions (Layard, 2010) and, hence, both are relevant to understand how the youth population experienced school during the COVID-19 pandemic.

Our results suggest that, during the COVID-19 pandemic, school experience mildly influences affective well-being (i.e., emotional happiness and mood), but it is relevant for the cognitive dimension of well-being (life satisfaction). Altogether, our findings add to a growing body of empirical evidence suggesting that school experiences are a key factor of well-being (Sirgy, 2021; Clark et al., 2018; Suldo et al., 2006; Huebner et al., 2014; Gilman & Huebner, 2006). At the same time, the loose correlation with affective well-being

Table 6.1 Regression results for life satisfaction by subjective social status. OLS fixed-effects regression models adjusted by IPW

Variables	Low Social Status		Middle Social Status		High Social Status	
School experience	0.221	0.197	0.072	−0.05	0.288***	0.099
	(0.168)	(0.209)	(0.119)	(0.136)	(0.108)	(0.132)
Mid-term effects of COVID-19 pandemic	−0.416**	−0.545	−0.615***	-1.168***	−0.815***	-1.756***
	(0.19)	(0.691)	(0.13)	(0.366)	(0.137)	(0.392)
Mid-term effects of COVID-19 pandemic x School experience		0.063		0.295*		0.477**
		(0.323)		(0.173)		(0.185)
Subjective health (Ref: Very good health)						
Good	−0.282	−0.286	−0.373*	−0.401*	−0.76***	−0.793***
	(0.324)	(0.322)	(0.216)	(0.215)	(0.257)	(0.254)
Fair	−0.943*	−0.926*	−0.43	−0.498	−0.483	−0.41
	(0.51)	(0.515)	(0.407)	(0.405)	(0.677)	(0.679)
Poor	−0.978*	−0.972*	-2.314**	-2.24**	−0.668	−0.131
	(0.571)	(0.571)	(1.084)	(1.038)	(0.684)	(0.736)
Very Poor	−0.282	−0.286	−0.373*	−0.401*	−0.76***	−0.793***
	(0.324)	(0.322)	(0.216)	(0.215)	(0.257)	(0.254)
Constant	6.083***	6.123***	7.144***	7.36***	7.642***	7.961***
	(0.319)	(0.375)	(0.219)	(0.245)	(0.202)	(0.239)
Observations	289	289	490	490	355	355
Obs. (individuals)	167	167	271	271	191	191

Standard errors are in parentheses; *** $p<.01$, ** $p<.05$, * $p<.1$

Data source: 'Young People and COVID-19' (YAC), Luxembourg

suggests that other factors beyond school experience play a more immediate role in shaping emotional states in the daily life of young individuals during the COVID-19 pandemic. Therefore, our study expands the previous established findings in the literature during non-pandemic scenarios and highlights the importance to examine school experiences during macro-crisis using youths' own assessments beyond parents or teachers reports.

Our results also show that the relationship between subjective school experience and life satisfaction is particularly sensitive to the medium-term effects of the COVID-19 pandemic, as young individuals' perceptions of their subjective school experiences tend to worsen over time. We find that individuals with negative subjective school experience tend to be more affected than others by the medium-term effects of the COVID-19 pandemic. Overall, subjective school experience seems to be more important for cognitive subjective well-being in the medium term of the COVID-19 pandemic than in the short term. This result is consistent with the existing literature, which suggests that life satisfaction is influenced by the comparison between life achievements and personal standards (Galinha & Pais-Ribeiro, 2012). Cognitive well-being is also typically more susceptible to contextual influences than affective well-being (Schimmack et al., 2008).

Finally, we also observe significant variations between social statuses. While those of high SSS generally enjoy higher levels of subjective well-being than the other social groups, they also react more strongly to the mid-term effects of the COVID-19 pandemic when it comes to the relationship between school experience and subjective well-being. This reaction is particularly significant for those with more negative subjective school experiences. By contrast, perceived school experience is loosely related with subjective wellbeing for lower SSS, and we do not observe significant changes between 2020 and 2021. One possible explanation is that school life is more relevant for individuals with high social status compared to students from lower social statuses, as high-SES families invest in education as a means of maintaining their privileged social position (Jackson, 2013). Additionally, even if they were more protected in terms of resources and connections than other social groups (Kiess & Lahusen, 2018), high-SSS students with negative school experience may have developed a 'comfort conditioning' response to the COVID-19 pandemic stemming from their psychological vulnerability generated from facing rare life adversities. In contrast, individuals from lower SSS may be more accustomed to adversity in life and, as a result, those with more negative school experience have a greater coping repertoire.[6]

Our results are subject to some limitations that at the same time offer venues for new research. First, the generalizability of our findings is likely to be limited by the specific contextual factors of the country in which the study was conducted. Luxembourg has the highest GDP per capita in the world and consistently ranks high in global happiness assessments. The high level of affluence may provide more resources and support systems, such as better access to mental health services, educational resources, and (online) extracurricular activities, which can mitigate the negative impacts of the COVID-19 pandemic on students' school experience. Furthermore, Luxembourg's high happiness ratings indicate a generally positive societal mood and well-being, which can buffer against the stresses brought by the pandemic. As a result, the findings from this study might represent a lower bound of the pandemic's impact on school experience and well-being. In less affluent environments

[6] This psychological dynamic aligns with social science research on the highly negative unemployment experiences of individuals who were previously happy with their job (Clark et al., 2001) and psychological reactions to disappointments of previously very happy or well-off people (Kalmijn & Monden, 2006).

Table 6.2 Regression results for happiness by subjective social status. OLS fixed-effects regression models adjusted by IPW

Variables	Low Social Status		Middle Social Status		High Social Status	
School experience	0.031	0.043	−0.018	0.048	0.214**	0.062
	(0.108)	(0.148)	(0.069)	(0.094)	(0.095)	(0.096)
Mid-term effects of COVID-19 pandemic	−0.059	0.006	−0.231**	0.068	−0.319***	-1.072***
	(0.128)	(0.552)	(0.09)	(0.251)	(0.122)	(0.348)
Mid-term effects of COVID-19 pandemic x School experience		−0.032		−0.16		0.381***
		(0.253)		(0.125)		(0.146)
Subjective health (Ref: Very good health)						
Good	−0.343*	−0.34*	−0.246*	−0.233	−0.293	−0.317
	(0.188)	(0.189)	(0.146)	(0.146)	(0.207)	(0.202)
Fair	-1.116***	-1.124***	−0.382*	−0.347*	-1.04***	−0.98***
	(0.302)	(0.313)	(0.204)	(0.205)	(0.298)	(0.265)
Poor	-1.132**	-1.135**	-1.039**	-1.08*	−0.721**	−0.29
	(0.541)	(0.539)	(0.502)	(0.55)	(0.339)	(0.37)
Very Poor	−0.343*	−0.34*	−0.246*	−0.233	−0.293	−0.317
	(0.188)	(0.189)	(0.146)	(0.146)	(0.207)	(0.202)
Constant	3.335***	3.315***	3.575***	3.458***	3.359***	3.617***
	(0.206)	(0.273)	(0.127)	(0.168)	(0.172)	(0.178)
Observations	289	289	490	490	355	355
Obs. (individuals)	167	167	271	271	191	191

Standard errors are in parentheses; *** $p<.01$, ** $p<.05$, * $p<.1$

Data source: 'Young People and COVID-19' (YAC), Luxembourg

with lower happiness ratings, we might expect the impact of the COVID-19 pandemic on the relationship between school experience and subjective well-being to be more negative. Additional evidence collected from panel datasets in other countries with varying levels of affluence and happiness can help to disentangle the specificities of the Luxembourg context from more general behavioural and psychological patterns. This comparative approach would provide a broader understanding of how different socioeconomic contexts, less affluent than Luxembourg, influence students' school experiences and subjective well-being during global crises. It is also important to note that both data collections were conducted during periods of relatively low impact of COVID-19 (e.g., lower infection rates and less severe clinical courses), mild protective measures (e.g., social distancing, quarantines) and close to the school summer break. We can speculate that more pronounced results might have been obtained during more severe epidemiological scenarios.

Second, our investigation covers a relatively short period of time, which underscores the need for further research on the more long-term effects of the COVID-19 pandemic. Continued monitoring is essential to capture the long-term effects of the COVID pandemic on the association between subjective school experience and the different subjective well-being dimensions, given the central role of school in young people's well-being and the importance to explore recovery patterns or the entrenchment over time of negative experiences for those who are psychologically more vulnerable and who might need tailor-made interventions.

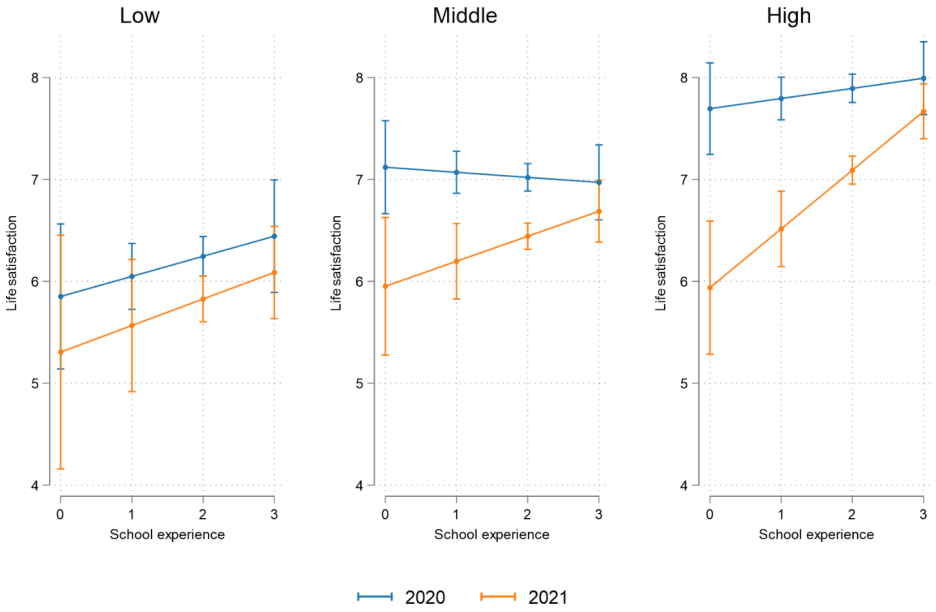

Fig. 5 Estimated levels of Life Satisfaction by school experience at the two stages of the pandemic (2020 and 2021). Models by subjective social status. Whiskers show 95% confidence intervals. Data source: 'Young People and COVID-19' (YAC), Luxembourg

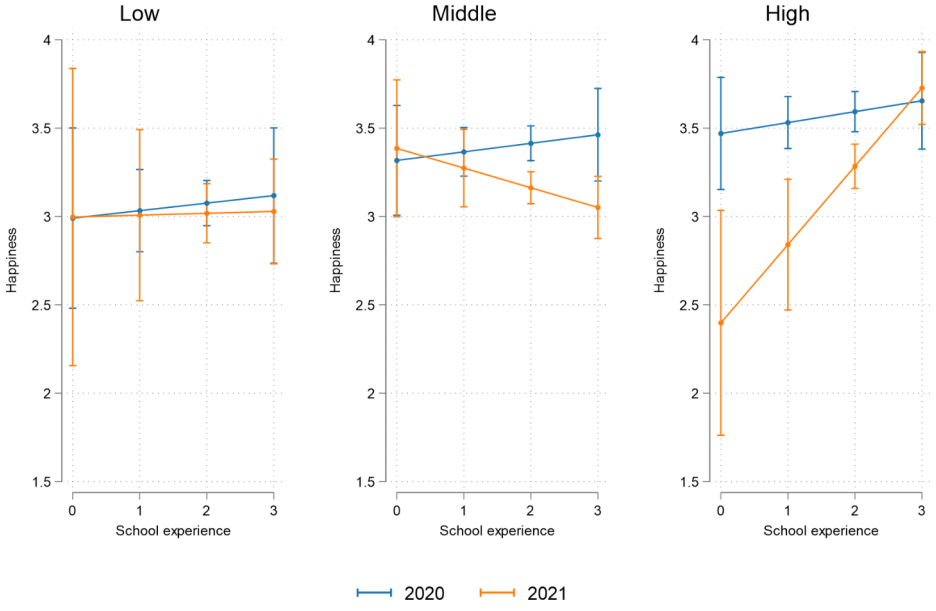

Fig. 6 Estimated levels of Happiness by school experience at the two stages of the pandemic (2020 and 2021). Models by subjective social status. Data source: 'Young People and COVID-19' (YAC), Luxembourg

Third, the attrition rate in our sample is another concern. While key sociodemographic characteristics such as subjective social status and language proficiency are important predictors of attrition (see S2 File), we are not able to account for unobserved confounders that can concur in the selection process. It is likely that those that have dropped out from the sample were also those with more negative school experiences and lower levels of subjective wellbeing. Students experiencing negative school environments or lower subjective well-being may be more likely to disengage from school-related activities and survey participation, contributing to higher attrition rates. This disengagement can be due to factors such as lack of motivation, emotional distress, or other personal circumstances exacerbated by the pandemic. Even if we employed IPW as well as fixed effect regressions to partially address this (i.e. adjusting for the probability of dropout based on observed characteristics and controlling for unobserved fixed heterogeneity), these strategies cannot fully account for all unobserved factors that might influence both attrition and our outcomes of interest. Therefore, it is plausible that our findings underestimate the real effect of subjective school experiences on subjective wellbeing in a pandemic scenario. Future studies should consider additional methods to handle attrition, such as trying to bring back in following waves those participants who did not appear in the second wave or implementing qualitative follow-ups, including potentially semi-structured qualitative interviews, to better understand the mechanisms behind dropout and its implications for the study results.

Fourth, we were unable to control for differences in time-varying variables before the outbreak. While this issue cannot be resolved retrospectively, we conducted robustness checks by controlling for the self-reported assessment of subjective school experience before the pandemic. Results from random effects models that included this self-assessment item yielded results of similar qualitative nature (see S4 File).

Finally, even if individual fixed effects capture time-invariant potential confounders (e.g., intrinsically optimistic or pessimistic individuals), other relevant unobserved time-varying characteristics and reverse causality would bias our results. As reported in Table S4.3 in S4 File, we try to address this concern by adjusting for several measures associated with the subjective well-being. None of these variations appear to undermine the main results of our analysis. In S3 File, we also analyze further heterogeneity by gender and native language proficiency, where the interaction terms appear as statistically significant for women and native speakers.

This paper advocates for a more in-depth theoretical exploration of how the COVID-19 pandemic differentially impacted the two primary subdimensions of subjective school experience: socialization and learning (Woods & Hammersley, 2017). Socialization within the school context pertains to the social interactions and relationships that students establish with peers, educators, and those generally working in the school, whereas the learning dimension encompasses students' perceptions of their academic competence and engagement with educational content.

The COVID-19 pandemic likely affected both affective and cognitive well-being in varied ways for students with differing prior school experiences. Students with negative learning experiences may have faced significant challenges in adapting to the disruption of normal school life and the new institutional arrangements necessitated by the pandemic. The transition to remote learning could have exacerbated these challenges, manifesting as reduced access to educational resources, inconsistent instructional quality, and difficulties in maintaining motivation and attention. The online learning environment often limits direct

interaction with teachers and peers, depriving students, particularly those with learning difficulties, of timely feedback and support. Consequently, these students' academic self-concept and attitudes towards learning could have deteriorated further. Conversely, students with positive pre-pandemic learning experiences might have benefited from additional time to explore personal interests and enhance self-directed learning skills with more flexible schedules (Luthar et al., 2021).

In the domain of socialization, the pandemic likely influenced affective and cognitive well-being differently depending on students' prior social experiences. The pandemic's disruption of social interactions, with a shift from in-person to virtual formats, often lacked the depth and immediacy of face-to-face interactions. This social isolation, coupled with reduced opportunities for engagement, could have adversely affected students' emotional well-being and their sense of belonging within the school community, which are closely linked to cognitive well-being. For students who thrive in social settings and easily form social ties, these disruptions could have led to more negative school experiences and diminished overall well-being. Furthermore, the absence of physical presence in a communal environment may have intensified feelings of loneliness and disconnection, affecting social development and emotional health. However, those students who typically experienced negative aspects of socialization, such as bullying or cyberbullying, might have seen a reduction in such negative experiences during quarantine or remote schooling phases (Bacher-Hicks et al., 2022).

Considering these factors, it is evident that the pandemic's impact on the learning and socialization aspects of school experience is not uniform, warranting further investigation. Our data does not permit a comprehensive disentanglement of these dimensions. Nonetheless, differentiating between socialization and learning could enable researchers to identify more targeted interventions to support students' well-being and academic success during and after crises. For instance, initiatives to foster online social interactions and sustain peer connections could help mitigate the negative impact on socialization, while improving access to digital learning resources and offering additional academic support could address the challenges associated with learning.

Overall, our findings suggest that school-related well-being is important in assessing the impact of the COVID-19 pandemic and future macroeconomic crises. Research should focus on the factors that improve school engagement. Particularly for those with negative school experiences, limiting substantial declines in subjective well-being may mitigate long-lasting effects on their subsequent educational and labor market trajectories, as well as their private lives (ILO, 2020; Tucker & Czapla, 2021).

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Declarations

Conflict of Interests The authors have no relevant financial or non-financial interests to disclose.

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