# Mental health, education, and work in Canada, the Netherlands, and the United States

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*DOI:*
10.33612/diss.171633023

# Chapter 1. Introduction

The word adolescence derives from the Latin *adolescere*—to grow up, to become established, to become an adult. During adolescence, individuals acquire social, emotional, cognitive, educational, economic, and health capabilities that they will use to create the foundations for adulthood. Given its implications for the life course, it is a public health priority to understand the risks and vulnerabilities associated with healthy development in adolescence.[1] [2] In this dissertation, I explore how the contexts in which adolescents grow up shape the determinants and consequences of mental health. Globally, an estimated 10-20% of adolescents have a mental disorder;[3] [4] and, neuropsychological conditions among 10- to 24-year-olds account for 45% of all years lost due to disability.[5] I examine how mental health problems emerge and change over adolescence, and how these patterns are unequally distributed by socioeconomic status. As well, I examine how adolescent mental health affects educational and work outcomes in young adulthood. Importantly, this research not only reinforces the role that social context serves in promoting healthy human development, but also that it is an important determinant of the ability to lead a healthy happy life.

This chapter begins with a review of the literature on adolescent mental health, current knowledge gaps, and the conceptual framework that motivates the empirical research in this dissertation. I argue that integrating concepts of change and context into life course research on adolescent mental health has the potential to generate insights into how institutions create and sustain inequalities in mental health from adolescence to young adulthood. Further, it has the potential to reveal intervenable mechanisms that may be implemented to empower young people in this life stage. This chapter ends with an overview of the studies in this dissertation.

### 1.1. Adolescence as sensitive period for mental health

Adolescence is described as a 'sensitive period' for mental health because this life stage is characterized by developmental plasticity of the brain, and a growing influence of adolescents' social environments, which together create the circumstances for the emergence of mental health problems.[6 7] In adolescence, brain development is characterized by processes that promote more efficient neuronal connections—including synaptic pruning, dendritic arborisation, and myelination—which continue into young adulthood.[8] The neuronal changes in this period occur at a rate second only to that of infancy and early childhood.[9] This neuroplasticity underpins the acquisition of interpersonal and emotional skills that form the basis for more complex social roles, and the acquisition of human capital throughout this period.[10 11] This neuroplasticity also has profound implications for sensitivity to the influences of the social environment. High quality, secure, and stable social contexts are likely to be important for the acquisition of emotional and social skills in this period.[12] As adolescents' social worlds expand and grow more complex, peers, educational environments, the labour market, and broader societal norms start to become more influential.[2]

It is not surprising that between adolescence and young adulthood the first symptoms of many mental disorders have their onset.[13 14] In a study of English-speaking residents of the USA, approximately three quarters of all cases of mental disorders had begun by age 24.[13 14] Over this life stage, the prevalence of mental disorders also undergoes shifts. A recent review of longitudinal research published in the last two decades found that some mental disorders such as depression increase during adolescence and young adulthood, others such as disruptive behavioural disorders decrease in prevalence.[15] These epidemiological trends in adolescent mental health symptoms reflect how some symptoms may persist over time, while other mental health problems evolve between these two life stages.[16]

## 1.2. Adolescent mental health inequalities from a life course perspective

Life course thinking is well established in disciplines such as psychology, sociology, and neurodevelopment and is now being employed in public health research to examine the temporal ordering between one's social position and health.[6 17-21] Key theoretical models within the life course framework account for timing of exposures and outcomes.[22] For example, the *accumulation of risk model* emphasizes the importance of chronic exposures that have a cumulative impact over time.[23] The *sensitive period model* emphasizes the importance of exposures that occur at developmentally sensitive periods in life (e.g., during periods of high developmental plasticity).[24] The *recency model* suggests that the magnitude of an exposures may be greatest when they are temporally close to the outcome.[25]

From a life course perspective, the risk of mental health problems in adolescence can be exacerbated by and linked to the socioeconomic conditions of childhood. A recent systematic review synthesized evidence showing a two or three-fold difference in the risk of developing mental health problems between children who grow up in disadvantaged socioeconomic conditions than their more advantaged peers (as measured household income, parental education, parental occupation, and receipt of welfare benefits, among other indicators).[26] A graded inverse relationship between childhood socioeconomic conditions and mental health was also observed in 52 out of 55 studies reviewed.[26] While some studies show that the effect of childhood socioeconomic conditions disappears after accounting for more temporally proximal socioeconomic conditions, such as adult occupation,[27] others have found that the effect of childhood socioeconomic conditions persists.[28 29] For example, a recent study of individuals in the UK found that among men, the effects of upward social mobility later in life did not attenuate the effect of childhood socioeconomic status on mental health.[29] At issue is the accumulation of exposure to stressors associated with disadvantage (e.g., witnessing

violence, frequent moves) that over time, may increase the risk of emotional and behavioural problems in a period young people are undergoing physiological and social transitions.[30 31] The strain of economic scarcity may also create family conflict and potentially limit the capacity for supportive parenting to protect against stressful experiences, ultimately having adverse mental health effects on adolescents.[26]

Within a life course perspective, mental health is itself thought of as a resource – one that may be depleted or protected over time through individual and structural processes to ultimately influence one's social position in adulthood.[32] Studies show, for example, that socioeconomic inequalities in mental health persist or widen between adolescence and adulthood.[33-35] Because successful education and employment in young adulthood are crucial for establishing social and economic resources that will be built on later in adulthood, mental health problems in adolescence place individuals on a pathway to social disadvantage across the life course. In a recent meta-analysis, adolescent mental health problems were associated with lower educational attainment and income, higher unemployment, and lower occupational status in adulthood.[36]

A number of psychosocial and structural challenges underlie the socioeconomic inequalities between those individuals who do and do not experience significant mental health problems. For example, those with mental health problems tend to have lower self-esteem; have difficulty searching for jobs when out of work; face challenges with job performance and social stigma when employed; and, require workplace accommodations that many employers do not provide.[37-39] In turn, unfavourable early labour force experiences leave long term 'scars' on one's wages, future employment, lifetime savings, which may then negatively affect mental health in later life.[40-42] The policy implications are clear: intervention in adolescence and the transition to young adulthood is important to creating equity across the life course.

### 1.3. An integrated life course and comparative framework

Despite the contributions of the life course framework to adolescent mental health research, there remain knowledge gaps. According to Corna et al.,[43] these frameworks have not explicated why and how socioeconomic inequalities in adolescent mental health develop in the first place, and how they are maintained or change over time. Building on these prior frameworks, there are two promising directions that can advance life course research on adolescent mental health. First, earlier research in this field generally conceptualized and assessed mental health (and socioeconomic status) as fixed attributes that may be measured at particular points across the life course, rather than as dynamic constructs that are subject to change. Over the last 20 years, life course research on mental health has seen a growth in studies investigating trajectories or longitudinal patterns in mental health.[44 45] However, much of this work has been descriptive (i.e. applying algorithms to describe trajectories), providing few explanations for how inequalities emerge or change over adolescence.[21 44] Studies also differ methodologically, making it difficult to assess the comparability of the number and shape of adolescent mental health trajectories identified across contexts.

Second, these frameworks do not clearly articulate how social and institutional contexts effect socioeconomic status.[19] Two principles of life course theory capture some aspects of institutional determinants: *agency bounded by structure*, and *historical time and place*. The first proposes that individuals have agency to construct their life course experiences, but do so within the constraints and resources of their social circumstances.[19 46-48] For example, individuals make decisions about educational attainment and their labour market participation based on prevailing norms and opportunities with respect to education and work. The second emphasizes that the life course must be understood in context of historical time and place. For example, the relative participation of young people in education and the labour force is

influenced by economic cycles.[49] Those with a history of mental health problems are more likely to be excluded from the labour force in the aftermath of economic downturns.[50-52] A study of Swedish men showed that the 1990s economic crisis amplified the effect of adolescent mental health conditions on future unemployment.[53] This focus on structure and on historical time and place helps to link adolescent mental health, education, and work to the opportunities and constraints of the broader social environment. At the same time, the life course framework does not emphasize the role of institutions (broadly encompassing social policies and provisions) such as the social safety net or welfare state, education systems, and the labour market.[21 54 55]

### *1.3.1. Integrating concepts of change in mental health*

To conceptualize the dynamic nature of adolescent mental health, this dissertation draws from current research in the field of developmental psychopathology showing that the symptoms of many common mental disorders, such as mood and anxiety disorders, occur on a spectrum, fluctuating over the life span.[56-58] With regards to depression a study of American patients with major depressive disorder (MDD) followed for 31 years found that the severity level of MDD changed a mean average of 1.5 times a year; with the majority of weeks in the year spent asymptomatic.[56] A separate but growing body of population-based studies have found that longitudinal trajectories of adolescent depressive symptoms are characterized by stability, change and fluctuation. Recent systematic reviews have found between 3 and 7 trajectories in adolescence, with the majority of adolescents displaying stable trajectories of low or no symptoms over time, but that there are also increasing, decreasing and episodic trajectories.[45 59] Together, this research suggests that the long-term course of depression consists of a dynamic continuum, fluctuating over different levels of symptom severity, with the majority of experiences below diagnostic thresholds. Moreover, depressive symptom severity has been

found to display a stepwise relationship with functional impairments such that a greater severity is related to greater impairments.[56] This research suggests that symptoms along both the clinical and sub-clinical range of severity are important components to measure. Longitudinal assessments of adolescent mental health that capture change over time, across varying levels of severity, may therefore more accurately characterize mental health over adolescence, contributing to a better understanding of potential consequences and opportunities for prevention.

### *1.3.2. How does context – social, institutional and time and place – matter?*

To conceptualize the role of institutional determinants—the social safety net or welfare state, education, labour market—this dissertation draws from two theoretical traditions. First, this dissertation draws from the comparative welfare state literature which provides a framework for describing the role of the social safety net, or the state's role in the provision of social transfers, services, and policies to ensure a minimum level of well-being for its citizens.[60-63] While most capitalist economies are considered welfare states, historical, political and social differences have resulted in variation in the nature of provisions and policies between countries, and in the commodification of labour (i.e., the extent to which individuals rely on the market to achieve an acceptable standard of living). Perhaps the most influential typology of welfare states comes from Esping-Andersen's *three worlds of welfare capitalism*,[64] which classifies countries according to the extent to which they reduce market dependence for an acceptable level of economic well-being, and stratify individuals through the provision of social transfers (e.g., pensions, unemployment benefits, etc.). More recent typologies differentiate countries according to the provision of services including health care, education, and social services.[65 66] Overall, the research evidence from this literature suggests that a relatively more generous and universal welfare provision enhances adolescent health and minimizes inequalities.[61-63 67 68]

Second, this dissertation draws from the varieties of capitalism (VoC) approach which theorizes the relevance of educational systems and their connection to the labour market institutions. In the seminal work of Hall and Soskice,[69 70] education and training systems are viewed as one of five core socioeconomic institutions that distinguish liberal from coordinated market economies, and are therefore responsible for national policies on innovation and for economic performance. The crucial difference between liberal and coordinated market economies with regards to skill formation is the specificity of skills. Whereas in liberal market economies such as the United States, the general education system provides generic human capital assets that must then be complemented with labour market experience, coordinated market economies such as the Netherlands place a strong emphasis on vocational training instead of and/or in addition to higher education.[71] The empirical evidence in this literature generally converges on a positive effect of vocational specificity and educational differentiation on young people's labour market entry.[72-75]

The studies in this dissertation do not test theories of the welfare state or the VoC; rather, they inform the conceptualization of mental health inequalities in adolescence, how they emerge and change during adolescence, and have consequences for education and work young adulthood. In the transition between adolescence and young adulthood, the burden of mental health and educational costs that is borne by individuals and their families can strain those with the fewest resources. The welfare state literature provides a broad understanding of the nature of the social safety net available to young people to minimize inequalities during this transition. The VoC approach, meanwhile, provides a framework for conceptualizing how different types of education and training systems are complementary to and interact with the labour market to constrain the social economic opportunities available to adolescents and ultimately shape their health and social inequalities as they transition to young adulthood.[76] Together, these frameworks assert that observed inequalities in adolescents and young adults should be

understood as a function not merely of individual choice, ability, effort, or other personal attribute, but as a product of institutional sources of inequality that shape an individual's capacity to navigate adolescence and young adulthood.

## 1.4. Aim and objectives

With the research in this dissertation, I aim to explore the impact of institutional differences between contexts—including differences in the social safety net, education systems, and labour market institutions—on mental health as it changes over adolescence, and on the socioeconomic consequences of mental health problems in the transition to young adulthood. In doing so, this research will contribute to several areas of inquiry: the life course understanding of adolescent mental health; the comparative literature on adolescence mental health inequalities; and, the evidence on intervenable structural mechanisms that may be leveraged to support the transition to young adulthood.

To achieve this aim, this dissertation has specific objectives:

**(1) Identify longitudinal patterns in the severity and frequency of mental health problems from adolescence to young adulthood, and examine the extent to which they are similar between comparable contexts.** Given the paucity of theories about how these patterns should be expected to compare across contexts, this research is exploratory.

(2) **Examine the extent to which longitudinal patterns of adolescent mental health are unequally distributed by childhood socioeconomic conditions in comparable contexts.** Following from institutional welfare state theories, adolescents from low-SES backgrounds may be expected to have better mental health outcomes in the more egalitarian contexts.

(3) **Examine whether and to what extent the relationship between adolescent mental health and young adult education and work are similar between comparable contexts.** Following from institutional welfare state theories, adolescents who experience mental health problems may be expected have better education and work outcomes as young adults in more egalitarian contexts.

(4) **Examine whether and to what extent educational attainment may be intervened upon to mitigate the pathway from adolescent mental health to NEET (not in education, employment, or training) in young adulthood in comparable contexts.** Following from the VoC framework, adolescents with mental health problems may have a stronger link to the labour market through educational attainment in education systems characterized by vocational specificity. Following from the life course principle of historical time and place, the relationship between adolescent mental health, education, and employment may be expected to vary between cohorts who experience different labour market circumstances in young adulthood.

## 1.5. Study methodology: Design, concepts and measures, and analyses

The research in this dissertation uses a comparative design to examine the institutions that are related to adolescent mental health, education, and work. Three contexts are compared: Canada, the Netherlands, and the USA. Social and economic similarities but key differences in the social welfare, education, and labour market institutions of these three countries provide opportunities to explore the impact of these institutional differences on adolescent mental health.[77]

### *1.5.1. Context and samples*

Chapters 2 and 3 compare Canada and the USA. Both are high-income industrialized countries with established democratic governments, constitutional law, market economies and relatively

advanced, health and mental health systems. Canada and the USA share similar cultural traditions, educational systems, and industrial and occupational structures.[78] Both are liberal market economies under the VoC framework,[69] and are neoliberal welfare states according to the Esping-Andersen typology.[64] However, they differ on a number of institutions that are important for understanding adolescent mental health and its effect on education and work in young adulthood. Compared with Canada, the USA social safety net provides fewer resources to families and children.[79] The USA also differs from Canada with regards to the level of educational inequality. Jurisdictional differences in the quality of compulsory education are greater in the USA, owing in part to different approaches to financing.[79 80] Private household spending on tertiary education is greater in the USA. In 2017, 42% of educational spending on tertiary education in the USA came from household expenditures, compared with only 26% in Canada.[81]

Chapters 4 and 5 compare the Netherlands and the USA. Chapter 4 is set in the Netherlands, another wealthy country with an advanced health and mental health system. Unlike Canada and the USA, the Netherlands was identified as a social democratic regime, characterized by universal and comparatively generous benefits, by Esping-Anderson.[64] Further, the Netherlands is a coordinated market economy under the VoC framework.[69] The Dutch system places an emphasis on skill specialization, dividing students into vocational and specialized educational streams early in their secondary school years, unlike the generalized education systems in both Canada and the USA.[82] To examine how the institutional differences between the Netherlands and the USA impact adolescent mental health, education, and work, Chapter 5 replicates the empirical work of Chapter 4 in the USA.

To examine how these relationships differ by historical time, Chapter 5 additionally compares two cohorts born ten years apart in the USA who experienced different rates of youth unemployment as young adults: those born between 1970 and 1980 and those born between

1981 and 1990. This design is similar to Elder's pioneering work examining the adolescent experience of two cohorts, born a decade apart—one that encountered Great Depression hardships after their relatively secure phase of early development, and another that experienced childhood during the worst years of the Depression.[19] My research looks at two generations of young people that came of (working) age in different economic circumstances.[83] As young adults, those born between 1970 and1980 experienced a period of economic recovery and a brief and mild recession in the early 2000's, during which youth unemployment rates did not exceed 13%.[83] Those born between 1981 and 1990 faced the Great Recession of 2007/2009 and its aftermath as young adults, during which youth unemployment remained over 13% for almost 6 years.[83]

To examine how institutional differences between Canada and the USA affect adolescent mental health, education, and work, comparable dynamic cohorts were created from national longitudinal survey data of young people in these two countries for Chapters 2 and 3: The National Longitudinal Survey of Youth 1979: Child and Young Adult (NLSY79 Child/YA; USA),[84] and the National Longitudinal Survey of Children and Youth (NLSCY; Canada).[85] Chapters 2 and 3 use approximately 15 years of follow-up data, which allow me to examine the relationship between childhood socioeconomic conditions and adolescent mental health, changes in adolescent mental health over time, and their association with education and work in young adulthood.

Chapter 4 uses 14-years of follow-up data from the Tracking Adolescents' Individual Lives Survey (TRAILS), a longitudinal cohort study of adolescents. This prospective cohort data allows for examination of temporally ordered relationships between adolescent mental health, educational attainment, and being neither in education, employment, or training (NEET) [86 87]

To compare across cohorts, Chapter 5 uses 15-years of follow-up data from young people born between 1970-1980 and 1981-1990 in the NLSY 1979: Child and YA.

### *1.5.2. Concepts and measures*

#### *1.5.2.1. Adolescent mental health*

Adolescent mental health is conceptualized as both an outcome of childhood socioeconomic circumstances (Chapter 2), and as a predictor of education and work in young adulthood (Chapters 3, 4, and 5). Two aspects of adolescent mental health are examined: depressive symptoms (Chapters 2 and 3), and internalizing and externalizing problems, typically used to denote emotional and behavioural problems, respectively (Chapters 4 and 5). In Chapters 2 and 3, depressive symptoms are measured using the self-reported answers to items on the Center for Epidemiological Scales for Depression.[88] [89] The severity of depressive symptoms is indicated on a continuous scale representing a spectrum of severity in the condition. Chapters 4 and 5 measured internalizing problems and externalizing problems using self- and parent-reported answers to validated multi-item scales—the Achenbach's Youth Self Report and the Adult Self Report,[90] [91] and the Behaviour Problems Index,[92] respectively. The presence of internalizing and externalizing problems at the higher end of the severity spectrum during adolescence is indicated by scale scores that are dichotomized and pooled over time.

#### *1.5.2.2. Childhood socioeconomic status*

Childhood SES is conceptualized in Chapter 2 as a predictor of adolescent mental health, such that low-SES places adolescence at greater risk of developing poor mental health. Further, childhood SES is conceptualized as a confounder of the relationships between adolescent mental health, educational attainment, and working status in Chapters 3, 4, and 5. In this

research, childhood SES comprises three constructs: family income, parental education, and parental experiences of unemployment.[93] These constructs were measured using parent-reported answers to questions about family and household net and gross income adjusted for inflation, highest educational level attained by the parent (and their spouse/partner if applicable), and experiences of unemployment by the parent (and their spouse/partner).

#### *1.5.2.3. Educational attainment and work in young adulthood*

This dissertation examines several aspects of educational attainment and work in young adulthood. In Chapter 3, a young adult's social position within the labour market is conceptualized as an outcome of adolescent mental health, and was defined based on the joint contributions of their working status and educational attainment. Self-reported measures of educational attainment and working status at approximately age 25 are used to define five categories (working with post-secondary qualification, working with secondary school qualification, working with no educational qualification, still in school, and disconnected from both school and work).

In Chapters 4 and 5, educational attainment is conceptualized as an intervenable mechanism on the path from adolescent mental health problems to labour market exclusion in young adulthood. Educational attainment is defined by minimum educational qualifications (attainment of a basic qualification certificate in the Netherlands, and secondary school completion in the USA), and measured using self-reported educational attainment. Labour market exclusion is defined using the concept of not in employment, education, or training (NEET), otherwise known in the USA policy context by the terms 'disconnected youth' or 'opportunity youth'.[2 94] In Chapters 4 and 5, NEET is measured using self-reported working status and enrolment in school at approximately age 25.

### *1.5.3. Analyses*

Two statistical methods are used in this research. Growth mixture models, a form of group-based trajectory analyses are used in Chapters 2 and 3, to examine the dynamic course of depressive symptoms over time and the distribution of these patterns within the population.[95] Causal mediation analyses, or the potential outcomes framework, are used in Chapters 4 and 5 to estimate the contribution of educational attainment on the pathway from adolescent mental health to young adult labour market exclusion.[96 97]

## 1.6. Summary and dissertation outline

Given its significance for both individuals' lives and for societal social and economic well-being, it is essential to understand the risks to poor mental health in adolescence, the vulnerabilities it confers for young adulthood, and intervenable mechanisms that will empower young people in their transition to adulthood.[1 2] How does the broader social safety net, the education system, the labour market create, sustain or mitigate such risks and vulnerabilities? The empirical studies that follow provide insight into this question by examining both change in mental health inequalities during adolescence, and the context in which adolescent mental health influences education and work young adulthood.

In Chapter 2, I examine if longitudinal patterns in the severity and frequency of mental health problems from adolescence to young adulthood are comparable in Canada and the USA, and the extent that inequality in these patterns by childhood SES is similar between contexts. In Chapter 3, I examine how the relationship between adolescent mental health and young adult education and work compares between Canada and the USA. In Chapters 4 and 5, I examine whether and to what extent educational attainment may be intervened upon to mitigate the pathway from adolescent mental health problems to young adult labour market exclusion in the Netherlands and the USA. In Chapter 6, I conclude this dissertation with a summary and

discussion of the findings from this research, its theoretical implications, and an outline of recommendations for future research and practice.