

The Role of Early Adolescence in Subsequent Risk and Resilience

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Abstract

Early adolescence comes with new opportunities for subsequent risk and resilience. Yet, international cohort studies covering this important developmental period and extending into young adulthood are rare. To address this gap in research, this special issue draws on data from the Zurich Project on Social Development from Childhood to Adulthood (z-proso). We outline the terminology for risk and resilience used in this special issue, describe the z-proso study design, characterize the z-proso sample in terms of important markers of adolescence, and provide an overview of Switzerland as a study setting. The contributions to this special issue highlight that adolescent well-being is not a given, even in a setting with relatively low contextual risk. Supportive parent–child relationships in early adolescence emerged as an important promotive factor for longer-term well-being. This special issue illustrates how early adolescence serves as an important juncture for different areas of future development.

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The Developmental Context of Early Adolescence

Early adolescence (approximately 11–14 years of age) marks the beginnings of many interrelated biological, social, and psychological transitions. In terms of biological changes, pubertal and brain development contribute to important changes in physical, behavioral, and social development (e.g., [Blakemore, 2008, 2012](#); [Casey & Jones, 2010](#); [Steinberg et al., 2017](#)). In terms of social changes, children transition out of the elementary school years into new peer, school, and leisure contexts, where they begin to experiment with adult behaviors and roles, including romantic and sexual behaviors or substance use (e.g., [Eccles et al., 1996](#); [Quednow et al., 2022](#); [Romer et al., 2017](#); [Shanahan et al., 2021](#)). Their widened spatial and social circles provide early adolescents with many opportunities for building relationships with new friends, teachers, and adult mentors and for exploring romantic relationships ([Boisvert & Poulin, 2016](#); [Larson & Verma, 1999](#); [Werner, 1993](#)). Psychological changes include early adolescents reaching new cognitive horizons ([Keating et al., 2023](#)) that allow them to further develop their self-concept and identity, to become more sophisticated scholars, and to orient toward future educational and professional pathways.

Overall, these new biopsychosocial horizons in early adolescence support many “first” experiences, which each come with new opportunities for risk and resilience. This important developmental period has most often been studied in the English-speaking world. More work from different cultural contexts is needed to gain insight into the role of early adolescence in subsequent risk and resilience ([Eisner, 2023](#)).

This Special Issue

This special issue is intended to advance knowledge of the role of early adolescence in social development throughout adolescence and early adulthood, drawing on data from Switzerland. The contributions focus on early adolescence as a developmental stage that presents opportunities for developing well-being and resilience but also new risk exposures that could increase vulnerability (e.g., [Dahl et al., 2018](#); [Werner, 1993](#)). In this paper, we outline the terminology for risk and resilience used in this special issue and describe the Zurich Project on Social Development from Childhood to Adulthood (z-proso). We then provide an overview of Switzerland as a study setting, comparing select indicators of contextual and social risk to those of the USA. Next, we briefly discuss the z-proso sample in terms of markers of

pubertal development, social stress, mental health and substance use, and delinquency during adolescence. Afterwards, we present a brief overview and synthesis of the papers in the special issue and discuss their main contributions to an improved understanding of the role of early adolescence in subsequent risk and resilience.

Risk and Resilience

“Risk” typically refers to characteristics associated with an increased probability of experiencing an undesirable (later) outcome (Kraemer et al., 1997; Rutter, 1985). For example, early exposure to stressful life events, such as parental separation or bullying victimization, can increase young people’s likelihood of experiencing poorer long-term well-being in many areas, including in the educational, financial, social, and health domains (Copeland et al., 2022). Similarly, “adolescent snares” (e.g., drug use, delinquency, unsafe sex) can “derail” adolescents from adaptive toward more maladaptive trajectories (Moffitt et al., 2011). The contributors to this special issue are particularly interested in factors during early adolescence that predict an increased risk of undesirable outcomes over and beyond earlier (individual) propensities (Murray et al., 2009).

Resilience refers to better-than-expected outcomes in the face of risk (e.g., Werner, 1993). Resilience is facilitated by the presence of individual or contextual characteristics that weaken or nullify the association between a risk factor and an undesirable outcome (Luthar et al., 2000; Masten, 2001; Rutter, 2013; Werner, 1993). Typical examples include warm and supportive social relationships with adults, self-efficacy, adaptive self-regulation, family socioeconomic resources, and cognitive skills such as intelligence and self-control (Masten et al., 2021; Werner, 1993). Many of these can also serve as promotive factors, meaning that they elevate well-being, regardless of the presence of risk (Farrington et al., 2016).

The Need for International Longitudinal Studies of Risk and Resilience

To more fully understand the role of early adolescence in development, long-term data from cohort studies are needed. Repeated measures are necessary to track changes and pathways across time, to investigate issues of developmental timing in relation to risk and protective factors and outcomes, and to examine whether risk during early adolescence (compared with earlier or later risk) uniquely initiates new trajectories. Longitudinal studies of risk and resilience ideally assess participants repeatedly in childhood and adolescence and then again in adulthood. Measurements should be frequent enough to capture the important changes that occur at a very quick pace during

adolescence. Ideally, attrition from such studies would be relatively low to allow inferences about the population from which the sample was drawn.

To date, long-term longitudinal studies that begin in childhood and span two or more decades are relatively rare, especially outside the English-speaking world, where the majority of such studies have been conducted. As a consequence, current knowledge remains disproportionately based on data from a few particular cultural, social, and economic contexts, and the generalizability of findings to other contexts and societies is unclear (Eisner, 2023). To address this, the contributions to this special issue are based on the Zurich Project on Social Development from Childhood to Adulthood (z-proso). This longitudinal study tracked the lives of a cohort of children born approximately 1996/1997. The study is largely representative of children who entered primary school in the city of Zurich, the largest city in Switzerland, in 2004. The z-proso study is well suited for answering questions about the role of early adolescence in the development of risk and resilience. The study comprises relatively closely spaced assessments, starting in middle childhood and continuing until early adulthood. Furthermore, the data cover a range of individual, family, peer, and contextual factors related to risk and resilience.

The z-proso Study Design

The z-proso study was conceived by Manuel Eisner and Denis Ribeaud; it is currently led by Manuel Eisner, Denis Ribeaud, and Lilly Shanahan at the Jacobs Center for Productive Youth Development at the University of Zurich. The target sample of the study was $N = 1675$ children who entered primary school in the City of Zurich in the Fall of 2004; of this target sample, $n = 1583$ participated in at least one wave, via one or more informants (Ribeaud et al., 2022).

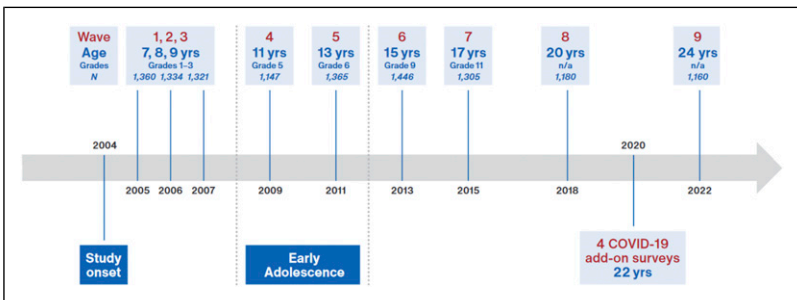


Figure 1. Timeline of z-proso from 2004 to 2024: Nine main data collection waves and four COVID-19 add-on surveys.

Data collection began in 2005 (see [Figure 1](#)), when the children were in first grade and approximately 7 years old (for the recent z-proso cohort profile, see [Ribeaud et al., 2022](#)). At intake, the sample was largely representative of first graders in Zurich public primary schools, with a slight overrepresentation of participants from school districts with a lower socioeconomic status. Consistent with Zurich's population, the sample is culturally and ethnically diverse ([Figure 2](#)). Participants' parents were born in over 90 countries. Of note, families with two first-generation immigrant parents tend to have a lower SES than families with two Swiss-born parents.

As described in the cohort profile ([Ribeaud et al., 2022](#)), z-proso originally started out as a cluster-randomized clinical trial to evaluate the efficacy of the Promoting Alternative Thinking Strategies socio-emotional skills training (PATHS, [Kusché et al., 1994](#)), and the Triple P Positive Parenting Program ([Sanders, 1999](#)). To date, z-proso has identified almost no longer-term effects of these interventions ([Averdijk et al., 2016](#); [Sorrenti et al., 2024](#)); therefore, the interventions are not further discussed in this special issue.

The z-proso study is based on a multi-informant and multi-method approach. Main survey assessments of the target children were completed at approximately ages 7, 8, 9, 11, 13, 15, 17, 20, and 24 years. Teacher assessments were administered up to age 17 (grade 11) by the main teacher,

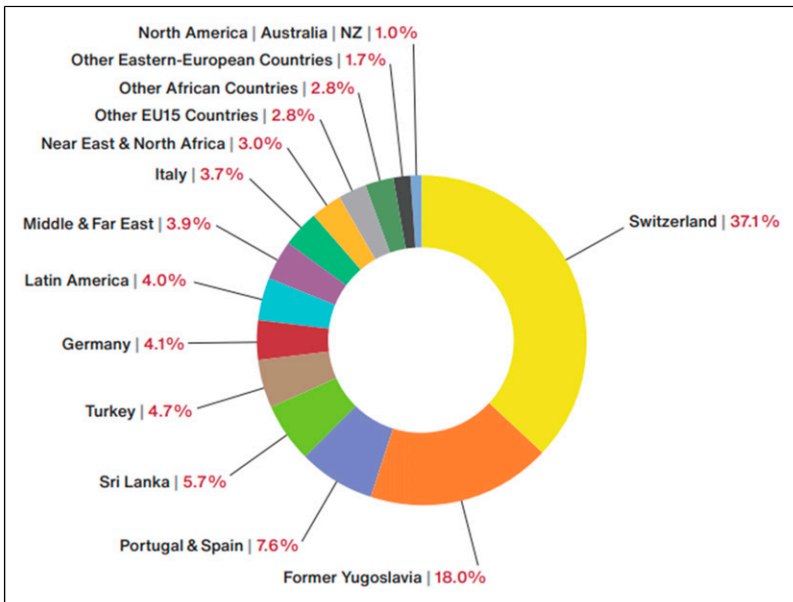


Figure 2. Country of birth of the parents of z-proso study participants (as reported by their children at ages 13 and 15).

including vocational school teachers at age 17. Face-to-face interviews with parents were conducted up to age 11 (grade 5). During the first few months of the COVID-19 pandemic, when participants were ~22.5 years old, four Online Supplemental data collections assessed stressful experiences, coping, well-being, and compliance with public health measures implemented between April and September 2020 (e.g., [Nivette et al., 2021](#); [Shanahan et al., 2022](#); [Steinhoff, Bechtiger, et al., 2021](#)).

Importantly for this special issue, two assessments were conducted during early adolescence, when z-proso participants' ages averaged 11.3 and 13.7 years (in 2009 and 2011, respectively). In terms of their self-reported physical development during puberty, females were primarily in the advanced pubertal stages and males primarily in mid-puberty at the age 13.7 assessment (see [Figure 3](#), [Petersen et al., 1988](#)). The z-proso early adolescent data collections overlapped with the Global Financial Crisis of 2007/08 and its aftermath. They also coincided with the transition from primary school (grades 1–6) to a more tracked, performance-based secondary school system from grade 7 onwards. Specifically, the academically strongest students attend Gymnasium, followed by Sek A and then Sek B/C for the academically weakest students. Thus, early adolescence is a time of academic selection and school transitions in z-proso. During this time, many adolescents experience prolonged periods of stress and also significant setbacks (e.g., not scoring sufficiently high on the Gymnasium entry-test to attend this school track, despite studying for it for many months, [Steinhoff et al., 2020](#)).

Select administrative data about the participants (e.g., juvenile criminal records, educational records) are available (e.g., [Zych et al., 2021](#)). Beginning at age 20, biological data on stress hormones (e.g., cortisol, cortisone), sex hormones (e.g., testosterone), and substances (e.g., illegal substances, prescription drugs) and their metabolites were collected from hair (e.g., [Johnson-Ferguson et al., 2023](#); [Steinhoff et al., 2023](#)). Several add-on studies were also

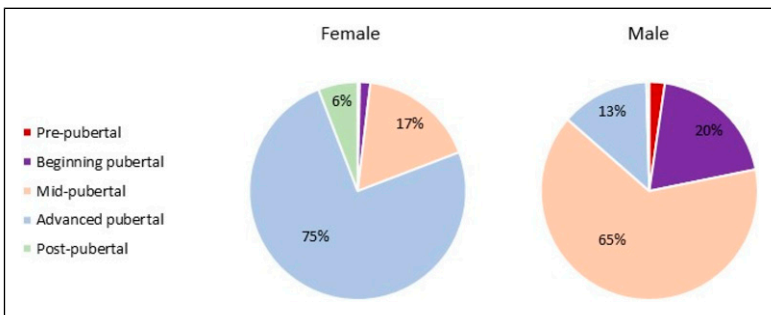


Figure 3. Self-reported pubertal status of z-proso adolescents at age 13 ([Petersen et al., 1988](#)); see [Supplement](#) for measurement.

implemented, including studies of decision-making and cognitive performance offered to all participants as well as ecological momentary assessments (e.g., Murray et al., 2021) and studies that measure genetic and brain activity in subsets of participants.

Retention rates have been acceptable (Ribeaud et al., 2022). At age 13 years, $n = 1365$ participated, and $n = 1446$ at age 15 years. At the most recent assessment in 2022, at age 24 years, $n = 1160$ young adults participated again (i.e., 75% of those who had first participated at the age 7 assessment); indeed, the number of participants at age 24 was only $n = 20$ lower than that four years earlier at the age 20 assessment. As is the case with many longitudinal studies, there is drop-out and drop-in over time, and individuals with a lower socioeconomic status, those with a migration background, and males were less likely to be retained (Ribeaud et al., 2022). Next, we describe the wider context of the z-proso study and, using z-proso data, we examine rates of various indicators of stress, psychopathology, substance use and delinquency in this context.

The Wider Context of z-proso: How Does Growing up in Zurich Compare to US Indicators?

When the z-proso participants were in early adolescence, the city of Zurich had a population of 440,000 (in 2010), with the Greater Zurich population approaching approximately 1.4 million. Zurich's economy is dominated by the service sector, with a concentration of international banks and insurance companies. It also has a strong tech industry and several universities with a total of approximately 60,000 students.

Like many other longitudinal studies, z-proso is embedded in a particular geographic area in Switzerland; thus, it is not nationally representative. Nevertheless, the wider cantonal (canton = member state of the Swiss confederation) and national contexts frame the developmental trajectories and risks that young people encounter (Buchmann, 1989). Table 1 shows key indicators of the Swiss context and those of the United States, where most longitudinal studies on child and adolescent development have been conducted. The indicators were selected to reflect approximately 2015 when the z-proso participants were 17 years old (i.e., at an age at which risk-taking and offending are typically high and when several outcomes in this special issue were measured).

Demographics and Economic Conditions

The comparisons in Table 1 suggest some similarities and important differences between Switzerland and the United States. In terms of similarities, both countries have highly productive economies. The levels of affluence, as

Table 1. Selected Comparative Indicators of Risk Contexts for Youth in Switzerland and the USA in 2015.

Indicator	Country	
	Switzerland	USA
<i>Demographics</i>		
Population in 2015	8.3 million	320 million
Persons born abroad	29.0%	13.3%
Children in single-parent households	12.2%	27.1%
<i>Economic Conditions</i>		
GDP per capita, PPP, 2015 USD prices	70,000	69,000
Income inequality: Ratio highest 20%/Lowest 20%	5.2:1	9.1:1
Youth unemployment rate	8.8%	11.6%
<i>Education</i>		
Student truancy rate, PISA 2015	9.6%	37.2%
15–29-year-olds not in education, employment, or training (NEET)	11.3%	16.3%
<i>Crime and Justice</i>		
Homicide victims, ages 20–29, per 100,000	0.4	9.3
Imprisonment rate per 100,000	83	670
Firearms in civilian hands, per 1000 population	276	1205
<i>Health and Well-Being</i>		
Life expectancy at birth (2015)	82.8 years	78.7 years
Adolescent overweight rate	21%	41%
Adolescent (ages 15–19) suicide rate per 100,000	7.1	9.4
Teenage fertility rate, per 1000 women ages 15–19	2.9	21.9

Abbreviations: GDP = gross domestic product. PPP = purchasing power parity. USD = US dollar. PISA = Program for International Student Assessment.

Note. All indicators refer to 2015 or the closest available year. Sources for the table include: *population* (World Bank, 2023); *persons born abroad* (The Swiss Federal Statistical Office, 2023; United States Census Bureau, 2023); *children in single-parent households* (OECD, 2023); *GDP per capita* (World Bank, 2023); *income inequality* = ratio top 20% to bottom 20%, net per capita income, 2015 (World Income Inequality Database, 2022); *youth unemployment rate*: Youth unemployment rate 2015, Men/Women aged 15–24, % of youth not in the labor force (OECD Labour Market Statistics, 2023); *student truancy rate* = percentage of students who reported that they had skipped a day of school in the two weeks prior to the PISA test in 2015, Table II.3.1 (OECD, 2016); *15–29-year-olds not in Education, Employment or training (NEET)* (OECD, 2017); *homicide victimization* (United Nations Office on Drugs and Crime, 2023); *imprisonment rate*: prison population per 100,000 population, (World Prison Brief, 2023); *Firearms in Civilian Hands* (Small Arms Survey, 2023); *life expectancy at birth 2015* (The World Bank Group, 2023a); *adolescent overweight rate* = BMI > +1 standard deviations above the median (WHO Global Health Observatory, 2023); *adolescent (age 15–19) suicide rate WHO Mortality* = suicide rates per 100,000, among adolescents 15–19 years (World Health Organization, 2023); *teenage fertility rate* = births per 1000 women ages 15–19 (The World Bank Group, 2023b).

expressed by gross domestic product per capita at purchasing power parities, are similar and are among the highest in the world. In 2015, the two countries had similar levels of youth unemployment.

Differences emerge in the economic and social policy context, where the USA is typically classified as having a market-dominated liberal type of capitalism and Switzerland as having a more protective conservative-liberal type of capitalism with more comprehensive welfare protection and a greater emphasis on distributional equality comparable to countries such as the Netherlands or Germany (Bambra, 2007). This is illustrated by the substantially lower levels of both income inequality and wealth inequality in Switzerland than in the USA, as reported by the World Bank. As a result, Switzerland has proportionally fewer areas of concentrated disadvantage and a lower proportion of adolescents growing up in poor households. The high rates of poverty and inequality in the USA constitute a considerable societal risk context for youth development, one that is related to many additional risk factors (Odgers & Adler, 2018). Cross-nationally, inequality is associated with a broad range of poor health outcomes in adolescence and throughout adulthood (Pickett & Wilkinson, 2015).

Switzerland and the USA also differ in key demographic structural risks. The USA has a substantially larger proportion of children growing up in single-parent households, whereas Switzerland has a much larger proportion of children whose parents have a migration background, especially in cities (Fibbi et al., 2015). Twenty-nine percent of the overall population in Switzerland was born abroad; this proportion is larger in urban areas and among younger age groups. Switzerland's immigrant population partly reflects the country's geographical location in the heart of Europe (e.g., with a high percentage of immigrants from European countries), but its recent immigration patterns are also strongly linked to violent conflicts in Sri Lanka (1983–2009), the Balkan wars (1990–2001), the Somali Civil War (1988–1990), and the Kurdish–Turkish conflict.

Education

The education system in Switzerland varies among cantons. Adolescents in Zurich are classified into different performance tracks after sixth grade (approximately 11/12 years old) based on their assessed ability levels. In total, compulsory education lasts nine years, and better-performing students spend three additional years of upper secondary education, leading to access to university (Eurydice Network, 2023). Most adolescents (~70%) who do not continue upper secondary school enter an apprenticeship that includes significant professional training and additional (vocational) schooling. As Table 1 shows, student truancy and young people not being in education, employment, or training are much less common problems in Switzerland than

in the United States. Overall, state schools provide high-quality education at all levels, and private schools play a limited role in the Swiss education system.

Crime and Justice

Switzerland is considered a safe country, and its homicide rate among young people aged 20–29 years is among the lowest in the world. Imprisonment rates are similar to those in other European countries and far lower than those in the USA. In Switzerland, the minimum age of criminal responsibility is 10 years; across states of the USA, it ranges from 6 to 11 years. Notably, the juvenile justice system in Switzerland is guided by the principles of protection, integration, treatment, and education. Prison sentences for offenders under the age of 18 are very rare, only admissible from age 15, and limited to a maximum of 4 years (the maximum sentence is life imprisonment in the USA). Firearm purchases are easier in Switzerland than in many European countries, but the right to carry a firearm is strictly controlled and generally limited to people working in the security sector (e.g., [Rosenbaum, 2012](#)).

Health and Well-Being

The indicators in [Table 1](#) also suggest that the health of adolescents is generally better in Switzerland than in the USA. For example, Switzerland outperforms the USA in terms of life expectancy at birth and has lower rates of adolescent obesity and teenage pregnancy.

What do the numbers described above mean in the daily lives of adolescents in Zurich, Switzerland, compared with those in the USA? The social policy, economic, and educational contexts of Switzerland suggest that young people could have excellent conditions for growing up and that they could avoid some of the contextual risks posed by the high social inequality and demographic-structural risks that many US adolescents face. Moreover, growing up in a relatively safe city with an excellent public transport infrastructure, as is the case in Zurich, allows early adolescents some independence and the opportunity to safely spend time outside by themselves and to use public transport alone for various activities. However, one potential downside of such independence, at least for some, is reduced supervision by adults.

Social Stress, Mental Health Problems, Substance use, and Delinquency in the z-proso Study

Considering that Switzerland ranks higher than the USA on many indicators known to positively influence well-being and mental health, one might expect

Table 2. Selected Developmental Risks in Mid- and Late Adolescence in the z-proso Sample (Prevalence in %).

	Age 15 years			Age 17 years			p value of difference ^a
	Overall	Male	Female	Overall	Male	Female	
Victimization							
Corporal punishment	25.0	25.4	24.5	19.3	21.2	17.4	<.001
Serious violence	14.3	16.1	12.3	8.6	10.1	7.1	<.001
Physical dating violence ^b	N/A	N/A	N/A	21.8	23.6	20.4	N/A
Sexual harassment	20.8	7.9	34.6	19.7	6.9	33.4	.198
Internalizing symptoms							
Suicidal ideation	19.7	14.1	25.6	22.5	17.3	27.7	.082
Self-harm	11.4	7.1	16.1	9.7	5.6	13.8	.119
Substance use							
Smoking	60.4	62.6	58.2	73.2	73.0	73.3	<.001
Beer/Wine	54.7	58.3	50.9	75.2	78.0	72.4	<.001
Cannabis	33.8	41.0	26.2	51.7	56.9	46.5	<.001
Ecstasy	1.8	2.3	1.3	4.7	5.1	4.4	<.001
Amphetamines	0.8	0.7	1.0	3.5	4.0	2.9	<.001
Cocaine	1.2	1.2	1.1	3.3	4.4	2.2	<.001
Delinquency							
Shoplifting >\$50	3.3	3.6	2.9	2.5	3.2	1.7	.306
Burglary	1.5	2.3	0.6	1.5	2.6	0.5	.557
Drug dealing	7.9	11.1	4.4	11.5	15.6	7.3	<.001
Carrying a weapon	9.1	14.4	3.3	6.9	11.5	2.3	.044
Assault with injury	10.0	13.5	6.2	7.3	11.8	2.8	.009
Reported to the police	8.2	12.1	4.0	8.7	13.0	4.3	.254

Notes. All prevalence rates except for internalizing symptoms refer to the previous 12 months. Internalizing symptoms were measured in the past month. For information on the measurement of these indicators, see the [Supplement](#).

Sources: z-proso dataset. For further information on developmental patterns of victimization, see [Obsuth et al. \(2018\)](#); for patterns of self-harm, see [Steinhoff et al. \(2021\)](#). For patterns of substance use, see [Quednow et al. \(2022\)](#); for developmental patterns of delinquency, see [Huijsmans et al. \(2021\)](#).

^aAge 15–17 years difference (overall sample), McNemar's test.

^bPrevalence among adolescents who are in a dating relationship.

z-proso participants to encounter few familial and behavioral risks and to have mostly positive well-being in mid-adolescence. Yet, [Table 2](#) shows that the prevalence of several indicators of victimization, poor mental health, substance use, and delinquency is considerable at ages 15 and 17 years, when some behavioral problems of adolescence peak. Rates of physical victimization by parents and others were notably high. For example, near 25% of 15-year-olds reported physical punishment by parents in the past year, approximately one third of females reported having been the victim of sexual harassment, and over 20% of those in dating relationships reported physical dating violence (see also, [Campo-Tena et al., 2023](#)).

[Table 2](#) and previous work based on z-proso show that rates of past-month self-harm and suicidal ideation in mid-adolescence were relatively high (see also, [Steinhoff, Ribeaud et al., 2021](#)). In addition, many adolescents initiated substance use at an early age, and the prevalence of adolescent substance use was quite high ([Quednow et al., 2022](#); [Shanahan et al., 2021](#)). A considerable number of adolescents had initiated illegal substance use other than cannabis by age 15 or 17, and this rate further increased substantially by age 20 ([Quednow et al., 2022](#)). z-proso adolescents also frequently engaged in delinquency and had police contact in relation to wrongdoing: nearly 40% by age 24 ([Nivette et al., 2024](#)). These high rates are not specific to z-proso and are corroborated by independent cross-sectional samples from the study area (e.g., [Ribeaud & Loher, 2022](#)).

Taken together, despite living in a wealthy society with generally low contextual risk (compared to the United States), adolescents in z-proso experienced substantial risks of victimization, mental health problems, substance use, and delinquency. Examining how the period of early adolescence could serve as a juncture at which positive well-being is enhanced or, alternatively, risk processes ‘come online’ is an important endeavor for research.

Special Issue Contributions

The contributions to this special issue focus on several topics relevant to early adolescence and subsequent risk and resilience: (1) the role of prosociality, self-control, and parental involvement as prospective promotive factors ([Silletti et al., 2023](#); [Speyer et al., 2023](#)); (2) the importance of adolescents’ future orientation for understanding later behavioral and mental health challenges ([Ganschow et al., 2023](#)); and (3) the early-adolescent developmental roots of victimization, distress, and coping in later adolescence and early adulthood ([Campo-Tena et al., 2023](#); [Steinhoff et al., 2023](#)).

[Speyer et al. \(2023\)](#) used self- and teacher-report data to examine prosociality as a prospective promotive factor against aggression and bullying perpetration during the transition from early to middle adolescence (ages 11–15). They applied a random-intercept cross-lagged panel model to the z-proso

data, a statistical approach designed to separate developmental change within individuals from stable differences between individuals (Hamaker et al., 2015). The authors found some stability of the main study constructs from early to mid-adolescence, which increased with age.

The findings support some of the expected links. A promotive effect of teacher-observed prosociality at ages 11 and 13 years on less self-reported bullying perpetration at ages 13 and 15 years emerged, respectively. Evidence of a reciprocal dynamic also emerged in that self-reported aggression at age 11 was a prospective risk factor for decreased prosociality at age 13. These findings extend earlier z-proso work that examined the reciprocal association between prosociality and aggression during childhood, at ages 7–11 years (Obsuth et al., 2015). Taken together, the studies by Obsuth et al. (2015) and Speyer and colleagues (2023) suggest a complex cascading dynamic: From middle childhood to early adolescence, aggressive behavior acts as a prospective risk factor for subsequent declines in prosociality, possibly because child aggressive behavior elicits negative social evaluations by peers, which in turn reduces opportunities to practice social competencies. In contrast, from early to middle adolescence, prosociality may act as a promotive factor that shields children against externalizing behavior including bullying peers.

Silletti et al. (2023) examined prospective associations between prosociality, internalizing symptoms, parental involvement, and self-control across four waves of the z-proso study, from ages 11–17 years. They hypothesized that self-control acts as a promotive factor that reduces the risk of subsequent internalizing problems and promotes prosociality. Similarly, they expected positive parental involvement during early and middle adolescence to be associated with higher prosociality and a lower risk of internalizing problems. The findings, based on cross-lagged panel models, provide evidence for the role of parental involvement as a prospective promotive factor. In particular, higher levels of parental involvement at ages 11, 13, and 15 were prospectively associated with increased prosociality two years later. Additionally, higher levels of parental involvement in early and middle adolescence predicted improvements in self-control two years later. In contrast, higher self-control was not prospectively associated with either higher prosociality or fewer internalizing symptoms, nor did higher parental involvement predict fewer internalizing symptoms. Finally, and contrary to prior literature, prosocial behavior and internalizing problems were positively associated prospectively from early to late adolescence.

The paper by Ganschow et al. (2023) examines future orientation as an outcome at age 20 and contributes to an emerging strand of developmental research that considers future orientation as important in the development of positive health and development (Johnson et al., 2014). The authors examined the developmental roots of future orientation at age 20 years. More specifically, they examined how stressful life events experienced from early

adolescence onward predict three aspects of future orientation, namely the connectedness, vividness, and valence of the future self. Based on evolutionary life history theory (Ellis et al., 2009), they hypothesized that the cumulation of adverse life events creates a harsh and unpredictable environment and hence a reduced interest in and identification with a future self. The findings partly support their hypotheses. They suggest that the cumulative number of stressful life events predicts a lower sense of being connected to the future self at age 20. In contrast, and contrary to life history theory, accumulated stressful life events neither predicted the vividness of the future self nor the future self-valence. The results also show that adolescents who reported greater parental involvement at age 17 reported increased future self-connectedness, vividness, and valence at age 20, while harsh parenting was unrelated to the three dimensions of future orientation.

Finally, two papers explore how risk and protective factors in early adolescence affect behavioral risks and coping mechanisms in late adolescence and early adulthood. Campo-Tena et al. (2023) examined risk and promotive factors in early adolescence (age 13) that predict dating violence victimization in late adolescence (age 17). Given their research question, they focused on the subset of z-proso participants in dating relationships at age 17 ($N = 643$). Their findings differed depending on which form of dating violence they examined (monitoring, physical victimization, sexual victimization) and whether they analyzed males or females. Monitoring was the most common form of dating violence at age 17, followed by physical violence. One of the most consistent findings was that the endorsement of violence-legitimizing norms of masculinity at age 13 predicted a higher risk of dating violence victimization risk at age 17. These findings suggest long-term effects of socialization in gender norms that increase the risk of unhealthy beliefs and the acceptance or normalization of dating violence in late adolescence.

Also, early onset of sexual relationships was predictive of physical and sexual victimization at age 17 for girls only. In contrast, early adolescent problem behavior (aggression, substance use, deviant friends) was not predictive of the risk of dating violence victimization four years later in this cohort. Similarly, promotive factors such as adult social support and competent conflict coping in early adolescence were not associated with later victimization risk. These non-findings may reflect the contingent quality of many dating relationships at this age. Specifically, victimization may be more strongly influenced by characteristics of the dating partner than the personal characteristics of the victimized person or their latent dispositions rooted in early adolescence.

Steinhoff et al. (2023) examined the extent to which risk and promotive factors in early adolescence affected levels of distress and adaptive coping many years later, in the first months of the COVID 'lockdown' in April 2020, when study participants were 22.5 years old ($n = 786$ for the participating

subsample). The paper is focused on three main developmental predictors, namely internalizing symptoms, supportive parenting/parental involvement, and cumulative stressful life events experienced in early adolescence. Findings show that levels of internalizing symptoms at age 13 were associated with more distress during the pandemic, including feeling worse during than before and more hopelessness. In addition, those with higher internalizing symptoms at age 13 perceived more lifestyle disruptions during the first lockdown. This is consistent with more short-term longitudinal work conducted during the pandemic, including from this cohort, which showed that pre-pandemic well-being was one of the better predictors of during-pandemic well-being (Shanahan et al., 2022).

Importantly, Steinhoff et al. (2023) show that more supportive parent-child interactions at age 13 predicted more adaptive coping-strategies at age 22.5 during the pandemic. This applied especially to socially based coping strategies, such as seeking emotional support from others, maintaining contact with close others, helping others in the neighborhood, and seeking professional support. This finding is notable considering it essentially documents an outcome of parental involvement that many parents would hope for: That supportive interactions with their children will prepare them for later challenges in life, including those that cannot be anticipated by the parents. Additionally, the authors found evidence that exposure to stressful life events in early adolescence had some protective effect during the COVID crisis in the sense that young adults who had previously been exposed to an unusually high number of stressful events during early adolescence felt less distressed under the difficult circumstances of COVID. The authors argue that this evidence may be consistent with the stress inoculation hypothesis (Rutter, 2012) and that adolescents with experience in dealing with life events may have developed a different cognitive framing and more flexibility toward life events compared to adolescents with fewer experiences of life events (Cheng et al., 2014).

Discussion

The contributions to this special issue drew on a long-term longitudinal cohort study in Switzerland. The findings provide insights into important developmental dynamics that begin to unfold in early adolescence and that may influence well-being and resilience for years to come. In addition, the articles in this special issue contribute to characterizing the developmental period of early adolescence in the non-English-speaking world. Several important themes have emerged across the contributions.

First, youth's positive well-being is not a given, even in a setting such as Zurich, Switzerland, that objectively has much to offer, including relative socioeconomic equality and wealth, low contextual risk, high-quality

education and healthcare that are accessible to all, a relatively mild and nonpunitive juvenile justice system, and, overall, relative freedoms and safety for youth. Despite these many positive features, youth in Zurich displayed substantial rates of victimization experiences, internalizing problems, delinquency, and substance use. Indeed, similar to other Western countries, the rates of youth internalizing symptoms in Switzerland have been increasing since before the COVID-19 pandemic (Schuler et al., 2017; Schweizerisches Gesundheitsobservatorium [Swiss Health Observatory], 2020). The positive sociodemographic indices of Zurich may shield youth from some adversities, but not others. For example, academic and time pressures are high, and some youth struggle with the social and psychological challenges of transitioning through adolescence, as do their counterparts elsewhere. The liberties and relative wealth afforded to youth in Switzerland can also create contexts conducive to risky and delinquent behaviors and early substance use (Quednow et al., 2022; Shanahan et al., 2021).

A second theme that emerged was that positive parent–child relationships in early adolescence (e.g., support, involvement) have long-term associations with several positive outcomes years later, including more self-control and prosociality (Silletti et al., 2023) and the use of adaptive coping strategies in response to novel stressors (Steinhoff et al., 2023). Indeed, z-proso participants who had more involved and supportive parents at age 13 adopted more adaptive coping strategies during the historical challenge of the COVID-19 pandemic almost a decade later (Steinhoff et al., 2023). This was especially the case for socially based coping strategies. This finding is notable because it documents that involved parents can help prepare their child to address challenges later in life, including those that the parents have never experienced. These results are consistent with those of other recent large-scale longitudinal studies in a variety of settings documenting the long-term importance of positive parent–child relationships (e.g., Ford et al., 2023; VanBronkhorst et al., 2023).

These findings on early adolescent parent–child relationships have important implications. Despite early adolescents striving for increased independence from their family and some engaging in more frequent squabbles and conflicts with parents (Shanahan, McHale, Osgood, et al., 2007), which can result in overall decreases in the warmth of parent–child relationships (Shanahan, McHale, Crouter, et al., 2007), positive aspects of parenting continue to matter for youth well-being. Thus, positive parent–child relationships, even as they change with age, remain an invaluable resource for young people’s long-term development in an ever-changing world.

A third theme was that early adolescence serves as an important juncture for future development. For example, Campo-Tena et al. (2023) underscored the importance of gender socialization and the formation of norms in early adolescence (e.g., with respect to the endorsement of violence-legitimizing

norms of masculinity) in relation to dating violence four years later. [Ganschow et al. \(2023\)](#) showed that an accumulation of early life events beginning in adolescence decreases the likelihood of feeling connected to one's future self years later. [Speyer et al. \(2023\)](#) highlighted the promotive role of teacher-rated early adolescent prosocial behaviors in protecting adolescents from bullying involvement at later ages. Overall, these findings indicate that development in early adolescence has the potential to initiate longer-term pathways and cascades for years to come.

Limitations

The studies compiled in this special issue share several limitations. First, the historical context of early adolescence is changing rapidly ([Dahl et al., 2018](#)), meaning that some of the findings in this special issue may not be generalizable to today's early adolescents or those growing up in different contexts. For example, in 2009–2011, early adolescents in Switzerland typically did not have regular access to smartphones or social media—which early adolescents today spend much of their free time on. Early adolescents in z-proso also had not lived through a global pandemic. Furthermore, the rates and correlates of various youth behaviors (e.g., risky behaviors) change across historical times and places ([Gage & Patalay, 2021](#); [Patalay & Gage, 2019](#)). Thus, research on early adolescence needs to continue to monitor the ever-changing risk and resilience landscapes that youth face ([Campbell et al., 2021](#)).

Second, many positive factors in this special issue were examined as promotive factors in early adolescence—that is, factors that are conducive to later development or elevate later well-being, regardless of the presence of risk. Additional work is needed on protective factors that weaken or nullify the associations of early adolescent risk factors with later outcomes ([Luthar et al., 2000](#)). Third, the effect sizes identified in the papers in this special issue are typically small. This is common in longitudinal studies spanning many years, especially those that adjust for associations among constructs in previous assessments (such as cross-lagged panel models), and even more so in models that eliminate between-person differences (e.g., random-intercept models). However, small effect sizes in longitudinal studies can be meaningful and may accumulate in chains of risk over the years and decades ([Gotz et al., 2022](#)).

Fourth, none of the papers examined the actual “uniqueness” of developmental risk or protective processes during early adolescence; that is, most of the analyses began in early adolescence but did not compare associations across different developmental periods. Understanding the role of timing, however, can have important implications for prevention and intervention ([Zuber et al., 2023](#)). Fifth, the majority of the studies in this special issue drew on self-reports, although teacher and parent reports and some objective data were available in z-proso. Sixth, one of the key concerns highlighted in several

contributions to this issue relates to the challenges of identifying causal mechanisms linked to risk and resilience using longitudinal data, such as those collected in z-proso and many other longitudinal studies.

Seventh, during adolescence, the z-proso study was unable to collect biological data and data on more fine-grained timescales, such as ecological momentary assessments. These assessments would have been ideal for better understanding how some of the processes studied in this special issue unfolded. Such more fine-grained ecological momentary assessments were implemented beginning at age 20 (e.g., Murray et al., 2021), as were additional biological assessments (e.g., the hair data collection, Johnson-Ferguson et al., 2023; Steinhoff et al., 2023). Finally, the majority of adolescents today reside in developing countries, where the daily realities and challenges of the adolescent world are very different from those experienced by adolescents in Switzerland (Thalmayer et al., 2021).

The Value of International Longitudinal Cohort Studies

Despite these limitations, the z-proso study and the analyses presented in this special issue illustrate the many scientific opportunities inherent in long-term longitudinal cohort studies, especially those with a reasonably large sample size at intake. First, many research questions about risk and resilience in human development can only be answered with data collected from the same individuals over many years. Second, a large sample size at intake allows for studies of subpopulations and tests of group differences (e.g., males, females, those who are dating, and those who provided data during COVID-19), as well as relatively rare but harmful phenomena (e.g., sexual dating violence). Third, larger-scale, long-term cohort studies can serve as a platform to launch add-on studies that leverage rich, previously collected data and link them with new, innovative assessments that sometimes did not even exist at the initiation of the study. Hence, long-term cohort studies, such as z-proso, can become hubs for interdisciplinary, international research networks, which, in turn, serve as valuable resources, including training and supporting early career researchers. Finally, studies from non-English-speaking countries, such as z-proso, contribute to progress in understanding how the macro-level context shapes the risks and resources affecting adolescent developmental trajectories. Further widening of researchers' perspectives on different macro-level contexts is needed, however, as the majority of adolescents today reside in developing countries, where the daily realities and challenges of the adolescent world are very different from those experienced by adolescents in, for example, the USA or Switzerland (Thalmayer et al., 2021).

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Data Availability Statement

The data will be made available to other researchers upon request.

Supplemental Material

Supplemental material for this article is available online.

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