



# Adolescent Perspectives on Distance Learning and Schools' Impact on Subjective well-being

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## Abstract

Aim of this study is to see how youths and adolescents (12–17 years) have experienced their education during lockdowns in 2021, and how school affects subjective well-being (SWB). Grounded in Bronfenbrenner's ecological systems theory, it explores the interconnectedness of social environments and subjective well-being. Data were collected through a survey in Germany, capturing subjective well-being, social resources, and educational outcomes before and during times of school closures (2019 and 2021). The present study evaluates responses from two towns, two years and more than 1700 adolescents in total. Quantitative analyses reveal positive associations between academic success, supportive environments, perceived affluence, and well-being. Findings highlight which dimensions of supportive environments are driving youth well-being and underscore the importance of school as central piece in adolescent life. School as a supportive environment plays a major role in adolescent lives and has a lot of potential to compensate for structural disadvantages affecting SWB.

**Keywords** Adolescence · Subjective well-being · School · Ecological systems theory · COVID-19

## 1 Introduction

School represents a crucial aspect of adolescent life, providing not only formal education but also a social space for building relationships and a sense of belonging. Positive experiences in the educational system most likely enhance subjective well-being. The outbreak of the COVID-19 pandemic in 2020 has disrupted the daily lives of students everywhere. The sudden shift to remote learning and social isolation that has been implemented in many countries has challenged students'

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well-being, particularly those from socio-economically disadvantaged backgrounds who may lack access to the necessary resources for successful remote learning. In this sense, the pandemic has created a natural experiment, allowing us to examine the potential differential impact of the crisis on adolescent well-being across different socio-economic groups in Germany. By exploring these effects, we can shed light on the broader structural inequalities that shape adolescent well-being in the country. And eventually show how important the institution is for subjective well-being.

The COVID-19 pandemic has had severe economic and social consequences, disproportionately affecting vulnerable groups, such as low-income families, single parents, and unemployed individuals (Andresen et al., 2020; Möhring et al., 2021). The shutdowns of schools and childcare system, coupled with the economic downturn, have added to the stress levels of these families, potentially worsening already strained situations. While objective indicators such as poverty and unemployment rates can provide insight into the impact of the crisis on society on a macro level, we still lack a comprehensive understanding of how the pandemic has affected children's subjective well-being, social development, and educational outcomes. It remains unclear how effects of shutdowns on youth well-being and development differ across different social strata (Bremm and Racherbäumer, 2020). As a result, it is important to investigate whether the pandemic has reinforced social inequality and examine the situation from the youths' own perspective.

To comprehend how subjective well-being (SWB) may have changed among adolescents during the pandemic, it becomes crucial to explore the intricate connection between SWB, social resources within the ecological framework, and the educational system. The ecological framework is a concept introduced by Urie Bronfenbrenner (1979), describing how children's social surroundings affect their subjective well-being and development. Along with further explanation of this concept and a review of previous research on the pandemic's impact, I want to show how the whole fabric of support, encompassing family, peers, schools, and communities, played a pivotal role in shaping the SWB outcomes for adolescents during these challenging times.

Previous cross-sectional research has indicated that the availability of social resources at home and in school significantly influences the negative impact of school closures in Germany (Grommé et al., 2023). However, these studies were unable to account for potential effects of neighbourhood characteristics or the specific schools attended by students. Therefore, the present study aims to test the hypothesis that the disruption of social resources and the educational system during the pandemic has played a role in the decline of adolescent SWB, while also considering socio-spatial differences.

By investigating the significance of these factors in times of crisis, this study contributes to our broader understanding of adolescent SWB. To accomplish this, data from a survey study conducted in Germany will be utilized, which has collected information on SWB, social resources, and self-reported educational outcomes from adolescents in both 2019 and 2021. With the theoretical considerations and analysis presented in the following study I want to shift our strong focus on formal learning goals and formalized measurements of well-being or behaviour of adolescents

towards a more sensitive approach that values young peoples' own perception of their living environments. My results shall inform scientists, decision makers and practitioners concerned with the well-being and successful growing up of adolescents how they perceive their school lives and how their perception shapes well-being. I want to show which dimensions of education and school as social environment are relevant for SWB and deserve further attention of this audience.

This study will first summarize previous sociological research about how the pandemic affected SWB and which factors played a role for the presumed overall decline of adolescent well-being. In the empirical part of the work, I present a unique survey study that provides a broad understanding of adolescent SWB from adolescent perspectives. I utilize three datasets provided by the project to model the links between supportive environments and SWB in adolescent life, using ordinary least square regression analysis. Results indicate that school plays a pivotal role in the lives of young people, and that it is their perception of positive relationships, support and peer cohesion in the institution that makes the difference between those with high or low SWB respectively. The potential negative effects of social origin on SWB, which are also briefly analysed could be partially offset by positive environments in school.

## 2 Previous Research

First investigations of family life during the pandemic in Germany (Andresen et al., 2020; Bujard et al., 2021; Calvano et al., 2021) and around the world (Hafstad et al., 2020; Brown et al., 2020; de Araújo et al., 2020) suggest high levels of stress and lower satisfaction with work and family life among parents (Möhring et al., 2021) indeed. Psychological stress has increased among parents, children, and adolescents (Bujard et al., 2021). Early studies of well-being in pandemic times lacked the perspectives of unemployed or single parents, those of lower socio-economic background or with migration background, and their children especially (Kirsch et al., 2020; Calvano et al., 2021). International results show that SWB has declined among elementary school children (Steinmayr et al., 2022) and adolescents (von Soest et al., 2020, Pigaiani et al., 2020) during lockdown, and that outdoor activity (Pigaiani et al., 2020; Jackson et al., 2021) and parental involvement in home schooling (Gaxiola Romero et al., 2022; Treviño et al., 2021; Grommé et al., 2023) can foster SWB.

### 2.1 Subjective well-being in the Ecology of Human Development

According to Bronfenbrenner's ecology of human development (Bronfenbrenner, 1979), the development of children is shaped by their social surroundings, which include their family, school, and local community. They represent the microsystem, one of the systems he theorized as being arranged as concentric circles around the child, interacting with each other and being more influential the closer they are to the centre. Interactions between attachment figures from these microsystems take

place on the mesosystem, they affect the child directly. A supportive and collaborative relationship between parents and teachers could positively influence the student's academic performance and overall well-being. The mesosystem is embedded into the exosystem, which does not involve the child in a sense that it experiences anything that happens on this level directly but is affected by its outcomes. For instance, changes in a parent's employment status or work-related stress can have indirect effects on a child's well-being or academic success. The macrosystem represents the broader cultural, societal, and historical context in which the individual is embedded. It includes cultural values, social norms, economic systems, and political structures. For example, cultural beliefs about the importance of education, access to educational resources, and government policies regarding education can significantly shape the opportunities and outcomes for adolescents within a society. Finally, the chronosystem recognizes that human development unfolds over time and involves the dynamic interactions between the individual and their changing environments. This system accounts for the impact of historical events, life transitions, and socio-cultural changes on development. For instance, the COVID-19 pandemic and its associated disruptions in education and social interactions represent a significant chronosystem event that has influenced the well-being of adolescents worldwide. The emergence of the COVID-19 pandemic has introduced unprecedented disruptions that have reverberated across the entire ecological landscape. The effects of COVID-19 extend beyond the individual systems and permeate the microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

At the very centre, children and adolescents have experienced social isolation like no generation before. At the microsystem level, families and schools have faced immense challenges in adapting to remote learning, social isolation, and increased stress (de Araújo et al., 2020; Andresen et al., 2020; Hafstad et al., 2020; Brown et al., 2020; Bujard et al. 2021; Calvano et al., 2021; Möhring et al., 2021.) The mesosystem has been strained as the interconnections between families, schools, and community support systems have been disrupted. Changes in employment, economic instability, and healthcare systems have influenced the exosystem, affecting access to resources and support services. Moreover, the macrosystem has likely witnessed shifts in societal values, cultural norms, and policy responses in the face of the pandemic. Educational systems have undergone significant transformations, and disparities in access to technology and quality remote learning have become more apparent (Bayrakdar & Guveli, 2020; Huebener & Schmitz, 2020; Dietrich, Patzina, and Lerche 2021). The chronosystem has been marked by a profound disruption, as the pandemic's duration and evolving nature have altered the trajectory of individuals' development and social integration. For instance, Dückers et al. (2023) report that young people at transitional stages had trouble with social integration in their new environments, like new schools, college, or jobs. They conclude that society and individuals have been significantly affected by the fear of contamination and social distancing measures as a result of the prolonged pandemic. The impact of COVID-19 on the entire ecological framework highlights the interdependence and vulnerability of these systems. It underscores the importance of considering the systemic effects when studying the subjective well-being and development of youths and adolescents.

This study examines the influence of social resources within the human ecology on subjective well-being. Social resources encompass emotional or material support or resources individuals receive from their social networks, as described earlier. While social resources draw from the principles of social capital, it's important to note that social capital, as conceptualized by Bourdieu, can be converted into forms of support such as 'individual gratuitous expenditure of time, attention, care, concern [...]' (Bourdieu, 1986: 24). Thus, social resources are distinct from social capital itself; they emerge from these "conversions" (ibid.). For instance, even within the same family structure and peer group, individual children might possess varying social resources due to differences in how their social capital translates into resources like emotional support. In a broader sense, things such as one's home in its size and (emotional and physical) warmth, or the availability of a healthy diet could be a social resource, as the possession of it depends on whether parents are able and willing to provide them.

The focus lies on school as the centre of adolescent life, that has been subject to an extraordinary disruption. A continuously supportive environment even during the pandemic should empirically be found to be associated with higher subjective well-being among adolescents:

**Hypothesis 1:** Adolescents who perceive supportive environments at school tend to experience higher levels of subjective well-being before the pandemic, this group is also less affected by the pandemic in 2021.

A continuously supportive environment is a stable ecological system, which is a factor of resilience in that adolescents should be less harmed emotionally or mentally, because they can count on the people, interactions and networks to support and protect them despite temporary crises (Twum-Antwi et al., 2020; Antony, 2022). If crises are seriously threatening the integration of the surrounding ecological system, temporary changes may become existential and lead to behaviour problems (Sun et al., 2022). Continuous support that prevails during a crisis such as COVID-19 may prevent these negative outcomes.

## 2.2 Subjective well-being and Economic Affluence

Results on socio-economic factors seem to be indifferent. The findings of Lockl et al. (2021) suggest, that differences in children's ability to cope with this unusual teaching-situation is a question of former performance and interest rather than socio-economic background. However, many studies show that youths from middle and low-income homes experienced steeper decline of well-being (Kirsch et al., 2020; Engel de Abreu et al., 2021; Vogel et al., 2021; Lehmann et al., 2021) while others report a stronger effect among the better-off youths (von Soest et al., 2020) or no significant differences (Jackson et al., 2021; Steinmayr et al., 2022). Youths with migration background have been found to be more likely to suffer from psychological stress during the first lockdown (Bujard et al., 2021), although results are mixed in this regard. Grommé et al. (2023) could not find an effect on SWB when German

is spoken at home (as a proxy for not having a migration background). The majority of these studies report stronger negative effects on girls, which frequently report lower subjective well-being anyways. Grommé et al. (2023) suggest that it would be important to investigate how strongly SWB during the pandemic is dependent on which district one is living in or which school one attends, since Knüttel et al. (2021) found no statistically significant correlation between these and SWB in 2019.

In sum, most findings lean into the direction of affluence or higher economic status being associated with higher subjective well-being as well. Many studies referenced above report that more affluent adolescents live in larger homes and are generally more able to distract themselves from the psychological stress their families are experiencing due to lockdowns. They have more privacy (own bedroom versus shared bedroom with siblings or relatives) and experience less psychological stress linked to lack of equipment for distance learning. The disadvantages students faced before the pandemic have likely persisted or even worsened. Therefore, I expect that:

**Hypothesis 2:** Before the pandemic, adolescents who perceive higher levels of affluence are likely to experience higher levels of subjective well-being. This “happiness gap” widens during the pandemic.

### 2.3 Subjective well-being and Academic Success

While there is an established understanding of a reciprocal relationship between academic achievement and well-being, most studies so far focused on parental involvement in teaching at home, formal learning goals or unidimensional indicators of subjective well-being (Kleinkorres et al., 2020). We know that there is a connection between youth well-being and educational outcomes (Diener et al., 1999; Hascher & Hagenauer, 2011, p. 19; Fend & Sandmeier, 2004 p. 162 f.; Kleinkorres et al., 2020). Both have likely suffered during the pandemic (Kirsch et al., 2020).

In the UK (Bayrakdar & Guveli, 2020) and Germany (Huebener & Schmitz, 2020; Dietrich, Patzina, and Lerche 2021), researchers discovered that education-related pre-covid disadvantages have continued during the times of home-schooling, but could be mitigated by schools’ provisions. These provisions were mainly learning materials and infrastructure and could not be measured on a personal level. Interestingly, research conducted in the United States (Cohen et al., 2022) revealed that families from disadvantaged socioeconomic backgrounds placed greater value on academic activities, social skills, and life skills, in comparison to families from more privileged socioeconomic backgrounds – complementing the finding above that additional resources independent from the household play a major role for equal opportunities.

Success, like well-being, is a concept that is perceived entirely different by each individual and dependent on previous achievements as well as circumstances of one’s life in general. There is a great difference in achieving learning goals, earning good grades, acquiring competencies and feeling good with ones achievements. Students are different in their intellectual properties and their abilities to keep up with their educational curriculum. Smaller steps might feel very different for those who

are achieving slower, while others might suffer from minor drawbacks much more than those who performed mediocly before.

In that sense, this study will follow the capability approach (cf. Walker & Unterhalter, 2007; Saito, 2003). This approach allows us to develop a more nuanced understanding of how the pandemic has impacted adolescents' subjective well-being and how policy responses could be improved to better support their capabilities and freedoms.

The Capability Approach, as proposed by Sen (2010), distinguishes between functionings and capabilities. Functionings comprise basic activities such as nourishment, social participation, and other fundamental aspects. Nussbaum (2016) understands these functionings as capabilities necessary for a dignified life. These capabilities represent freedoms and, according to Sen and Nussbaum, the freedom for self-realization. They are influenced by social resources that enable well-being and education (Nussbaum, 2016; Saito, 2003). Subjective well-being and school-related capabilities beyond formal learning goals are essential because they encompass the holistic development of individuals, nurturing their overall happiness, personal growth, and success in various aspects of life. An adequate measurement of educational capability should therefore incorporate students' own perspective. Considering this perspective, I suggest looking into self-assessments, as they reflect students' perception of what is expected of them and how capable they are to meet these expectations.

Since the capability approach underscores education as a fundamental capability that contributes to an individual's overall well-being, adolescents who report higher levels of educational assessment are likely to have a stronger sense of empowerment, knowledge, and skills, contributing positively to their overall capabilities and well-being. Also, higher self-reported educational assessment may indicate a greater sense of agency and autonomy in adolescents. They may feel more in control of their educational journey, which can positively impact their subjective well-being. Testing the following hypothesis does not only further the understanding of the link between educational performance and SWB but adds the capability perspective. If the hypothesis is found to be supported by the data, we can state that self-realization capabilities in the educational context matter for subjective well-being and might as well be treated as equally important as formal learning goals. Based on the extensive body of research examining the association between educational outcomes and subjective well-being, I propose the following hypothesis:

**Hypothesis 3:** Adolescents with higher self-reported educational assessment exhibit higher levels of subjective well-being before the pandemic. During the pandemic, they are less affected by an overall drop in subjective well-being.

In challenging circumstances, such as during the COVID-19 pandemic, it is important to investigate the relationship between maintaining academic progress and subjective well-being among adolescents. Despite the disruptions and difficulties faced during such times, it is hypothesized that adolescents who are able to maintain their academic progress, regardless of the challenges, are more likely to experience higher levels of subjective well-being. I expect that circumstances which



enable progress and continuous engagement in academics, even in adverse situations, can contribute positively to an adolescent's overall well-being.

### 3 Data

Had we asked students directly about their perception of how school was working for them during lockdown, we might be able to better understand the significance school has for adolescent well-being in general and during crises especially.

An existing source of this kind of data is the UWE-project. UWE stands for „Umwelt, Wohlbefinden und Entwicklung von Kindern und Jugendlichen“ (= Environment, Well-Being and Development of children and youths) (Knüttel et al., 2021). It has started as an adaption of the Canadian Middle Years Development Instrument (MDI) (Schonert-Reichl et al., 2013), but has since grown into an autonomous study. The pilot study was launched in 2017 and ensured the applicability in the German context. The data is publicly available from the CESSDA Data Catalogue (Petermann, 2022, Stefes, 2023).

UWE's main objective is to deliver information about adolescent well-being and development that is robust on the institutional (schools) and small regional (statistical districts) levels. The project is designed and conducted as a full census of adolescents in the participating municipalities. In 2019, all students in seventh and ninth grade in two municipalities in Western Germany have been asked to fill out a 45-minute questionnaire, supervised by teachers and scientific personnel of Zentrum für Interdisziplinäre Regionalforschung (ZEFIR). Both municipalities are close to each other in Germany's largest metropolitan area, have more than 100.000 inhabitants and have relatively high rates of child poverty and school-drop-out (Town A). Table 1 shows child- and youth poverty as well as school-drop-out rate with Germany as a reference.

UWE is a unique and very strong instrument to measure SWB of young people. First, it inherits the ability to distinguish between institutional and very small geographical and units. The data is representative for these units which is a unique asset in the German educational research landscape. Second, it employs a whole child model of well-being following state-of-the-art well-being research (see Pollock et al., 2018; Moore, 2020). That approach is based on an index, consisting of six dimensions of well-being: self-esteem, optimism, absence of

**Table 1** Child poverty and school-dropouts. (Source: Bertelsmann Stiftung, 2023; own representation)

	Town A		Town B		Germany (Reference)	
	2019	2021	2019	2021	2019	2021
Child Poverty (under 15 years, %)	30.5	28.6	21.3	18.7	13.4	12.1
Youth Poverty (15–17 years, %)	24.5	25.0	16.0	15.3	9.9	10.0
School drop-outs (%)	5.7	5.8	2.8	3.1	3.7	2.9



sadness, absence of worries, body image and life satisfaction. These dimensions are supported by (social) resources: subjective affluence, relationships, attachment figures, friendships, school climate and feelings of belonging to school and peer group. Social development measures include amongst others empathy and social behaviour. All of these dimensions consist of 3–5 items, that show sufficient Cronbach's Alpha values when combined. An overview of the respective items and psychometrics can be found in Tables 4, 5 and 6 in the appendix.

Another strength is its focus on the youths' own perspective. The survey allows quantitative measurement of how they spend their leisure time and what they enjoy or lack in their school and neighbourhood. Success at school is assessed by a three-item self-assessment, rather than a measure of educational performance. Respondents were asked if they were confident in reaching the next grade level, being able to do all their homework and learning difficult subject matters. This way the survey data is comparable across the stratified German secondary education system – and mainly reflects their own perception of how well they meet expectations of the school system.

Trying to draw a comprehensive picture of youths' lives, we need to consider socio-economic background. Measuring that comes with challenges. We can't reliably record parental income and wealth in the survey's setting because children and adolescents usually just don't know the important figures. Again, we ask directly what we need to know in order to identify those struggling with economic disadvantages: "My family often has to save money", "I can often do things with my friends that cost money", and "My family can afford many things". The resulting index has Cronbach's Alpha values of 0.69 to 0.73.

Well-being holds externalities for both adolescents themselves on the one hand and society on the other (Pollock et al., 2018). Not only does it enable educational attainment in the first place (Fend & Sandmeier, 2004; Hascher & Hagenauer, 2011), but it allows becoming a functional member of society. While the former is essential for individual social existence and forthcoming, the latter is what holds society together: Health, solidarity, empathy, trust and commitment (Petermann et al., 2019: 387).

The existing data allows to draw a comprehensive picture of youth life in the social settings home, school, and local community and how it affects youth well-being. We have collected rich data less than one year before the first lock-down situation in Germany and another iteration in the middle of the chaotic situation, where some schools are teaching on-site, while others are still practising distance education. All interviewed students have experienced distance learning at one point.

In spring 2021, the second wave of the survey was conducted in two municipalities, I will call towns A and B. Participants overlap as the first seventh graders will now participate as ninth graders. The survey faced significant challenges due to weekly changing regulations, forcing researchers to adapt and to pioneer eventually (Stefes et al., 2023). Over the whole survey period (April-May 2021), students were being taught at home or at school in small groups that were alternating between weeks. Eventually, students in town B filled out surveys during class while being in school or at home. Surveys at home were supervised by researchers as they were

connected with students via videoconference. These very flexible survey modes allowed to achieve response rate of 50% among the target population.

In town A, schools did not cooperate in 2021. Therefore, surveys were conducted online, and students were invited to participate by letter from 01.06.-09.07.2021. A major drawback of this approach was low participation rate in town A (20%) and the change in survey mode, which made it necessary to condense the questionnaire. That in turn affects comparability of survey waves. The advantage however was more flexibility in questionnaire design, as it was not necessary to consult with stakeholders in schools and municipalities. For instance, we were able to ask questions about daily (school) life during lockdown:

In time of homeschooling, I ....

- a) "... usually know what I have to do for school."
- b) "... can follow well in class."
- c) "... am regularly in touch with my teachers."
- d) "... usually get up early."

These items are designed to understand how well students were informed rather than left alone (a/c), could adequately participate in online classes (b) and maintain a daily routine (d).

All survey waves were initially planned as full-surveys, recruiting all seventh- and ninth graders in town for the study without further exclusion criteria. The only limitation was informed parental consent, which is mandatory but difficult to obtain for various reasons, and under pandemic circumstances it was especially hard to manage. Eventually, all participants provided parental approval of their participation. The data used for this study does not exclude any observations, except for those with high item-nonresponse. There is no reason to assume systematic bias from these two challenges. Considering this and the high response rates plus comparable demographics, the sample is representative for adolescents in urban areas in Western Germany.

## 4 Method

With these two samples (A&B) I can conduct two different analyses. While the sample from town B allows a comparison of the student group over time, sample A enables a more in-depth analysis of home-schooling. Unfortunately, the two samples collected in town A cannot be compared with each other or the sample B. Data collection method and target population differ entirely. Adolescents from town A provided an important insight into their daily lives that was disrupted in a quite unique way, thus I take the opportunity to see how their differing perception of that correlates with SWB. Therefore, I will be conducting two separate analyses using data from each sample. This will allow me to see whether patterns in

the relationship between school climate and SWB are comparable between very poor places (town A) and towns that are closer to being middle-class (town B).

First, I conduct a cross sectional linear regression model using sample A. It shall investigate the impact school has on subjective well-being of adolescents by including the four abovementioned questions and further scales: feelings of belonging in school, school climate, which is asking whether people in school (students, teachers, other personnel) are treating each other in a respectful manner, the school self-assessment and an index measuring supportive relationships to adults in school.

Second, in order to assess whether subjective well-being differ in their decline between 2019 and 2021, I use linear regression analysis with time or grade as a control. In four separate models, I analyse (1) seventh or (2) ninth graders between 2019 and 2021, and both grades in (3) 2019 and (4) 2021. This way I can distinguish whether effects are robust in both years and both age groups and keep potential confounding under control.

Using (ordinary least square) linear regression I make several assumptions about the structure of the data. Firstly, I assume that relationships between the independent and dependent variables are linear, which is hardly true in social science. Yet, results of linear regression provide the closest estimate possible in this case. Multicollinearity may arise from relationships between independent variables. While a correlation between e.g. relationships to teachers or peers and feelings of belonging is likely, they are different dimensions of social life and nowhere close to collinearity. An important limitation of this method is the fact that it cannot provide evidence for causal relationships. High coefficients can only hint at positive relationships, while it is impossible to claim that for instance feelings of belonging *cause* higher SWB, although higher SWB can be found more often among adolescents with high feelings of belonging.

The models control for important socio-economic factors, social resources and considers that data is most likely nested in schools and districts. Multilevel Regression Analyses however will not be conducted, as there is no considerable variance in subjective well-being on these levels (1.2% on the school level; ICC for district level is almost zero). To take the risk of heteroskedasticity into account whatsoever, I include dummies for both schools and districts in all analyses.

The distribution of socio-demographic characteristics as well as the social resources of the adolescents, whose responses were used in the analyses are represented in Table 1. Interviewees were between 12 and 17 years old, with a higher concentration around the ages 13 to 15. Age itself is not included in the descriptive tables and the analyses. The main differentiation of age groups is grade seven/nine in Town B or six-seven/eight-nine in Town A respectively. Genders are distributed almost equally, with the B sample from 2021 having more girls than boys. The number of students with migration background is comparable with all students in their respective municipalities for 2021, but in Town B (2019) they are slightly underrepresented. All scales (relationships and school-related resources) were z-standardized for the analyses. Tables 2 and 3 present their original distribution in the three samples used in the following analyses.

**Table 2** Descriptive statistics for Town A sample of the UWE-project used in the statistical models

Variable	Town A (2021)				
	Mean	sd	Min	Max	N
Gender: Female	0.51	0.50	0.0	1.0	693
Grade 8 or 9	0.6	0.48	0.0	1.0	693
Family: Migration background	0.47	0.50	0.0	1.0	693
Family: Number of siblings	1.34	1.26	0.0	6.0	693
Family: 1 adult at home	0.14	0.34	0.0	1.0	693
Family: 2 adults at home	0.79	0.40	0.0	1.0	693
Family: 3 or more adults at home	0.07	0.26	0.0	1.0	693
Family: Subjective affluence	3.79	0.81	1.0	5.0	693
Relationships: Adults at school	3.50	1.01	1.0	5.0	693
Relationships: Adults at home	4.51	0.72	1.0	5.0	693
Relationships: Peers	3.95	0.96	1.0	5.0	693
Relationships: Friends	4.19	1.03	1.0	5.0	693
Family: Subjective affluence	4.11	0.91	1.0	5.0	693
School: Climate	3.22	0.96	1.0	5.0	693
School: Belonging	3.54	1.00	1.0	5.0	693
Sleep and nutrition	3.75	0.69	1.3	5.0	693
Subjective Well-Being	3.60	0.86	1.0	5.0	693

**Table 3** Descriptive statistics for Town B samples of the UWE-project used in the statistical models

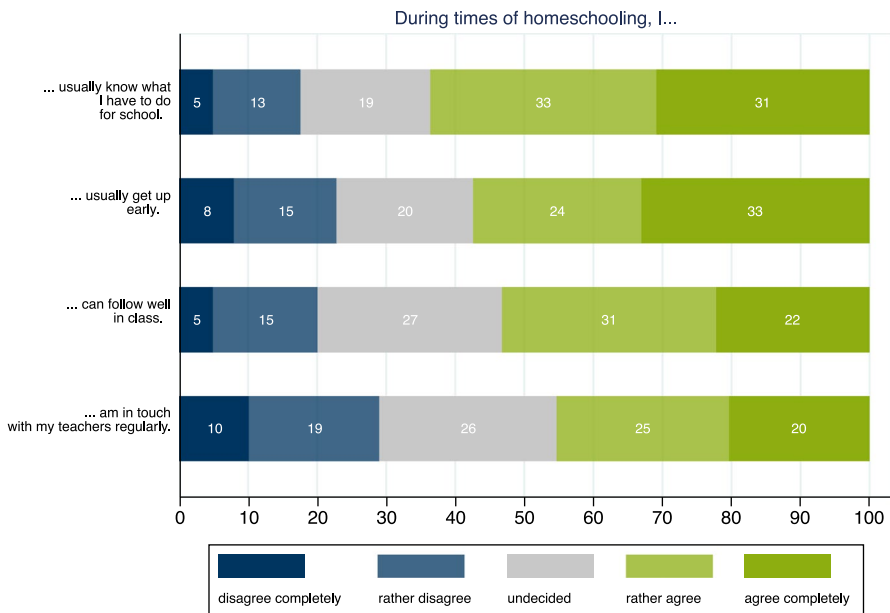
Variable	Town B (2019)					Town B (2021)				
	Mean	sd	Min	Max	N	Mean	sd	Min	Max	N
Gender: Female	0.49	0.50	0.0	1.0	1202	0.55	0.50	0.0	1.0	714
Grade 9	0.54	0.50	0.0	1.0	1202	0.50	0.50	0.0	1.0	714
Family: Migration background	0.39	0.49	0.0	1.0	1202	0.43	0.50	0.0	1.0	714
Family: Number of siblings	1.21	1.20	0.0	6.0	1202	1.30	1.20	0.0	6.0	714
Family: 1 adult at home	0.15	0.35	0.0	1.0	1202	0.20	0.40	0.0	1.0	714
Family: 2 adults at home	0.56	0.50	0.0	1.0	1202	0.71	0.46	0.0	1.0	714
Family: 3 or more adults at home	0.29	0.46	0.0	1.0	1202	0.10	0.29	0.0	1.0	714
Family: Subjective affluence	3.97	0.73	1.0	5.0	1202	3.95	0.73	1.0	5.0	714
Relationships: Adults at school	3.32	1.02	1.0	5.0	1202	3.12	0.90	1.0	5.0	714
Relationships: Adults at home	4.62	0.64	1.0	5.0	1202	4.50	0.74	1.0	5.0	714
Relationships: Peers	4.27	0.80	1.0	5.0	1202	4.04	0.89	1.0	5.0	714
Relationships: Friends	4.56	0.77	1.0	5.0	1202	4.34	0.98	1.0	5.0	714
School: Subjective success	4.13	0.77	1.0	5.0	1202	3.98	0.86	1.0	5.0	714
School: Climate	3.08	0.94	1.0	5.0	1202	3.28	0.89	1.0	5.0	714
School: Belonging	3.40	0.98	1.0	5.0	1202	3.36	0.98	1.0	5.0	714
Sleep and nutrition	3.76	0.72	1.0	5.0	1202	3.74	0.70	1.6	5.0	714
Subjective Well-Being	3.71	0.80	1.1	5.0	1202	3.52	0.81	1.0	5.0	714

### 5 Results

On a descriptive level I find it important to show how students could keep up with school during times of homeschooling. The responses of 693 students to the four questions are represented in Fig. 1. While many students could keep up with their daily tasks for school, almost one fifth of them did not usually know what they were supposed to do in their school time. Another fifth could not follow well when taught at home. In all four items we can see a considerable share of students that could not keep up with school in at least one of these dimensions.

Figures 2 and 3 show linear regression coefficients. A positive coefficient indicates a positive relationship of the variable with subjective well-being (*ceteris paribus*). The most obvious connection is gender. Girls report much lower SWB on average. Migration background is positively related to SWB in sample A, but not a factor in sample B as indicated in Fig. 3. The subjective wealth indicator shows that in both samples, better-off students report higher SWB. Good relationships to adults at home and to peers have a very positive effect on SWB. Feelings of belonging at school is a positive resource, as well as sleep and nutrition. Quality of home-schooling seems to have had mattered for SWB in spring 2021 – in Fig. 2 we see a positive relation between SWB and the ability to follow in class. Having said that, being in touch with teachers, knowing what to do and getting up early are not significant factors.

Those who are having good relations to adults in schools in town A, that includes but is not limited to teachers, report a lower SWB than those who don't.



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Fig. 1 How students kept up with school and daily life during home-schooling (own calculation)

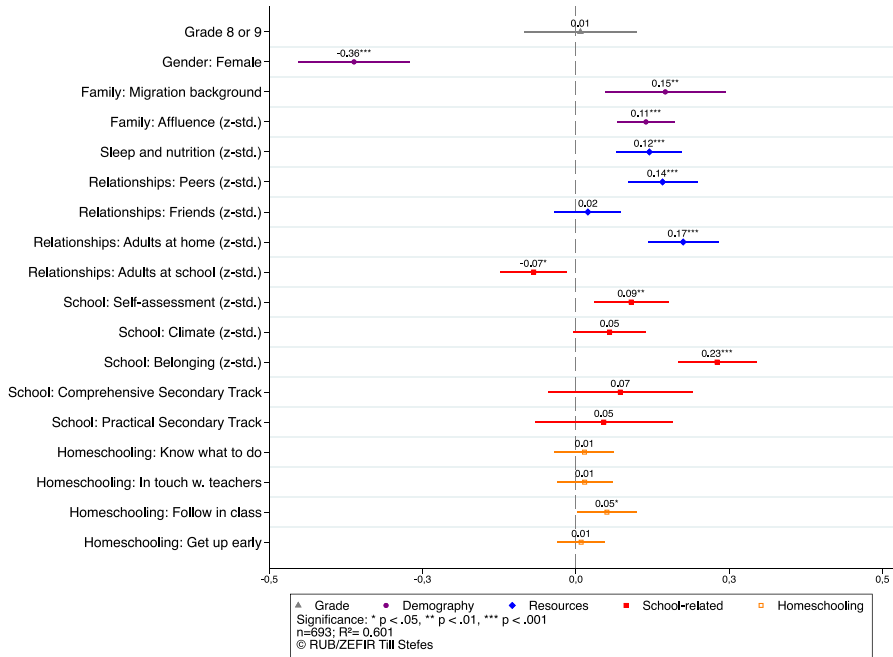


Fig. 2 Linear regression analysis: factors of subjective well-being in Town A (own calculation)

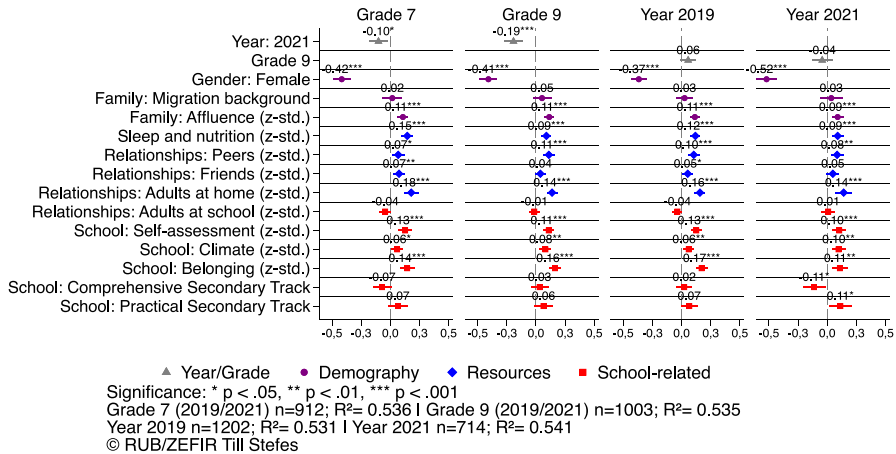
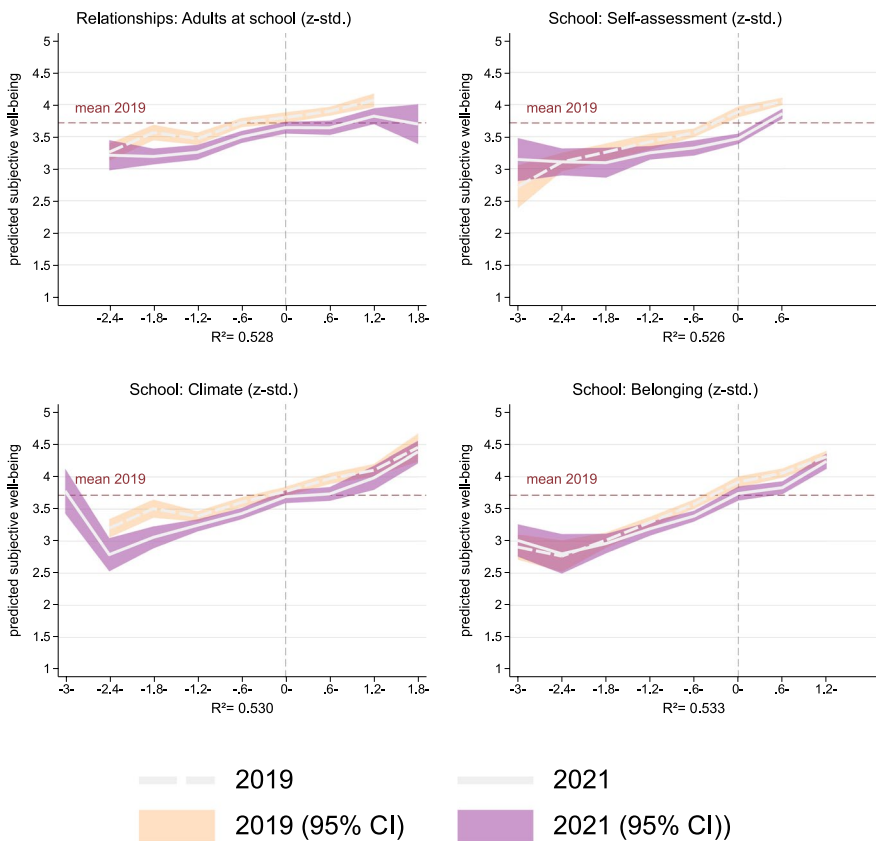


Fig. 3 Linear regression analysis: factors of subjective well-being in Town B (own calculation)

Robustness checks have shown, that this effect is reversed when feelings of belonging and subjective success are excluded from the analysis. We have a statistically significant, positive correlation between relationships to adults in school and SWB as long as we don't include feelings of belonging and subjective success in the regression model.

The school-climate is measured on a more general level. It is asked whether the people in school (teachers, students, personnel) interact respectfully with each other. The feelings of belonging are concerned with the individual. The fact that the former does affect well-being only in sample B and not that strongly, while the latter does in a significantly positive way across samples suggests that the institution itself matters much less than how adolescents experience their own role in it. Which type of school students attend seems to matter in sample B in 2021 only, the practical secondary track accommodates students that feel better on average, while students on the comprehensive track report lower levels. However, significant effects can only be found in the 2021 sample.

In Fig. 4, I present predictions of SWB for students in 2019 and 2021 in sample B, based on a model similar to that presented in Figs. 3 and 4 but with all observations in one model and the year as interaction of the respective variable indicated in the titles. Dashed lines represent the year 2019, while the solid lines



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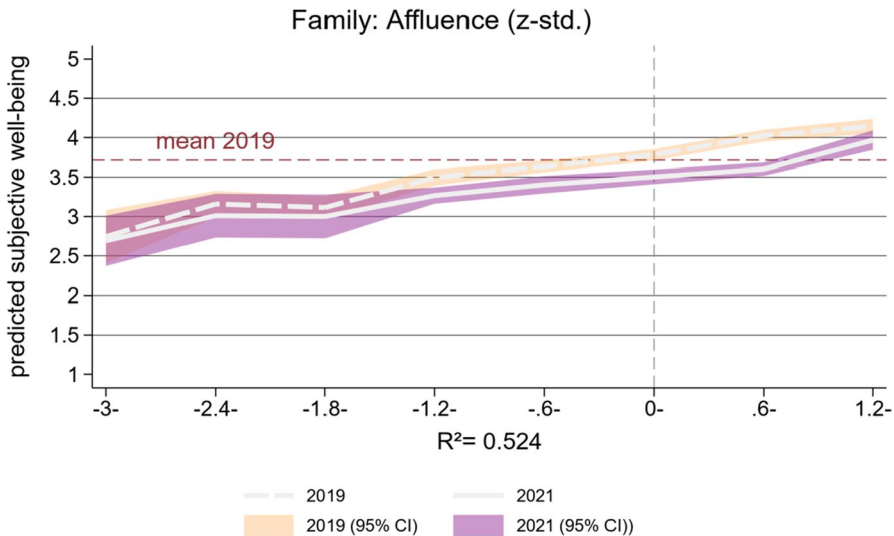
Fig. 4 Linear predictions of SWB with different characteristics in town B (own calculation)



stand for 2021. All scales have been z-standardized. It appears that higher values in the school-related scales are associated with higher SWB in both 2019 and 2021, indicated by the positive gradient of all depicted variables. Interestingly, the lower values in 2021 are not significantly lower than 2019 across the sample.

In case of the relationships to adults in schools, most groups are now significantly lower in SWB than comparable students in 2019. Interestingly, the average student (at the zero line on the x-axis) is lower, but not significantly lower than in 2019. The self-assessment had a stronger gradient in 2019 than in 2021 but higher values are still associated with higher SWB. Around the mean, there is a significant decline that is steeper below than above the mean. School climate and feelings of belonging both show a strong, almost linear gradient with higher values being associated with higher SWB. SWB declined stronger for those who reported a worse-than-average school-climate. A very bad climate is associated with very low SWB and the decline in this group is significant. Students with average feelings of belonging have significantly lower SWB than comparable students in 2019 (Fig. 4).

Looking at subjective affluence, we can see a similar direction of correlation between that and SWB (Fig. 5). The decline of SWB in the two years observed is mostly affecting those with average or higher-than-average subjective affluence, although they still report higher SWB than students feeling less wealthy than others. Those at the very top of this distribution don't seem to be affected at all, their SWB-levels are the highest and very similar to 2019 and above the respective average. On the bottom of the distribution, there was not much room for significant losses in SWB and thus no evidence of it.



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Fig. 5 Linear predictions of SWB with different levels of subjective affluence (own calculation)

## 6 Discussion

Research on the subjective well-being of children, adolescents, and youth during the Covid-19 pandemic has consistently revealed a notable decline in their well-being. While this is not a positive development, it came as no surprise. The preceding sections have examined the various dimensions of adolescent well-being within the context of Bronfenbrenner's ecological systems theory and the challenges posed by the COVID-19 pandemic. They explored the interconnectedness of social environments, such as the family and school, and their influences on subjective well-being. Drawing upon the rich literature on educational outcomes and subjective well-being, this discussion aims to synthesize the findings and present a comprehensive analysis of the interplay between these factors. Furthermore, I will critically examine the implications of this study's hypotheses and offer insights into the complex dynamics that shape the subjective well-being of adolescents, particularly during times of crisis. By doing so, I hope to contribute to the ongoing dialogue on how to promote positive youth development and enhance the well-being of adolescents.

My first hypothesis addressed supportive environments in school and I could show that there is a positive relationship indeed. All analyses concluded that the better school-climate, relationships to adults in school, self-assessments and feelings of belonging especially were, the higher SWB has been. Between 2019 and 2021 however, gaps seem to have decreased but not in a good way. The less steep gradients in 2021 are mainly due to the fact that students with higher values report lower SWB than students did in 2019. This result contradicts the notion of resilience as it has been described by Twum-Antwi et al. (2020) and Antony (2022). The same applies to and is even stronger for subjective wealth.

The second hypothesis dealt with subjective affluence. Whether and how strong the relation between affluence and SWB during the pandemic has been was not clear (Bremm and Racherbäumer, 2020). The large number of research articles on the matter had come to partially opposing conclusions. While many researchers (Kirsch et al., 2020; Engel de Abreu et al., 2021; Vogel et al., 2021; Lehmann et al., 2021) found that poorer and average students were affected more negatively, some found no significant effect of affluence (Jackson et al., 2021; Steinmayr et al., 2022) or the opposite effect (von Soest et al., 2020). The results of this study are mainly in line with the first group, as affluence definitely divides adolescents in well-being, but time has hit those from supposedly more affluent families slightly harder, except those who reported the highest subjective wealth. However, those who perceive their affluence as being very low are doing much worse than those with higher values. Table 3 indicates that SWB doesn't get much lower than the predictions for the reportedly poor adolescents. Eventually I must conclude that very affluent adolescents were resilient, while the average adolescent was not and the very not affluent adolescents had not much too lose anyways.

All of the above have worked with measurements that could be considered objective, and not perceptions of affluence as this study does. I argue that the perception of affluence is an adequate indicator of supportive environments in an economic sense, as it is not based on the potential, but literal affluence in

the sense of not being poor. This category might be especially relevant for the circumstances of the sample, which is widespread material deprivation in the community.

In the third hypothesis I utilized the capability approach to explain how I believe that successful education affects subjective well-being. Unsurprisingly, successful learning is indeed associated with higher SWB which is in line with previous research (Diener et al., 1999; Hascher & Hagenauer, 2011; Fend & Sandmeier, 2004; Kleinkorres et al., 2020). The result supports the capability approach in the sense that the capability to learn is related to subjective well-being. Although I cannot claim whether higher success *causes* higher SWB, their correlation allows the claim that they are necessary for each other in adolescent life. However, subjective success or self-efficacy in the education system has not yet been established as valid indicator, the strong relationship to SWB might change that. For future research it would be useful to establish how strongly educational self-efficacy translates in actual educational outcomes, the result in this study can only be a first step. The practical, educational implication here is that learning requires continuous efforts to enhance youth well-being in school. Above, it has been shown that establishing a common sense of belonging is helpful in this regard.

Keeping up with school was examined through two operationalizations. Firstly, I analyzed the effects of a self-assessment of educational success, which has consistently shown a positive association with SWB both before and during the pandemic period from 2019 to 2021. Furthermore, to address the unique circumstances imposed by the pandemic, I investigated how students experienced distance learning and its impact on their well-being. The findings revealed that a significant portion of students reported negative experiences, as depicted in Fig. 1. However, it is important to note that there were also students who managed to adapt successfully to remote learning, and their capability to follow well in class during distance learning had a significantly positive effect on their subjective well-being. In light of this result, practitioners should carefully evaluate which measures to apply in times of crises, as we can see that the strict rules in 2021 left many disoriented. Again, it is crucial to acknowledge the limitations of my results, particularly regarding the establishment of causal relationships. The ideal approach to overcome this limitation would involve conducting true experimental or longitudinal observational studies to explore whether a change in factor A leads to a corresponding change in factor B for certain individuals, while comparable observations without that change in factor A do not exhibit a similar change in factor B. Obviously, such rigorous assessments remain challenging or even unethical to implement. Further research might make use of methods that allow for such testing without making adolescent miserable to see how they perform, such as matching algorithms to find statistical twins.

As for the analyses over time there are clear limitations in the sense that from the results presented, we cannot conclude that the changes over time are only due to the pandemic. I cannot make claims about individual changes, but only about declining means in groups or averages. Since I cannot identify individuals in the data, I cannot link them and conduct these more sophisticated analyses, like fixed effects models. There are data sources allowing such, but to my knowledge none of them share the in-depth portrait of adolescent well-being, social resources and environments as the

UWE study does. For future research, long-term projects with longitudinal design would be very useful in order to address similar questions.

There are results in this study that deserve a closer look than I could provide here. In sample A, students that were coded as having a migration background reported a significantly higher SWB than those who are considered “native” during spring 2021. This study cannot provide a satisfactory explanation for this phenomenon but it is noteworthy that this result is based on a robust statistical model accounting for at least a proxy of family affluence and supportive environments, explaining 60% of the variance between the observed SWB. An argument that needs to be considered here anyways is that there might be self-selection into the survey. Respondents in Town A were invited to take part in the survey by letter and not randomly selected. The fact that response rates were much higher in town B, where respondents were recruited in their schools, highlights the efficiency of that method. A similar, potential response bias is not existent in this sample.

Another intriguing incidence is that the students attending practical secondary schools in town B reported significantly higher SWB than others, over time and even when controlling for the school environment in the extensive way UWE does. Important to mention here is that there are 3 schools on average in each of the categories, so this effect might be the result of one particularly happy student body. Descriptive analyses not included in this study have shown that all of the practical track schools show higher averages than the other schools, but only in town B. Another surprising result found in the OLS-regression from sample A is the fact that positive relationships to adults in school seem to be associated with lower SWB when the school climate is controlled for. While there is no previous research on this particular question, a potential explanation that deserves further investigation could be a kind of “compensation mechanism”: close ties to teachers, social workers or other adults working in school might hint at missing emotional support at home.

How representative are the results for adolescents in general? I cannot claim that the significance of a supportive environment in school is similar for adolescents all over the world. Since the sample is taken from a materially deprived area in Germany and the towns show different levels of deprivation (see Table 1), I regard the sample as representative at least for the lower middle-class and lower classes in Germany. There is a high share of children living in poverty in the target population but I cannot identify them based on the questionnaire. Although the data allows for small scale determination of where respondents live, I could not find effects of segregation – none of the district indicators was anywhere near statistical significance. How they perceive their own (economic) situation does influence adolescents' SWB in any case.

While the COVID-19 pandemic hopefully was a unique event, there are lessons we can learn even for the better days. School as a supportive environment plays a major role in adolescent lives and has a lot of potential to compensate for structural disadvantages affecting SWB. If we want to increase SWB and not depend on their families alone, we must use the opportunity schools as a public commodity can offer. The study has shown that it is not necessarily educational success, school-type or the institution itself that makes a difference here but social contacts and feelings of belonging – it matters how adolescents perceive their social environment.

## Appendix

**Table 4** Items, alphas and factors for scales used in the analyses (Family and Relationship variables)

Scale	Items	Cronbach's Alpha   Factors		
		Town A (2021)	Town B (2019)	Town B (2021)
Family: Affluence		0.73   1	0.69   1	0.71   1
	My family can afford many things			
	My family often has to save money (recoded).			
	I can often do things with my friends that cost money.			
Relationships: Adults at school		0.85   1	0.77   1	0.80   1
	There is an adult at school ...			
	who really cares about me.			
	who believes that I will be successful.			
	who listens to me when I have something to say.			
	with whom I can talk about my problems.			
Relationships: Adults at home		0.84   1	0.78   1	0.85   1
	There is an adult at home ...			
	who really cares about me.			
	who believes that I will be successful.			
	who listens to me when I have something to say.			
	with whom I can talk about my problems.			
Relationships: Peers		0.77   1	0.76   1	0.76   1
	I am part of a group of friends.			
	I think I usually fit in with the children I'm dealing with.			
	When I'm with other children my age, I feel like I belong.			
Relationships with friends		0.86   1	0.80   1	0.86   1
	I have at least one really good friend who I can talk to if something is bothering me (...)			
	I have a friend who I can tell everything to.			
	There is someone my age who really understands me.			

**Table 5** Items, alphas and factors for scales used in the analyses (School related variables)

Scale	Items	Cronbach's Alpha   Factors		
		Town A (2021)	Town B (2019)	Town B (2021)
School: Subjective success		0.80   1	0.68   1	0.76   1
	I am sure that I will manage this school year.			
	If I have enough time, I can do all my homework well.			
	Even if some things are difficult at school, I can learn them.			
School: Climate		0.87   1	0.84   1	0.84   1
	At my school, teachers and pupils treat each other with respect.			
	At my school, pupils treat each other with respect.			
	In this school, people look after each other.			
	The pupils in this school help each other, even if they are not friends.			
School: Belonging		0.84   1	0.78   1	0.82   1
	I have the feeling that I belong at my school.			
	I think I am important for this school.			
	I am part of this school.			
Nutrition and sleep		0.61   1	0.47   1	0.60   1
	If you think of a normal week...			
	how many days do you have the opportunity to have breakfast?			
	on how many days do you eat sweets, crisps or similar? (recoded)			
	how many days do you eat with your parents or other adult family members?			
	how many days do you sleep well at night?			

**Table 6** Items, alphas and factors for scales used in the analyses (Subjective well-being)

Scale	Items	Cronbach's Alpha   Factors		
		Town A (2021)	Town B (2019)	Town B (2021)
Optimism		0.81   1	0.79   1	0.77   1
	I feel better more often than I feel bad.			
	I think I will experience more good things than bad.			
	In the morning I usually think it's going to be a good day			
Self-esteem		0.86   1	0.82   1	0.83   1
	Most of the time, I like it the way I am.			
	I have a lot to be proud of.			
	Many things about me are good.			
Life satisfaction		0.87   1	0.87   1	0.85   1
	Most of the time, my life is the way I want it to be.			
	Everything is really good in my life.			
	I am happy with my life.			
Worries (Recoded to reflect absence of worries)		0.84   1	0.77   1	0.81   1
	I'm worried about being teased or annoyed.			
	I worry a lot that other people might not like me.			
	I worry about what other children might say about me.			
Body image		0.88   1	0.87   1	0.89   1
	I usually like the way I look.			
	Most of the time I am happy with my weight.			
	I feel good in my body.			
Sadness (Recoded to reflect absence of sadness)		0.83   1	0.81   1	0.79   1
	I often feel unhappy.			
	I am often sad.			



**Table 6** (continued)

Scale	Items	Cronbach's Alpha   Factors		
		Town A (2021)	Town B (2019)	Town B (2021)
Most of the time I feel alone.				
Subjective well-being		0.94   1	0.93   1	0.93   1
Optimism, Self-esteem, Life satisfaction, Body image, Absence of Worries, Absence of Sadness				

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**Data Availability** The data used for this study are available from the CESSDA Data Catalogue under the numbers 10.7802/2350 (2019) and 10.7802/2613 (2021).

## Declarations

**Ethical Approval** Not applicable

**Research Involving Human Participants and/or Animals** Not applicable.

**Competing Interests** The author has no relevant financial or non-financial interests to disclose.

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## References

- Andresen, S., Lips, A., Möller, R., Rusack, T., Schröder, W., Thomas, S., & Wilmes, J. (2020). *Kinder, Eltern und ihre Erfahrungen während Der Corona-Pandemie*. Universitätsverlag Hildesheim. <https://doi.org/10.18442/121>
- Antony, E. M. (2022). Framing Childhood Resilience Through Bronfenbrenner's Ecological Systems Theory: A Discussion Paper. *Cambridge Educational Research E-Journal (CERJ)*, 9. <https://doi.org/10.17863/cam.90564>
- Bayrakdar, S., & Guveli, A. (2020). *Inequalities in home learning and schools' provision of distance teaching during school closure of COVID-19 lockdown in the UK*. ISER Working Paper Series 2020–09. University of Essex, Institute for Social and Economic Research (ISER). <http://hdl.handle.net/10419/227790>
- Bertelsmann Stiftung (2023). *Wegweiser Kommune*. Gütersloh. Data repository available at <https://www.wegweiser-kommune.de>. Accessed 29 Apr 2024.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood.
- Bremm, N., & Racherbäumer, K. (2020). 'Dimensionen der (Re-)Produktion von Bildungsbenachteiligung in sozialräumlich deprivierten Schulen im Kontext der Corona-Pandemie' In „Langsam vermissem ich die Schule ... edited by Detlef Fickermann and Benjamin Edelstein, 202–15. Waxmann Verlag GmbH. <https://doi.org/10.31244/9783830992318.13>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Brown, S. M., Jenalee, R., Doom, S., Lechuga-Peña, S. E., Watamura, & Koppels, T. (2020). 'Stress and Parenting during the Global COVID-19 Pandemic'. *Child Abuse & Neglect, Protecting children*

- from maltreatment during COVID-19: First volume, 110 (December): 104699. <https://doi.org/10.1016/j.chiabu.2020.104699>
- Bujard, M., von den Driesch, E., Kerstin, R., Laß, I., Thönnissen, C., Schumann, A., & Schneider, N. (2021). Belastungen von Kindern, Jugendlichen und Eltern in der Corona-Pandemie. *Bundesinstitut für Bevölkerungsforschung*. <https://doi.org/10.12765/bro-2021-02>
- Calvano, C., Engelke, L., Bella, J. D., Kindermann, J., Renneberg, B., Sibylle, M., & Winter (2021). *Families in the COVID-19 pandemic: Parental stress, Parent Mental Health and the occurrence of adverse childhood experiences—results of a Representative Survey in Germany*. *European Child & Adolescent Psychiatry*. <https://doi.org/10.1007/s00787-021-01739-0>
- Cohen, S. R., Wishard Guerra, A., Molgaard, M. R., & Miguel, J. (2022). Social class and emotional well-being: Lessons from a daily diary study of families engaged in virtual elementary school during COVID-19. *AERA Open*, 8, 233285842210958. <https://doi.org/10.1177/23328584221095854>
- de Araújo, L. A., Veloso, C. F., Souza, M. D. C., Azevedo, J. M. C. D., & Tarro, G. (2020). The Potential Impact of the COVID-19 Pandemic on Child Growth and Development: A Systematic Review'. *Jornal de Pediatria*. <https://doi.org/10.1016/j.jped.2020.08.008>
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276.
- Dietrich, H., Patzina, A., & Lerche, A. (2021). Social Inequality in the Homeschooling Efforts of German High School Students during a school closing period. *European Societies*, 23(sup1), S348–S369. <https://doi.org/10.1080/14616696.2020.1826556>.
- Dückers, M., Jansen, N., Horst, T., & Haagen, J. (2023). Linking public health monitoring to dialogue-based decision-making during the COVID-19 pandemic: Experiences from a participatory pilot in the Netherlands. *Prehospital and Disaster Medicine*, 38(S1), s210–s210.
- Engel de Abreu, P. M. E., Neumann, S., Wealer, C., Abreu, N., Macedo, E. C., & Kirsch, C. (2021). Subjective well-being of adolescents in Luxembourg, Germany, and Brazil during the COVID-19 pandemic. *Journal of Adolescent Health*, 69(2), 211–218.
- Fend, H., & Sandmeier, A. (2004). 'Wohlbefinden in Der Schule', *Wellness oder Indiz Für Gelungene Pädagogik*. In *Schule Positiv Erleben. Ergebnisse Und Erkenntnisse Zum Wohlbefinden von Schülerinnen Und Schülern*, edited by Tina Hascher, 161–83. Haupt.
- Gaxiola Romero, J. C., Pineda Domínguez, A., Villa, G., & González Lugo, S. (2022). Positive family environment, general distress, subjective well-being, and academic engagement among high school students before and during the COVID-19 outbreak. *School Psychology International*, 43(2), 111–134.
- Grommé, E., Nonte, S., & Reintjes, C. (2023). *Prädiktoren Des Schulischen Wohlbefindens während Der COVID-19 Pandemie. Empirische Befunde Einer Befragung Von Kindern Und Jugendlichen in Zwei Deutschen Großstädten. Zeitschrift für Bildungsforschung*, pp.1–17.
- Hafstad, G. S., Sætren, S. S., Wentzel-Larsen, T., & Augusti, E. M. (2020). 'Longitudinal Change in Adolescent Mental Health During the COVID-19 Outbreak – A Prospective Population-Based Study of Teenagers in Norway'. SSRN Scholarly Paper ID 3727297. Social Science Research Network. <https://doi.org/10.2139/ssrn.3727297>
- Hascher, T., & Hagenauer, G. (2011). 'Adolescents' Well-Being in School – Time Courses and Antecedents'. In *Jahrbuch Jugendforschung*, edited by Angela Ittel, Hans Merckens, and Ludwig Stecher, (pp. 15–45). VS Verlag für Sozialwissenschaften. [https://doi.org/10.1007/978-3-531-93116-6\\_1](https://doi.org/10.1007/978-3-531-93116-6_1)
- Huebener, M., & Schmitz, L. (2020). 'Corona-Schulschließungen: Verlieren leistungsschwächere SchülerInnen den Anschluss?', DIW aktuell, no. 30. <http://hdl.handle.net/10419/216975>. Accessed 29 Feb 2024.
- Jackson, S. B., Stevenson, K. T., Larson, L. R., Peterson, M. N., & Seekamp, E. (2021). Outdoor activity participation improves adolescents' mental health and well-being during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 18(5), 2506.
- Kirsch, C., Engel de Abreu, P., Neumann, S., Wealer, C., Brazas, K. A., & Hauffels, I. (2020). *Subjective well-being and stay-at-home experiences of children aged 6–16 during the first wave of the COVID-19 pandemic in Luxembourg: A report of the project COVID-Kids*. University of Luxembourg.
- Kleinkorres, R., Stang, J., & McElvany, N. (2020). A longitudinal analysis of reciprocal relations between students' well-being and academic achievement. *Journal for Educational Research Online*, 12(2), 114–165.
- Knüttel, K., Stefes, T., Albrecht, M., Schwabe, K., Gaffron, V., & Petermann, S. (2021). *Wie geht's dir? Ungleiche Voraussetzungen für das subjektive Wohlbefinden Von Kindern in Familie, Schule Und Stadtteil*. Bertelsmann Stiftung. Arbeitspapiere wissenschaftliche Begleitforschung „Kein Kind zurücklassen!.

- Lehmann, S., Skogen, J. C., Haug, E., Mæland, S., Fadnes, L. T., Sandal, G. M., Hysing, M., & Bjørknes, R. (2021). Perceived consequences and worries among youth in Norway during the COVID-19 pandemic lockdown. *Scandinavian Journal of Public Health*, 49(7), 755–765.
- Lockl, K., Attig, M., Nusser, L., & Wolter, I. (2021). Lernen Im Lockdown: Welche Voraussetzungen Helfen Schülerinnen Und Schülern? Die Bedeutsamkeit Der Lesekompetenz, Des Interesses An Lerninhalten Und Der Anstrengungsbereitschaft Für Die Bewältigung Des Lernens Zuhause'. NEPS Corona Und Bildung. 5. LifBi.
- Möhring, K., Naumann, E., Reifenscheid, M., Wenz, A., Rettig, T., Krieger, U., Friedel, S., Finkel, M., Cornesse, C., & Blom, A. G. (2021). The COVID-19 pandemic and subjective well-being: Longitudinal evidence on satisfaction with work and family. *European Societies*, 23(sup1), S601–S617.
- Moore, K. A. (2020). Developing an indicator system to measure child well-being: Lessons learned over time. *Child Indicators Research*, 13(2), 729–739. <https://doi.org/10.1007/s12187-019-09644-4>
- Nussbaum, M. C. (2016). *Gerechtigkeit oder Das gute Leben. Deutsche Erstausgabe, 9. Auflage*. Suhrkamp.
- Petermann, S. (2022). Umwelt, Wohlbefinden und Entwicklung von Kindern und Jugendlichen (UWE) Befragung 2019. GESIS, Cologne. Data File Version 1.0.0. <https://doi.org/10.7802/2350>
- Petermann, S., Strohmeier, K. P., & Yaltzis, K. (2019). Kontexte des Wohlbefindens von Kindern und Jugendlichen. Integrierende Stadtentwicklung mit dem kommunalen kleinräumigen monitoring-instrument UWE. *Raumforschung Und Raumordnung Spatial Research and Planning*, 77(4), 383–400. <https://doi.org/10.2478/rara-2019-0034>
- Pigaiani, Y., Zoccante, L., Zocca, A., Arzenton, A., Menegolli, M., Fadel, S., Ruggeri, M., & Colizzi, M. (2020). Adolescent lifestyle behaviors, coping strategies and subjective wellbeing during the COVID-19 pandemic: an online student survey. *Healthcare*, 8(4), 472. MDPI.
- Pollock, G., Ozan, J., Goswami, H., Rees, G., & Stasulane, A. (2018). *Measuring Youth Well-Being: How a Pan-European Longitudinal Survey Can Improve Policy. Children's Well-Being: Indicators and Research*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-76063-6>
- Saito, M. (2003). Amartya Sen's capability approach to education: A critical exploration. *Journal of Philosophy of Education*, 37(1), 17–33.
- Schonert-Reichl, K. A., Guhn, M., Gadermann, A. M., Hymel, S., Sweiss, L., & Clyde Hertzman. (2013). Development and validation of the Middle Years Development Instrument (MDI): Assessing children's Well-Being and assets across multiple contexts. *Social Indicators Research*, 114(2), 345–369. <https://doi.org/10.1007/s11205-012-0149-y>
- Sen, A. (2010). *Die Idee der Gerechtigkeit*. Beck.
- Stefes, T. (2023). Umwelt, Wohlbefinden und Entwicklung von Kindern und Jugendlichen (UWE) Befragung 2021. GESIS, Cologne. Data File Version 1.0. <https://doi.org/10.7802/2613>
- Stefes, T., Lemke, A., Gaffron, V., Knüttel, K., Schuchardt, J., & Petermann, S. (2023). Konzeption und Durchführung der UWE-Befragung 2019. ZEFIR Materialien Band 22. Bochum: Zentrum für interdisziplinäre Regionalforschung (ZEFIR). ISBN: 978-3-946044-22-2 .
- Steinmayr, R., Paschke, P., & Wirthwein, L. (2022). Elementary School Students' Subjective Well-Being Before and During the COVID-19 Pandemic: A Longitudinal Study. *Journal of happiness studies*, 1–21.
- Sun, J., Singletary, B., Jiang, H., Justice, L. M., Lin, T. J., & Purtell, K. M. (2022). Child behavior problems during COVID-19: Associations with parent distress and child social-emotional skills. *Journal of Applied Developmental Psychology*, 78, 101375. <https://doi.org/10.1016/j.appdev.2021.101375>
- Treviño, E., Miranda, C., Hernández, M., & Villalobos, C. (2021). *Socioeconomic status, parental involvement, and implications for subjective well-being during the global pandemic of Covid-19* (Vol. 6). Frontiers Media SA. Frontiers in Education.
- Twum-Antwi, A., Jefferies, P., & Ungar, M. (2020). Promoting child and youth resilience by strengthening home and school environments: A literature review. *International Journal of School & Educational Psychology*, 8(2), 78–89. <https://doi.org/10.1080/21683603.2019.1660284>
- Vogel, M., Meigen, C., Sobek, C., Ober, P., Igel, U., Körner, A., Kiess, W., & Poulain, T. (2021). Well-being and COVID-19-related worries of German children and adolescents: A longitudinal study from pre-COVID to the end of lockdown in Spring 2020. *JCPP Advances*, 1(1), e12004.
- Von Soest, T., Bakken, A., Pedersen, W., & Sletten, M. A. (2020). *Life satisfaction among adolescents before and during the COVID-19 pandemic*. Tidsskrift for Den norske legeforening.
- Walker, M., & Unterhalter, E. (2007). *Amartya Sen's capability approach and social justice in education*. Springer.