Developmental Psychology

Equitable Shifts in Youth Resilience? Distinguishing Normative Changes and Pandemic Effects on Academic Self-Efficacy and Cognitive Reappraisal

Juuso Repo, Sanna Herkama, and Christina Salmivalli

Online First Publication, January 23, 2025. https://dx.doi.org/10.1037/dev0001913

AMERICAN PSYCHOLOGICAL ASSOCIATION

Developmental Psychology

ISSN: 0012-1649

https://doi.org/10.1037/dev0001913

Equitable Shifts in Youth Resilience? Distinguishing Normative Changes and Pandemic Effects on Academic Self-Efficacy and Cognitive Reappraisal

Juuso Repo, Sanna Herkama, and Christina Salmivalli
Research Flagship Center for Inequalities, Interventions and New Welfare State, University of Turku

This preregistered longitudinal study examined the long-term effects of the COVID-19 pandemic on academic self-efficacy and cognitive reappraisal in early adolescence. It followed and compared two cohorts over 4 years: one prepandemic (11–14 years, 2016–2019) and one during the pandemic (2019–2022). The study analyzed annual well-being surveys merged with school enrolment data from South Australian public schools (N = 28,307, 49% female). Employing latent growth modeling and a novel cohort comparison design, the study addressed a major limitation in pandemic studies: It separated pandemic effects from normative developmental changes. Results indicate that the pandemic cohort largely followed typical, yet declining, developmental trajectories, showing resilience at a population level. Unexpectedly, the examination of multiple covariates (i.e., gender, socioeconomic status, non-English background, anxiety, peer belonging, teacher support) showed that preexisting vulnerabilities did not predict adverse pandemic effects. This research underscores the value of longitudinal data infrastructures and the importance of understanding normative youth development and resilience research in discerning the effects of pandemics or other widespread crises.

Public Significance Statement
This study examined how the COVID-19 pandemic affected academic self-efficacy and cognitive reappraisal in South Australian adolescents. We compared a during-pandemic cohort (2019–2022) to a prepandemic cohort (2016–2019) and found that most young people showed resilience during the pandemic, maintaining typical developmental patterns. Our study underscores the importance of robust longitudinal data and highlights the need to distinguish pandemic's impact from normative youth development to inform future crisis response strategies.

Keywords: adolescent, resilience, COVID-19, academic self-efficacy, cognitive reappraisal

Supplemental materials: https://doi.org/10.1037/dev0001913.supp

Gustavo Carlo served as action editor.

Juuso Repo https://orcid.org/0000-0001-8756-6936

The study design, hypotheses, and analysis plan were preregistered on the Open Science Framework. Synthetic data replicating the structure of the original data set, all analysis R code, software used, study materials, and synthetic data are publicly available at https://doi.org/10.17605/OSF.IO/HKQ39.

This study's design and analysis plan were preregistered on the Open Science Framework. Deviations from the preregistration are reported in the Supplemental Table 12. This article uses the Workflow for Open Reproducible Code in Science (Van Lissa et al., 2021) to ensure reproducibility and transparency. The preregistration, all analytic code, and additional online material are available at https://doi.org/10.17605/OSF.IO/HKQ39. While the data use agreement prohibits the authors from making the full data publicly available, the authors have published synthetic data together with the analytic code. For access to original data, please contact the Research Unit of South Australian Department for Education. This research was conducted in full compliance with the ethical standards outlined in the American Psychological Association guidelines. The procedure followed the ethical standards of the University of Turku Ethics Committee for Human Sciences, the Finnish National Board of Research Integrity (National Advisory Board on Research Ethics, 2009), and the Finnish Personal Data Act (523/1999).

The authors have no conflicts of interest to disclose. The authors thank the South Australian Department for Education for their groundbreaking work with the Wellbeing and Engagement Data Collection and for granting approval and access to the data for this study. The authors also thank all the schools and students who participated in data collection. The study has been supported financially by the Research Flagship Center for Inequalities, Interventions and New Welfare State, University of Turku. This research was funded in whole, or in part, by the Academy of Finland (AKA; 345546). For the purpose of open access, the author has applied a CC BY public copyright license to any Author Accepted Manuscript version arising from this submission.

Juuso Repo played a lead role in conceptualization, formal analysis, methodology, visualization, and writing–original draft. Sanna Herkama played a supporting role in supervision and writing–review and editing. Christina Salmivalli played a lead role in supervision and a supporting role in conceptualization and writing–review and editing.

Correspondence concerning this article should be addressed to Juuso Repo, Research Flagship Center for Inequalities, Interventions and New Welfare State, University of Turku, 20014 Turku, Finland. Email: juuso.repo@utu.fi

Regarding the pandemic's impact on adolescents, both research and public concern have heavily focused on (a) adverse mental health effects and (b) growing inequalities, with harmful impacts accumulating among those with preexisting vulnerabilities (e.g., Kauhanen et al., 2023; Shergold et al., 2022). Meanwhile, the possible effects on adolescents' self-regulation development have been understudied, despite their centrality in psychological research, interventions, and educational policies (Domitrovich et al., 2017; Durlak et al., 2011; Restad & Mølstad, 2021; Smithers et al., 2018). The pandemic's impact on self-regulation is particularly interesting as it may have had both positive and negative effects: detrimental for some, yet opening new learning and development opportunities for others (Skinner et al., 2023).

This study focuses on two key aspects of self-regulation: academic self-efficacy (ASE) and cognitive reappraisal (CR)—a subdomain of emotion regulation. These concepts are among the most studied in adolescent development and are critical for academic achievement, psychological well-being, and youth resilience (Honicke & Broadbent, 2016; McRae & Gross, 2020; Talsma et al., 2018). During the pandemic, adolescents' self-regulation was significantly challenged due to the loss of in-person schooling and other disruptions to support systems and social interactions.

Moreover, given the rise in adolescents' internalizing symptoms during the pandemic, and the fact that these symptoms are associated with academic and emotional self-efficacy (Bandura, 1997; Skinner et al., 2023; Tak et al., 2017; Young et al., 2019), the pandemic may have adversely affected the development of these factors, disproportionately depending on individuals' psychological and social resources. As the increase in mental health symptoms may reflect a normative and nonpathological response to pandemic conditions, it is essential to assess the impact on adolescents' self-regulation to gain a more holistic understanding on pandemic's long-term effects.

Given the pandemic's disruption of both academic and emotional domains, this study employs a parallel analysis of these essential areas for adolescent development. It explores the long-term impact of the pandemic on ASE and CR in early adolescence and examines whether preexisting vulnerabilities related to mental health, peer relationships, and teacher relationships were exacerbated by the crisis.

A key limitation in prior pandemic research is the failure to separate normative developmental changes from pandemic-related effects. Our study overcomes this gap with a longitudinal cross-cohort design. We will begin by discussing ASE and CR within the context of the pandemic, followed by an examination of resilience research that highlights the complexity and individual variability in responses to stressful life events. Additionally, we highlight some key limitations in previous pandemic studies and outline our contribution through four research questions.

ASE and CR

ASE, a subdomain of the broader concept of self-efficacy, represents an individual's judgment about their ability to successfully attain educational goals (Bandura, 1997). Stressful academic situations, such as struggling with schoolwork, can reduce ASE levels. By contrast, supportive peer and teacher relationships are linked to higher ASE (Vestad et al., 2022). Navigating the new demands of remote learning, accompanied by shifts in students' relational worlds with teachers and peers, may have diminished student's perceived competence (Fong et al., 2022). Additionally, remote schooling may have highlighted disparities. For example, some families were able to provide enriching home-learning settings with strong parental support, while others, facing socioeconomic or emotional challenges, struggled with the transition, possibly exacerbating ASE disparities (Strasser et al., 2023).

Generally, ASE beliefs are shown to be relatively stable over time, also in the context of the pandemic (Repo et al., in press; Talsma et al., 2021).

CR, a subdomain of emotion regulation, is a cognitive process involving changing one's perspective on a situation to influence emotional response (Gross & Thompson, 2007). Emotion regulation is strongly associated with resilience, learning, and mental well-being (Aldao et al., 2010; LeMoult & Gotlib, 2019; Willner et al., 2022; Young et al., 2019). Surveys on CR usually assess self-perceived abilities, also interpreted as self-efficacy in emotional regulation (Alessandri et al., 2015). In adolescence, CR abilities generally improve with cognitive and brain development (Herd et al., 2020). However, a recent review by Willner et al. (2022) highlighted the need for further research, as several large-scale studies have shown declines in self-perceived CR during midadolescence (Gregory & Brinkman, 2020; Gullone et al., 2010; Vestad et al., 2022; Zimmermann & Iwanski, 2014), particularly in girls (Sanchis-Sanchis et al., 2020).

Importantly, the pandemic has amplified emotional challenges, especially for girls (Kauhanen et al., 2023; Madigan et al., 2023). Recent research emphasizes CR's interpersonal aspect, supporting the notion that pandemic-related social disruptions combined with emotional struggles could hinder CR development (Bandura, 1997; Hayes et al., 2022; Hofmann, 2014; Skinner et al., 2023). Notably, adolescents with initially lower emotion regulation have been found to catch up in development during the school years (Herd et al., 2020; see also Liu, 2019). However, the pandemic's impact on this compensation effect remains unexplored.

Ambiguities of Stress and Pandemic Effects

Current research on stress and resilience underlines significant individual variation in stress responses, with some individuals being more susceptible to its effects. Additionally, resilience—defined as positive adaptation amid adversity—is not solely based on individual characteristics but also on socioecological resources (Ungar et al., 2013). According to the stress sensitization hypothesis (Rutter, 2012), those already vulnerable before the pandemic may have been more affected by it, potentially intensifying preexisting disparities. Factors linked to higher stress sensitivity in both resilience and pandemic research include limited interpersonal support (Samji et al., 2022), preexisting mental health issues (Alamolhoda et al., 2022), and female gender (Madigan et al., 2023).

Conversely, many individuals, families, and communities may have responded to the pandemic by mobilizing new capabilities, connecting in new ways, and discovering untapped strengths to adaptand cope with stress (Beames et al., 2021). Drawing from the theory on stress-related growth, which pertains to the perception or experience of deriving benefits from encountering stressful circumstances (Vaughn et al., 2009), the pandemic may have presented new opportunities for psychological development. Contrary to stress sensitization, the steeling effect hypothesis suggests that exposure to moderate stress could have supported some adolescents' development, cultivating resources for future

resilience (Rutter, 2012). However, these potential positive effects may have disproportionately accumulated to those with better preexisting socioemotional resources, indicating an exacerbating Matthew effect.

Limitations in Previous Pandemic Research

Despite the surge in pandemic research, results have often been ambiguous, with many studies facing notable limitations: lack of longitudinal designs, absence of prepandemic data, emphasis on short-term effects, and dependence on self-perceived assessments of pandemic impact (Gorman, 2023). A less discussed but crucial deficit is the inability to distinguish potential pandemic effects from normative developmental changes. Very few studies have been structured to tackle this specific challenge (Repo et al., in press; Strohmeier & Branje, 2023; Wright et al., 2024).

Further, pandemic research has predominantly focused on negative mental health aspects, such as anxiety, or the repercussions of learning losses, neglecting the positive dimensions of well-being and the potential for stress-related growth. ASE and CR have been primarily studied as protective factors—moderating the pandemic effects—rather than as longitudinal outcomes (see, e.g., Bagheri Sheykhangafshe et al., 2022). Additionally, most pandemic research exploring the connection between interpersonal resources and psychological well-being has emphasized cross-sectional associations, even in longitudinal studies. It is clear that individuals with positive peer relationships or more teacher support consistently exhibit better well-being concurrently, including during the pandemic. However, studies examining whether prepandemic levels of these factors predicted any changes during the pandemic are still rare.

Taken together, longitudinal studies acknowledging the complex and varied nature of pandemic effects, addressing long-term consequences, and differentiating normative development from pandemic-related changes have been notably scarce or nonexistent. This study addresses these gaps by conducting a developmental comparison between age cohorts from prepandemic and during-pandemic periods.

The Present Study

The current preregistered study compares the development of ASE and CR in two same-aged early adolescent cohorts before and during the pandemic. To our knowledge, it represents the largest longitudinal study to date examining developmental trends in ASE and CR across early adolescence. The primary objective is to disentangle developmental changes from possible pandemic effects. Moreover, the study seeks to ascertain if the pandemic exacerbated interindividual differences in these domains and, if so, which preexisting socioemotional factors predicted the diverse pandemic-related responses.

To address these objectives, the study examines the following research questions:

1. What are the typical developmental patterns observed in ASE and CR among early adolescents?
2. To what extent did the pandemic affect the development of ASE and CR in adolescents?
3. Did the pandemic exacerbate between-person differences in the development of ASE and CR?
4. How much did demographic factors and initial levels of anxiety, peer belonging, and teacher support predict between-person differences in the development of the outcomes? Were there any variations in these associations between the cohorts?

The study is set in Australia, where initial success in controlling COVID-19 was followed by a surge in infections, exceeding double the Organisation for Economic Co-operation and Development average (Shergold et al., 2022). Throughout the pandemic, Australian COVID-19 policies were among the most stringent, ranking seventh on average in the Organisation for Economic Co-operation and Development (Hale et al., 2020). In South Australia, where this study's data were collected, statewide lockdowns began in March 2020 and ended in February 2022 (Storen & Corrigan, 2020). During these periodic lockdowns, schools were closed. Outside of the lockdowns, schools stayed open but implemented strict social distancing and hygiene measures (Edwards et al., 2022).

Method

Transparency and Openness

The study design, hypotheses, and analysis plan were preregistered on the Open Science Framework. Synthetic data replicating the structure of the original data set, all analysis R code, software used, study materials, and synthetic data are publicly available at https://doi.org/10.17605/OSF.IO/HKQ39. Access to the original data requires approval from the South Australian Department for Education. Any deviations from the preregistered plan are documented in the Supplemental Materials.

Data

This study used data from two sources: an annual student well-being survey and school enrollment data, both part of the South Australian Wellbeing and Engagement Collection administered by the South Australian Department for Education since 2013 (Gregory et al., 2022). Students completed the survey using an online data collection system during school class. Our sample includes students from governmental schools, where about 65% of South Australian students are enrolled (Australian Bureau of Statistics, 2022).

The sample consists of two age cohorts. The first cohort completed Grades 6–9 before the pandemic, in 2016–2019, and the second during the pandemic, in 2019–2022. The annual data collection took place at different times: in 2016 (October/November), 2017 (July/August), 2018 (July/August), 2019 (March/April), 2020 (February and July/August), 2021 (February), and 2022 (February). The school year in Australia runs from late January to mid-December.

The sample included 13,372 respondents in the prepandemic cohort (49.2% female; 50.8% male; mean age at T1 = 11.2, $SD = 0.5$) and 14,935 respondents in the during-pandemic cohort (49.0% female; 51.0% male; mean age at T1 = 11.2, $SD = 0.5$). The proportion of missing responses varied between 28.0% and 46.2% by wave and cohort, whereas the number of respondents ranged from 7,786 (T4, prepandemic) to 10,584 (T1, during pandemic). The

greatest difference between cohorts was in T2 (during-pandemic missing data: 46.2%, prepandemic: 31.9%). Overall, the missing data patterns were similar across cohorts (for detailed analysis, see Supplemental Tables 1–4).

Measures

Demographic factors included age, gender (female/male), parental education as the highest education level of guardians, non-English background (yes/no), and Aboriginal/Torres Strait Islander (yes/no). These factors were extracted from the school enrollment records and were parent reported. School-level factors included school socioeconomic status index (Index of Educational Disadvantage) and geographical remoteness index (Accessibility/Remoteness Index of Australia).

ASE and CR were measured at four waves using a 5-point scale varying from 0 (*strongly disagree*) to 4 (*strongly agree*). ASE, measured with three items (e.g., "I am certain I can learn the skills taught in school this year." "Even if the work in school is hard, I can learn it." "If I have enough time, I can do a good job on all my school work."), had a Cronbach's α ranging from .82 to .87 across time and cohort. The measure has been validated as part of the Middle Years Development Instrument (Schonert-Reichl et al., 2013). CR, also measured with three items ("When I'm worried about something, I make myself think about it in a different way that helps me feel better." "When I want to feel happier about something, I change the way I'm thinking about it." "When I want to feel less bad [e.g., sad, angry or worried], I change the way that I'm thinking about it."), had a Cronbach's α ranging from .84 to .91 across waves and cohorts. The measure was originally adopted from the Emotion Regulation Questionnaire for Children and Adolescents and thereafter shortened based on psychometric testing (Gregory & Brinkman, 2020; Gullone & Taffe, 2012).

Anxiety symptoms were measured at baseline using the "four-item Worries scale" (e.g., "I worry a lot about mistakes that I make" and "I worry a lot about things at school"; Gregory et al., 2019). Items were rated on a scale from 0 (*strongly disagree*) to 4 (*strongly agree*). Cronbach's α was .83 in both cohorts. Peer belonging was measured at baseline using a three-item scale (e.g., "I feel that I usually fit in with other kids around me."). Items were rated on a scale from 0 (*strongly disagree*) to 4 (*strongly agree*). Cronbach's α was 85 in both cohorts. Teacher support was measured at baseline using a five-item scale (e.g., "Most of the teachers are interested in my well-being." "If I need extra help, I will receive it from my teacher."). Items were rated on a scale from 0 (*strongly disagree*) to 3 (*strongly agree*). Cronbach's α for this scale was .86 in both cohorts. For a full list of items in all scales, see Supplemental Table 5.

Analytic Plan

The study analytic plan was preregistered, and all analytic R-code, together with synthetic data and preregistration, is available at https://doi.org/10.17605/OSF.IO/HKQ39. We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study. Survey responses were combined with school enrolment data to include demographic factors, utilizing the most recent available records. Further, survey responses from both cohorts were merged to create a continuous developmental trajectory spanning Grades 6 through 9 for both outcomes, using grade as time. Cohort (prepandemic/during pandemic) was used as a binary grouping variable. Full information maximum likelihood estimation was employed for managing missing data during growth modeling. Respondents with missing values on all outcomes in all waves were excluded (301 respondents for ASE and 144 for CR).

To ensure the comparability of the cohorts, an examination of all measures was conducted at baseline (Grade 6). This step was essential as the interpretation of the results relied on the assumption of baseline similarity between the cohorts. Moreover, intercorrelations among key variables at baseline were explored.

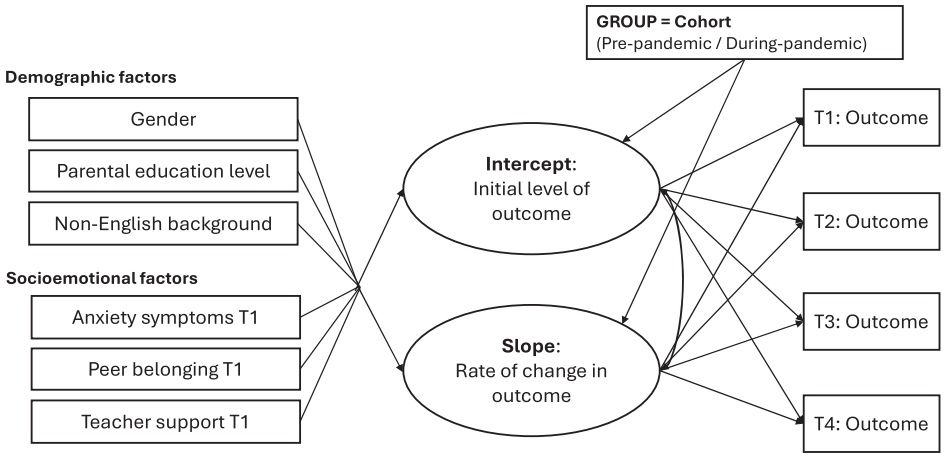
To ensure the reliability and validity of the outcomes, we formed latent measurement models and assessed their adequacy and measurement invariance across time and cohorts using a series of confirmatory factor analyses. Because we aimed to explore mean-level changes, we anticipated achieving at least scalar measurement invariance level (for details, see Supplemental Material).

Before modeling, we tabulated and plotted the mean trajectories for both cohorts. Subsequently, we specified a series of unconditional second-order latent growth curve models (LGCMs) for each outcome and cohort individually. These LGCMs allowed us to scrutinize the observed mean-level growth trajectories. We tested for no growth, linear growth, month-specific linear growth, and quadratic growth patterns. The month-specific growth pattern accounted for variations based on the specific month of annual data collection. To decide on the most appropriate shape for our growth models, we conducted model fit comparisons. We evaluated the models based on fit indices including and in priority order of (a) the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) where values closer to 0 indicate a better fit, (b) comparative fit index (CFI) where greater values indicate a better fit, and (c) the root-mean-square error of approximation (RMSEA) where lower values indicate better fit (Hu & Bentler, 1999). Across all growth models, the intercepts of latent constructs were constrained to zero.

To assess possible pandemic effects, we specified conditional multigroup LGCMs, separately for both outcomes, with cohort as a grouping variable and gender, parental education level, and non-English background as covariates (see Figure 1). To test cohort differences in slope means, slope variances, and intercept–slope covariances, we began with a constrained model where the growth estimates were set equal across groups. Thereafter, we progressed by releasing these equality constraints, permitting us to assess group differences in the growth estimates by comparing the model fit to the previous, more constrained model. Slope means indicate the average rate of change over time within each group. Slope variances reflect the variability in individual rates of change. Intercept–slope covariances reflect the relationship between the initial value (intercept) and the rate of change (slope). To evaluate differences between nested models, we relied on ΔAIC values greater than 10 as evidence of a difference and avoided using the likelihood ratio test and standardized root-mean-square residual due to their sensitivity to sample size (Burnham & Anderson, 2004).

To estimate a potential pandemic effect on a 4-year change in the outcomes, we compared the average slope estimates between the cohorts. Furthermore, we explored whether the pandemic widened the interindividual differences in development by comparing slope variances and intercept–slope covariances across cohorts. For illustrative purposes, we categorized the samples into three groups based on initial outcome levels: $-0.5SE$ below the mean, at the mean, and $+0.5$ SE above the mean.

Figure 1
The Conceptual Model for Latent Growth Curve Models



Note. T = time.

Further analyzing the specified LGCMs, we examined the associations between demographic covariates and outcome slope means. We tested cohort differences in these associations by applying equality constraints. Finally, we added anxiety, peer belonging, and teacher support into the models. We examined how these socioemotional factors were associated with outcome development and whether these associations differed between the cohorts.

Models were estimated using a robust maximum likelihood estimator and adjusting standard errors for the nonindependence of observations due to a hierarchical data structure (students nested in schools). In all models, continuous predictors were centered at the sample mean.

Results

Descriptive Results

The means and standard deviations for the demographic variables and baseline values, along with cohort comparisons, are shown in Table 1. According to *t* tests, the cohort differences in demographic factors were nonexisting except in parental education level, where the prepandemic cohort had somewhat lower average compared with the during-pandemic cohort, M (SD) = 1.30 (0.88) and 1.34 (0.85), $t = -3.22$, $d = -.04$. The prepandemic cohort scored higher in teacher support, M (SD) = 0.89 (0.60) and 0.81 (0.55), $t = 10.20$, $d = .15$, yet lower in peer belonging, M (SD) = 1.08 (1.02) and 1.15 (0.93), $t = -4.80$, $d = -0.07$, compared with the during-pandemic cohort. Regarding the outcomes, no baseline cohort differences were identified. Supplemental Table 6 provides correlations among key variables. The highest correlations were found between ASE and teacher support ($r = .61$) and between ASE and CR (r = .47).

What Are the Typical Developmental Patterns Observed in ASE and CR?

There was strong measurement invariance across time and cohorts for ASE and CR (see Supplemental Table 7). Examination of the mean-level changes in the prepandemic cohort suggested declining trends in both outcomes (see Table 2). From Grades 6 to 9,

Table 1
Descriptive Statistics for Demographics and Baseline Measurements by Cohort

Variable	Range	NA%	Prepandemic		During pandemic			
			M	*SD*	*M*	*SD*	*t*	*d*
Gender (1 = female)	0–1	0.00	0.49	0.50	0.49	0.50	0.42	0.01
Age T1	10–17	89.29	11.23	0.46	11.23	0.44	0.04	0.00
Aboriginal (1 = yes)	0–1	0.00	0.05	0.23	0.06	0.24	−1.49	−0.02
Non-English background (1 = yes)	0–1	0.00	0.24	0.43	0.25	0.43	−1.10	−0.01
Parental education level	0–3	10.92	1.30	0.88	1.34	0.85	−3.22	−0.04
School socioeconomic index (IOED)	1–7	0.00	4.47	1.74	4.51	1.74	−2.17	−0.03
School area (ARIA)	0–4	0.00	0.52	0.89	0.49	0.86	3.27	0.04
Academic self-efficacy T1	0–4	31.05	3.06	0.90	3.07	0.80	−0.39	−0.01
Cognitive reappraisal T1	0–4	30.48	2.49	0.92	2.50	0.90	−0.43	−0.01
Anxiety T1	0–4	29.95	1.93	1.13	1.91	1.04	1.13	0.02
Peer belonging T1	0–4	30.49	2.92	1.02	2.85	0.93	4.80	0.07
Teacher support T1	0–3	31.08	2.11	0.60	2.19	0.55	−10.20	−0.15

Note. Prepandemic N = 13,372, during pandemic N = 14,935. T1 = first wave. NA% = Proportion of missing values; IOED = Index of Educational Disadvantage; ARIA = Accessibility/Remoteness Index of Australia.

Table 2
Descriptives of Outcomes by Time and Cohort

	Prepandemic				During pandemic					
Variable	*N*	NA%	*M*	*SD*	*N*	NA%	*M*	*SD*	*t*	*d*
Academic self-efficacy										
T1—Grade 6	9,475	29.14	3.06	0.90	10,044	32.75	3.07	0.80	−0.39	−0.01
T2—Grade 7	8,961	32.99	3.07	0.89	7,639	48.85	2.92	0.82	11.06	0.17
T3—Grade 8	8,835	33.93	2.78	0.84	9,885	33.81	2.80	0.81	−1.72	−0.03
T4—Grade 9	7,526	43.72	2.73	0.84	8,159	45.37	2.64	0.87	6.53	0.10
Cognitive reappraisal										
T1—Grade 6	9,522	28.79	2.49	0.92	10,156	32.00	2.50	0.90	−0.43	−0.01
T2—Grade 7	9,037	32.42	2.35	0.93	7,769	47.98	2.25	0.95	6.79	0.11
T3—Grade 8	8,958	33.01	2.27	0.91	10,019	32.92	2.16	0.93	7.67	0.11
T4—Grade 9	7,606	43.12	2.24	0.93	8,316	44.32	2.14	0.95	6.87	0.11

Note. Response scales 0–4. Results based on mean scales. NA = missing values; T = time.

mean scores in ASE decreased from 3.06 ($SD = 0.90$) to 2.73 ($SD = 0.84$) and in CR from 2.49 ($SD = 0.92$) to 2.24 ($SD = 0.93$).

Did the Pandemic Affect the Development of ASE and CR?

As shown in Table 2, mean scores for the during-pandemic cohort indicated similar declines in both outcomes. By the last measurement, the during-pandemic cohort showed slightly lower mean levels and higher standard deviations in both ASE and CR compared with the prepandemic cohort. However, the mean difference between cohorts in either outcome did not increase after the second measurement (Grade 7). Mean scores are plotted in Supplemental Figure 2.

Next, we fitted unconditional second-order LGCMs, separately for both outcomes and cohorts. After testing different shapes for mean-level growth and comparing model fits, we chose the month-specific linear growth as the best fitting pattern. These models demonstrated a good fit to data across both outcomes and cohorts with all models showing CFI > .98 and RMSEA < .03 (see Supplemental Table 8).

The results from best fit unconditional multigroup LGCMs indicated negative estimated slope means across all conditions, indicating a decrease in both outcomes for both cohorts (see Table 3). Results from the conditional multigroup LGCMs, also shown in Table 3, similarly indicated negative slope means across all conditions. With ASE, there was no clear cohort difference in the average slopes (ß = −0.11, $SE = 0.008$, ß = −0.11, $SE = 0.006$ respectively, difference in standardized ß = 0.16). Model fit comparisons with invariance constraints showed no evidence for cohort difference (ΔAIC = −7 ΔBIC = 2; see Supplemental Table 9). For CR, the during-pandemic cohort showed a slightly steeper decline compared with the prepandemic cohort (ß = −0.06, $SE = 0.010$, ß = −0.09, $SE = 0.006$, difference in standardized ß = 0.30), and model fit analyses indicated difference between cohorts (ΔAIC = −14, ΔBIC = −5).

Did the Pandemic Exacerbate Between-Person Differences in the Development of ASE and CR?

For ASE, model fit analysis indicated a cohort difference in slope variance (ΔAIC = −12, ΔBIC = −4), and as shown in Table 3, the variance was smaller in the during-pandemic cohort (ß = 0.02, $SE = 0.002$) compared with the prepandemic cohort (ß = 0.04, $SE = 0.003$). As illustrated in Figure 2, the slope distribution in the during-pandemic cohort is more centered around the mean, indicating smaller between-person differences in the rate of change. For CR, the model fit analyses indicated no cohort differences in slope variance, yet the estimates and graphical examination indicated a similar pattern as with ASE (see Figure 2).

For intercept–slope covariance, the results indicated a similar pattern for both outcomes. Model fit analyses indicated clear cohort differences for ASE (ΔAIC = −79, ΔBIC = −71) and CR (ΔAIC = −38, ΔBIC = −30). The covariances were smaller in the during-pandemic cohort (ASE: ß = −0.02, $SE = 0.005$, CR: ß = −0.03, $SE = 0.006$) compared with the prepandemic cohort (ASE: ß = −0.09, $SE = 0.008$, CR: ß = −0.09, $SE = 0.009$).

This difference is illustrated in Figure 3. In the prepandemic cohort, those starting low (in red) showed no decline in time, catching others in growth. In the during-pandemic cohort, this compensation effect was not present, as also the ones starting low showed a declining trend. In the during-pandemic cohort, the initially high-scoring individuals (in green) showed more favorable development than their prepandemic counterparts, but only after a steep decline during the first wave of the pandemic (Grade 7, year 2020). In sum, this led to greater interindividual differences at the final wave (Grade 9) in the during-pandemic cohort.

What Factors Predicted the Development in ASE and CR and Did the Pandemic Make a Difference in These?

After finding substantial interindividual variation in the slopes for both outcomes, we proceeded to identify predictors for the slopes. The regression estimates for the covariates are shown in Table 3. A negative estimate implies that higher values of the predictor are associated with steeper declines in the outcome over time. Overall, gender had a negative association, whereas non-English background and parental education had zero to positive associations with the slopes, in both outcomes and in both cohorts. These indicate that students with male gender, non-English background, and more highly educated parents had somewhat less decrease in ASE and CR from Grades 6 to 9 compared with their counterparts. For these associations, the model fit comparison analysis revealed no cohort differences (see Supplemental Table 10).

Table 3
Cohort Comparison on Latent Growth and Slope Covariant Estimates

Parameter	Prepandemic			During pandemic			
	B (CIs)	*SE*	Std. *B*	*B* (CIs)	*SE*	Std. *B*	Std. B.Diff
Academic self-efficacy, unconditional model (CFI = 0.981, AIC = 485,049, BIC = 485,428, RMSEA = 0.032)							
Intercept	3.13 [3.09, 3.16]	0.019		3.01 [2.98, 3.04]	0.014		0.19[a]
Variance (intercept)	0.53 [0.48, 0.57]	0.024		0.29 [0.26, 0.32]	0.014		0.37[b]
Slope	−0.13 [−0.15, −0.12]	0.006	−0.63	−0.13 [−0.13, −0.12]	0.005	−0.79	0.16[b]
Variance (slope)	0.05 [0.04, 0.05]	0.003	1.00	0.03 [0.02, 0.03]	0.002	1.00	0
Covariance (intercept, slope)	−0.09 [−0.11, −0.08]	0.008	−0.61	−0.02 [−0.03, −0.01]	0.005	−0.27	−0.34
Academic self-efficacy, Model 1 (CFI = 0.977, AIC = 476,348, BIC = 476,826, RMSEA = 0.030)							
Slope	−0.11 [−0.13, −0.09]	0.008	−0.51	−0.11 [−0.12, −0.09]	0.006	−0.67	0.16
Variance (slope)	0.04 [0.04, 0.05]	0.003	0.98	0.02 [0.02, 0.03]	0.002	0.95	0.03
Covariance (intercept, slope)	−0.09 [−0.11, −0.08]	0.008	−0.61	−0.02 [−0.03, −0.01]	0.005	−0.28	−0.33
Sex ∼S	−0.06 [−0.07, −0.04]	0.007	−0.14	−0.06 [−0.07, −0.04]	0.007	−0.17	0.03
Non-English background ∼S	0.01 [−0.00, 0.03]	0.009	0.03	0.03 [0.01, 0.04]	0.008	0.08	−0.05
Parental education level ∼S	0.01 [−0.00, 0.02]	0.005	0.03	0.02 [0.01, 0.02]	0.004	0.09	−0.06
Academic self-efficacy, Model 2 (CFI = 0.992, AIC = 485,579, BIC = 486,058, RMSEA = 0.019)							
Anxiety ∼S	−0.05 [−0.06, −0.04]	0.005	−0.22	−0.04 [−0.05, −0.03]	0.005	−0.21	−0.01
Peer belonging ∼S	−0.05 [−0.06, −0.04]	0.005	−0.22	−0.04 [−0.05, −0.03]	0.005	−0.21	−0.01
Teacher support ∼S	−0.15 [−0.17, −0.13]	0.01	−0.38	−0.15 [−0.16, −0.13]	0.009	−0.42	0.04
Cognitive reappraisal, unconditional model (CFI = 0.993, AIC = 494,430, BIC = 494,810, RMSEA = 0.021)							
Intercept	2.48 [2.45, 2.51]	0.013		2.41 [2.38, 2.43]	0.013		0.11[a]
Variance (intercept)	0.51 [0.46, 0.57]	0.027		0.39 [0.36, 0.43]	0.017		0.18[b]
Slope	−0.09 [−0.11, −0.08]	0.007	−0.40	−0.11 [−0.12, −0.11]	0.004	−0.69	0.29[b]
Variance (slope)	0.05 [0.05, 0.06]	0.004	1.00	0.03 [0.02, 0.03]	0.003	1.00	0
Covariance (intercept, slope)	−0.10 [−0.11, −0.08]	0.009	−0.57	−0.03 [−0.04, −0.02]	0.006	−0.29	−0.28
Cognitive reappraisal, Model 1 (CFI = 0.971, AIC = 406,681, BIC = 407,258, RMSEA = 0.031)							
Slope	−0.06 [−0.08, −0.04]	0.01	−0.27	−0.09 [−0.11, −0.08]	0.006	−0.57	0.3
Variance (slope)	0.05 [0.04, 0.06]	0.004	0.93	0.02 [0.02, 0.03]	0.003	0.92	0.01
Covariance (intercept, slope)	−0.09 [−0.11, −0.07]	0.009	−0.58	−0.03 [−0.04, −0.02]	0.006	−0.32	−0.26
Sex ∼S	−0.12 [−0.13, −0.10]	0.009	−0.25	−0.08 [−0.10, −0.07]	0.007	−0.25	0
Non-English background ∼S	0.05 [0.03, 0.07]	0.012	0.09	0.04 [0.03, 0.06]	0.008	0.12	−0.03
Parental education level ∼S	0.01 [0.00, 0.02]	0.005	0.04	0.01 [−0.00, 0.01]	0.004	0.03	0.01
Cognitive reappraisal, Model 2 (CFI = 0.991, AIC = 419,213, BIC = 419,790, RMSEA = 0.018)							
Anxiety ∼S	0.01 [−0.00, 0.02]	0.005	0.03	0.01 [0.01, 0.02]	0.004	0.08	−0.05
Peer belonging ∼S	−0.04 [−0.05, −0.03]	0.005	−0.17	−0.03 [−0.04, −0.02]	0.005	−0.16	−0.01
Teacher support ∼S	−0.07 [−0.09, −0.06]	0.009	−0.19	−0.11 [−0.13, −0.09]	0.01	−0.32	0.13

Note. Std. B.Diff. = cohort difference in standardized coefficients; *B* = unstandardized coefficients; *SE* = standard error; CIs = confidence intervals; CFI = comparative fit index; AIC = Akaike information criterion; BIC = Bayesian information criterion; RMSEA = root-mean-square error of approximation.
[a] Cohen's *d*. [b] Standardized difference.

Regarding the socioemotional predictors, for anxiety symptoms and peer belonging, model fit comparison indicated no cohort differences (see Supplemental Table 11). For teacher support, the analysis indicated a cohort difference in CR (ΔAIC = −11, ΔBIC = −10), but not in ASE (ΔAIC = 3, ΔBIC = 4). The association was negative and stronger in the during-pandemic cohort (ß = 0.11, *SE* = 0.010) compared with the prepandemic cohort (ß = 0.07, *SE* = 0.009). This indicates that those with higher initial levels of teacher support had more negative development in CR and especially in the during-pandemic cohort. This interaction is illustrated in the Supplemental Figure 1.

Discussion

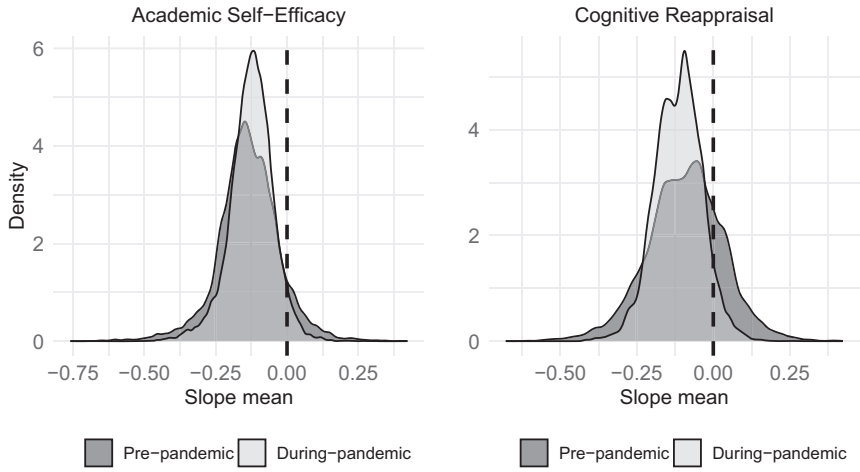
The present longitudinal multicohort study aimed to investigate the long-term effects of the COVID-19 pandemic on ASE and CR beliefs among early adolescents in South Australia. It tracked two cohorts over 4 years: one that experienced their early adolescence (11–14 years) before the pandemic (2016–2019) and another during the pandemic (2019–2022). The study examined the normative development of ASE and CR, their alteration during the pandemic, the impact of demographic and socioemotional factors, as well as the pandemic's possible role in magnifying individual differences.

Did the Pandemic Affect ASE and CR Development?

The prepandemic cohort showed a stable yet gradually declining trend in both ASE and CR. Given the prior mixed findings on normative developmental trends, this finding is notable and aligns with several studies among the same age group (Gregory & Brinkman, 2020; Gullone et al., 2010; Vestad et al., 2022; Zimmermann & Iwanski, 2014). The during-pandemic cohort also showed developmental declines in both domains. However, the cohort comparison indicated that these decreases largely echoed normative developmental changes: The 4-year ASE trajectory was similar to that of the prepandemic cohort, with a slightly deeper decline in CR. This suggests that pandemic's long-term impact was marginally small yet negative on CR and almost negligible on ASE. This aligns with one previous study, which found that even the ones who perceived a negative effect had no observable changes in ASE (Talsma et al., 2021).

Figure 2

Distributions of Predicted Slope Values by Cohort



Note. Estimated slope mean represents overall change in 4 years. The scale for both outcomes was 0–4.

To analyze whether the pandemic exacerbated between-person differences, we categorized students based on their initial outcome levels. The results indicated that in the prepandemic cohort, CR and ASE scores converged over time; students with initially low scores displayed positive growth, in contrast to their peers who experienced a negative decline, aligning with an earlier prepandemic study (Herd et al., 2020). However, the during-pandemic cohort did not exhibit this compensation effect, with those having low initial scores also declining over time. Additionally, high-starting students showed a less steep decline compared with their prepandemic counterparts. These findings were consistent with the observation of more uniform slope variance within the during-pandemic cohort.

In essence, individuals with low initial scores seemed somewhat negatively impacted by the pandemic, whereas those with higher initial scores showed negligible or modest positive effects in both outcomes. This pattern suggests a modest "buffering effect" against adverse long-term pandemic effects in both outcomes. Consequently, the during-pandemic cohort exhibited greater between-person differences by the final measurement, highlighting a pronounced, albeit modest, exacerbating pandemic effect on both ASE and CR.

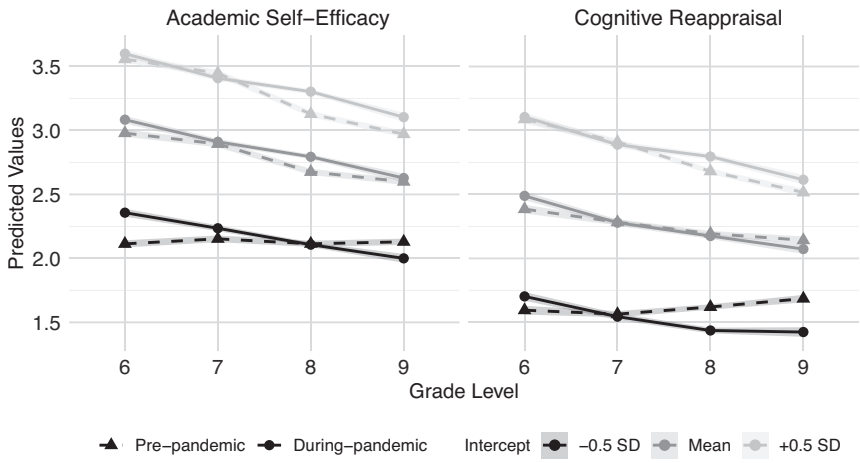
What Factors Influenced Development, and Did the Pandemic Alter These Effects?

When examining only the during-pandemic cohort, our results initially mirrored existing pandemic studies, showing that female gender correlated with less favorable development (Madigan et al., 2023). However, when considering the normative development based on the prepandemic cohort, we find no evidence for a disproportionate pandemic effect. The same applied for parental education.

Unsurprisingly, our results indicate that students with preexisting anxiety symptoms had lower levels of CR. Intriguingly, baseline anxiety did not lead to greater decline in CR during adolescence, after

Figure 3

Comparative Analysis of Outcome Trajectories Based on Initial Levels Across Cohorts



adjusting for factors like peer belonging and teacher support. Nor was it linked to any pandemic effect. This aligns with previous studies where preexisting anxiety has shown both positive and negative associations with adverse pandemic effects (Bouter et al., 2023; Haikalis et al., 2022; Morales et al., 2022; Skinner et al., 2023).

Correspondingly, students with lower peer belonging scores exhibited reduced ASE and CR compared with their peers, yet this factor was unrelated to pandemic-related changes. Interestingly, these students tended to catch up in ASE and CR growth, similarly in both cohorts. While prior research has focused on the immediate negative associations of loneliness, a few have noticed that adolescents with preexisting loneliness have not been more but often less affected by the pandemic (Hamza et al., 2021; Mlawer et al., 2022; Repo et al., 2023).

Finally, students with low initial teacher support typically displayed lower ASE and ER, yet less pandemic impact. Compared with their peers, they showed catch-up in growth, particularly in ER, and somewhat more during the pandemic. It is possible that students with stronger teacher relationships perceived a greater loss when schools closed, while those used to less support experienced less disruption. Intriguingly, those with weaker initial teacher support appeared more resilient in facing pandemic conditions.

In summary, while various vulnerabilities were associated with lower ASE and ER, only gender showed an association over time, independent of the pandemic impact. Notably, none of the vulnerabilities predicted a negative pandemic effect. The findings suggest that students' adaptability and resource maintenance, despite initial vulnerabilities, were key in mitigating the adverse effects on ASE and ER, indicating resilience beyond the expected negative outcomes of these vulnerabilities.

Limitations

In interpreting the results of this study, several limitations must be considered. First, the constructs measured with a limited number of items, despite achieving good internal consistency, represent only specific aspects of the outcomes. Second, using only adolescents' self-reports may have led to overestimated effects due to shared method variance, yet this would not significantly affect the main conclusions. Third, variation in data collection timing during the pandemic's initial year, with some data gathered before and some during the first pandemic wave, introduces uncertainty for that period's results. Had all 2020 data been collected after the pandemic began, the results might show a steeper decline that year. However, this does not significantly affect the overall findings, as the study focused on the 4-year longitudinal change. The fourth limitation is potential selection bias, given the attrition rates across waves. Those who did not participate might have faced greater challenges, as our missing data analysis suggested. However, missing data patterns did not differ between cohorts. Nonetheless, caution is advised in generalizing our findings. Finally, the study was limited to South Australia, with its distinct pandemic experiences, policies, and cultural factors. Therefore, the extent of pandemic effects might vary in other cultural contexts. Nonetheless, our main findings could offer valuable perspectives for future research in diverse cultural settings.

Conclusion

As its main conclusion, this study highlights the widespread methodological shortcomings in pandemic research (see also Repo, 2024). Many effects often attributed to the pandemic may actually be part of normative developmental patterns. Furthermore, self-perceived pandemic effects may be unrelated to actual long-term effects. The longitudinal cohort comparison was crucial to discern the actual extent of average pandemic effects, to pinpoint both exacerbation and buffering effects, and to discover that none of the preexisting vulnerabilities examined predicted adverse pandemic effects. This underscores the need for caution in interpreting all pandemic studies that fail to account for developmental changes. Such caution is also vital when researching future crises and other widespread phenomena. Overall, our research emphasizes the critical importance of understanding normative youth development and the need for robust longitudinal data infrastructures, as exemplified by the Wellbeing and Engagement Collection in South Australia.

Furthermore, the study predominantly illustrates the inherent resilience in youth. Despite facing numerous pandemic-related disruptions and negative emotional impacts during a critical developmental phase, early adolescents largely maintained similar trajectories in ASE and CR as their prepandemic counterparts. The results indicate stability in self-efficacy beliefs despite significant contextual and emotional shifts.

In addition, the study emphasizes the diversity of individual experiences. It indicated that the pandemic led to a moderate exacerbation of between-person differences, particularly affecting those with initially low in ASE and CR. However, the findings advise against a simplistic view that individuals with prepandemic vulnerabilities faced the worst effects. Resilience research shows that past adversities can sometimes buffer future stress impacts—yet opportunities for stress-induced resilience are not equally available for all (Rutter, 2012). This highlights the need for a more nuanced approach to the sociopsychological aspects of resilience development.

Finally, while this study focused on the development of ASE and CR among South Australian adolescents, its implications reach beyond these specific domains. In a broader sense, the findings emphasize the crucial need for robust data and designs to account for normative developmental changes when interpreting any temporal changes observed among developing adolescents.

References

Alamolhoda, S. H., Zare, E., HakimZadeh, A., Zalpour, A., Vakili, F., Chermahini, R. M., Ebadifard, R., Masoumi, M., Khaleghi, N., & Nasiri, M. (2022). Adolescent mental health during covid-19 pandemics: A systematic review. *International Journal of Adolescent Medicine and Health*, *35*(1), 41–60. https://doi.org/10.1515/ijamh-2022-0058

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*(2), 217–237. https://doi.org/10.1016/j.cpr.2009.11.004

Alessandri, G., Vecchione, M., & Caprara, G. V. (2015). Assessment of regulatory emotional self-efficacy beliefs: A review of the status of the art and some suggestions to move the field forward. *Journal of Psychoeducational Assessment*, *33*(1), 24–32. https://doi.org/10.1177/0734282914550382

Australian Bureau of Statistics. (2022). *Australian schools, 2021*. https://www.abs.gov.au/statistics/people/education/schools/2021

Bagheri Sheykhangafshe, F., Hajialiani, V., & Hasani, J. (2022). The role of emotion regulation strategies in mental health during the COVID-19 pandemic: A systematic review. *Journal of Modern Medical Information Sciences*, *8*(2), 196–207. https://doi.org/10.32598/JRH.11.6.1922.1

Bandura, A. (1997). *Self-efficacy: The exercise of control*. WH Freeman/Times Books/Henry Holt.

Beames, J. R., Li, S. H., Newby, J. M., Maston, K., Christensen, H., & Werner-Seidler, A. (2021). The upside: Coping and psychological resilience in Australian adolescents during the COVID-19 pandemic. *Child and Adolescent Psychiatry and Mental Health*, *15*(1), Article 77. https://doi.org/10.1186/s13034-021-00432-z

Bouter, D. C., Zarchev, M., de Neve-Enthoven, N. G. M., Ravensbergen, S. J., Kamperman, A. M., Hoogendijk, W. J. G., & Grootendorst-van Mil, N. H. (2023). A longitudinal study of mental health in at-risk adolescents before and during the COVID-19 pandemic. *European Child & Adolescent Psychiatry*, *32*, 1109–1117. https://doi.org/10.1007/s00787-021-01935-y

Burnham, K. P., & Anderson, D. R. (Eds.). (2004). *Model selection and multimodel inference*. Springer. https://doi.org/10.1007/b97636

Domitrovich, C. E., Durlak, J. A., Staley, K. C., & Weissberg, R. P. (2017). Social–emotional competence: An essential factor for promoting positive adjustment and reducing risk in school children. *Child Development*, *88*(2), 408–416. https://doi.org/10.1111/cdev.12739

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, *82*(1), 405–432. https://doi.org/10.1111/j.1467-8624.2010.01564.x

Edwards, B., Barnes, R., Rehill, P., Ellen, L., Zhong, F., Killigrew, A., Gonzalez, R., Sheard, E., Zhu, R., & Philips, T. (2022). *Variation in policy response to COVID-19 across Australian states and territories*. Blavatnik School of Government, University of Oxford.

Fong, C. J., Berger, C., & Bailey, T. (2022). Academic motivation in a pandemic context: A conceptual review of prominent theories and an integrative model. *Educational Psychologist*, *57*(3), 153–170. https://doi.org/10.1080/00461520.2022.2062100

Gorman, D. M. (2023). COVID-19 publications in top-ranked public health journals during the first phase of the pandemic. *Quantitative Science Studies*, *4*(2), 535–546. https://doi.org/10.1162/qss_a_00257

Gregory, T., & Brinkman, S. (2020). *Wellbeing and Engagement Collection (WEC): History of the WEC in the South Australian school system and psychometric properties of the WEC survey instrument*. Fraser Mustard Centre. https://www.education.sa.gov.au/docs/system-performance/fraser-mustard-centre/sa-wec-technical-report.pdf

Gregory, T., Engelhardt, D., Lewkowicz, A., Luddy, S., Guhn, M., Gadermann, A., Schonert-Reichl, K., & Brinkman, S. (2019). Validity of the middle years development instrument for population monitoring of student wellbeing in australian school children. *Child Indicators Research*, *12*(3), 873–899. https://doi.org/10.1007/s12187-018-9562-3

Gregory, T., Lewkowicz, A., Engelhardt, D., Stringer, A., Luddy, S., & Brinkman, S. A. (2022). Data resource profile: The South Australian wellbeing and engagement collection (WEC). *International Journal of Epidemiology*, *51*(1), 16–16g. https://doi.org/10.1093/ije/dyab103

Gross, J. J., & Thompson, R. A. (2007). *Emotion regulation: Conceptual foundations*. Guilford Press.

Gullone, E., Hughes, E. K., King, N. J., & Tonge, B. (2010). The normative development of emotion regulation strategy use in children and adolescents: A 2-year follow-up study. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *51*(5), 567–574. https://doi.org/10.1111/j.1469-7610.2009.02183.x

Gullone, E., & Taffe, J. (2012). The Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA): A psychometric evaluation. *Psychological Assessment*, *24*(2), 409–417. https://doi.org/10.1037/a0025777

Haikalis, M., Doucette, H., Meisel, M. K., Birch, K., & Barnett, N. P. (2022). Changes in college student anxiety and depression from pre- to during-COVID-19: Perceived stress, academic challenges, loneliness, and positive perceptions. *Emerging Adulthood*, *10*(2), 534–545. https://doi.org/10.1177/21676968211058516

Hale, T., Webster, S., Petherick, A., Phillips, T., & Kira, B. (2020). *Oxford COVID-19 government response tracker (OxCGRT)*. Blavatnik School of Government, University of Oxford. https://www.bsg.ox.ac.uk/research/covid-19-government-response-tracker

Hamza, C. A., Ewing, L., Heath, N. L., & Goldstein, A. L. (2021). When social isolation is nothing new: A longitudinal study on psychological distress during COVID-19 among university students with and without preexisting mental health concerns. *Canadian Psychology/Psychologie Canadienne*, *62*(1), 20–30. https://doi.org/10.1037/cap0000255

Hayes, S., Carlyle, M., Haslam, S. A., Haslam, C., & Dingle, G. (2022). Exploring links between social identity, emotion regulation, and loneliness in those with and without a history of mental illness. *British Journal of Clinical Psychology*, *61*(3), 701–734. https://doi.org/10.1111/bjc.12358

Herd, T., King-Casas, B., & Kim-Spoon, J. (2020). Developmental changes in emotion regulation during adolescence: Associations with socioeconomic risk and family emotional context. *Journal of Youth and Adolescence*, *49*(7), 1545–1557. https://doi.org/10.1007/s10964-020-01193-2

Hofmann, S. G. (2014). Interpersonal emotion regulation model of mood and anxiety disorders. *Cognitive Therapy and Research*, *38*(5), 483–492. https://doi.org/10.1007/s10608-014-9620-1

Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, *17*, 63–84. https://doi.org/10.1016/j.edurev.2015.11.002

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–155. https://doi.org/10.1080/10705519909540118

Kauhanen, L., Wan Mohd Yunus, W. M. A., Lempinen, L., Peltonen, K., Gyllenberg, D., Mishina, K., Gilbert, S., Bastola, K., Brown, J. S. L., & Sourander, A. (2023). A systematic review of the mental health changes of children and young people before and during the COVID-19 pandemic. *European Child & Adolescent Psychiatry*, *32*, 995–1013. https://doi.org/10.1007/s00787-022-02060-0

LeMoult, J., & Gotlib, I. H. (2019). Depression: A cognitive perspective. *Clinical Psychology Review*, *69*, 51–66. https://doi.org/10.1016/j.cpr.2018.06.008

Liu, A. (2019). Can non-cognitive skills compensate for background disadvantage?—The moderation of non-cognitive skills on family socioeconomic status and achievement during early childhood and early adolescence. *Social Science Research*, *83*, Article 102306. https://doi.org/10.1016/j.ssresearch.2019.04.019

Madigan, S., Racine, N., Vaillancourt, T., Korczak, D. J., Hewitt, J. M. A., Pador, P., Park, J. L., McArthur, B. A., Holy, C., & Neville, R. D. (2023). Changes in depression and anxiety among children and adolescents from before to during the COVID-19 pandemic: A systematic review and meta-analysis. *JAMA Pediatrics*, *177*(6), 567–581. https://doi.org/10.1001/jamapediatrics.2023.0846

McRae, K., & Gross, J. J. (2020). Emotion regulation. *Emotion*, *20*(1), 1–9. https://doi.org/10.1037/emo0000703

Mlawer, F., Moore, C. C., Hubbard, J. A., & Meehan, Z. M. (2022). Pre-pandemic peer relations predict adolescents' internalizing response to Covid-19. *Research on Child and Adolescent Psychopathology*, *50*(5), 649–657. https://doi.org/10.1007/s10802-021-00882-1

Morales, S., Zeytinoglu, S., Lorenzo, N. E., Chronis-Tuscano, A., Degnan, K. A., Almas, A. N., Pine, D. S., & Fox, N. A. (2022). Which anxious adolescents were most affected by the COVID-19 pandemic? *Clinical Psychological Science*, *10*(6), 1044–1059. https://doi.org/10.1177/21677026211059524

National Advisory Board on Research Ethics. (2009). *Ethical principles of research in the humanities and social and behavioural sciences and proposals for ethical review*. https://www.tenk.fi/sites/tenk.fi/files/ethicalprinciples.pdf

Repo, J. (2024). *Worst of times, best of times: Assessing pandemic impact on adolescents* [Doctoral dissertation, University of Turku]. https://urn.fi/URN:ISBN:978-951-29-9997-2

Repo, J., Herkama, S., Yanagida, T., & Salmivalli, C. (2023). Transition to emerging adulthood during the COVID-19 pandemic: Changes in anxiety and the role of inclusion/exclusion experiences. *European Journal of Developmental Psychology*, *20*(4), 649–665. https://doi.org/10.1080/17405629.2023.2183651

Repo, J., Smith, E., Kilpi-Jakonen, E., & Reimer, D. (in press). Student well-being, social inequality and educational transitions before, during and after the pandemic. *Social Indicators Research*.

Restad, F., & Mølstad, C. E. (2021). Social and emotional skills in curriculum reform: A red line for measurability? *Journal of Curriculum Studies*, *53*(4), 435–448. https://doi.org/10.1080/00220272.2020.1716391

Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology*, *24*(2), 335–344. https://doi.org/10.1017/S0954579412000028

Samji, H., Wu, J., Ladak, A., Vossen, C., Stewart, E., Dove, N., Long, D., & Snell, G. (2022). Review: Mental health impacts of the COVID-19 pandemic on children and youth—A systematic review. *Child and Adolescent Mental Health*, *27*(2), 173–189. https://doi.org/10.1111/camh.12501

Sanchis-Sanchis, A., Grau, M. D., Moliner, A.-R., & Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Frontiers in Psychology*, *11*, Article 946. https://doi.org/10.3389/fpsyg.2020.00946

Schonert-Reichl, K. A., Guhn, M., Gadermann, A. M., Hymel, S., Sweiss, L., & Hertzman, C. (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

Shergold, P., Broadbent, J., & Marshall, I. (2022). *Fault lines: An independent review into australia's response to COVID-19*. John and Myriam Wylie Foundation, Minderoo Foundation, and Paul Ramsay Foundation. https://apo.org.au/node/320067

Skinner, A. T., De Luca, L., Nocentini, A., & Menesini, E. (2023). Co-development of internalizing symptoms and regulatory emotional self-efficacy in adolescence: Time-varying effects of COVID-19-related stress and social support. *International Journal of Behavioral Development*, *47*(5), 433–443. https://doi.org/10.1177/01650254231189743

Smithers, L. G., Sawyer, A. C. P., Chittleborough, C. R., Davies, N. M., Davey Smith, G., & Lynch, J. W. (2018). A systematic review and meta-analysis of effects of early life non-cognitive skills on academic, psychosocial, cognitive and health outcomes. *Nature Human Behaviour*, *2*(11), 867–880. https://doi.org/10.1038/s41562-018-0461-x

Storen, R., & Corrigan, N. (2020). *COVID-19: A chronology of state and territory government announcements*. https://www.aph.gov.au/About_Parliament/Parliamentary_departments/Parliamentary_Library/pubs/rp/rp2021/Chronologies/COVID-19StateTerritoryGovernmentAnnouncements

Strasser, K., Arias, P., Alessandri, F., Turner, P., Villarroel, T., Aldunate, C. P., & Montt, M. E. (2023). Adolescents' academic self-efficacy and emotions during the COVID-19 pandemic: A latent profile analysis of family and school risk factors. *School Psychology*, *38*(2), 88–99. https://doi.org/10.1037/spq0000523

Strohmeier, D., & Branje, S. (2023). Human development in times of the COVID-19 pandemic. *European Journal of Developmental Psychology*, *20*(4), 581–596. https://doi.org/10.1080/17405629.2023.2211256

Tak, Y. R., Brunwasser, S. M., Lichtwarck-Aschoff, A., & Engels, R. C. (2017). The prospective associations between self-efficacy and depressive symptoms from early to middle adolescence: A cross-lagged model. *Journal of Youth and Adolescence*, *46*(4), 744–756. https://doi.org/10.1007/s10964-016-0614-z

Talsma, K., Robertson, K., Thomas, C., & Norris, K. (2021). COVID-19 beliefs, self-efficacy and academic performance in first-year university students: Cohort comparison and mediation analysis. *Frontiers in Psychology*, *12*, Article 643408. https://doi.org/10.3389/fpsyg.2021.643408

Talsma, K., Schüz, B., Schwarzer, R., & Norris, K. (2018). I believe, therefore I achieve (and vice versa): A meta-analytic cross-lagged panel analysis of self-efficacy and academic performance. *Learning and Individual Differences*, *61*, 136–150. https://doi.org/10.1016/j.lindif.2017.11.015

Ungar, M., Ghazinour, M., & Richter, J. (2013). Annual research review: What is resilience within the social ecology of human development? *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *54*(4), 348–366. https://doi.org/10.1111/jcpp.12025

Van Lissa, C. J., Brandmaier, A. M., Brinkman, L., Lamprecht, A.-L., Peikert, A., Struiksma, M. E., & Vreede, B. M. I. (2021). WORCS: A workflow for open reproducible code in science. *Data Science*, *4*(1), 29–49. https://doi.org/10.3233/DS-210031

Vaughn, A. A., Roesch, S. C., & Aldridge, A. A. (2009). Stress-related growth in racial/ethnic minority adolescents: Measurement structure and validity. *Educational and Psychological Measurement*, *69*(1), 131–145. https://doi.org/10.1177/0013164408318775

Vestad, L., Bru, E., & Virtanen, T. E. (2022). Changes in academic efficacy beliefs in the first year of lower secondary school. Is it related to changes in social and emotional competencies? *Educational Psychology*, *42*(7), 838–856. https://doi.org/10.1080/01443410.2022.2093333

Willner, C. J., Hoffmann, J. D., Bailey, C. S., Harrison, A. P., Garcia, B., Ng, Z. J., Cipriano, C., & Brackett, M. A. (2022). The development of cognitive reappraisal from early childhood through adolescence: A systematic review and methodological recommendations. *Frontiers in Psychology*, *13*, Article 875964. https://doi.org/10.3389/fpsyg.2022.875964

Wright, N., Hill, J., Sharp, H., Refberg-Brown, M., Crook, D., Kehl, S., & Pickles, A. (2024). COVID-19 pandemic impact on adolescent mental health: A reassessment accounting for development. *European Child & Adolescent Psychiatry*, *33*(8), 2615–2627. https://doi.org/10.1007/s00787-023-02337-y

Young, K. S., Sandman, C. F., & Craske, M. G. (2019). Positive and negative emotion regulation in adolescence: Links to anxiety and depression. *Brain Sciences*, *9*(4), Article 76. https://doi.org/10.3390/brainsci9040076

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development*, *38*(2), 182–194. https://doi.org/10.1177/0165025413515405

Received January 18, 2024
Revision received October 28, 2024
Accepted October 30, 2024 ■