Mikael Ahlborg

Mikael G. Ahlborg is a Registered Nurse with a long experience of working with children and adolescents with disabilities and rare diseases and their families. He began his Phd in Health & Lifestyle in the fall of 2016 with a focus on adolescent mental health. He has been teaching at the Nursing Program in various courses and elected as a doctoral representative at the research education committee and work environment committee during the course of his Phd at Halmstad University.

School of Health and Welfare

978-91-88749-81-9 (printed)
Halmstad University Dissertations, 2022

HALMSTAD UNIVERSITY

SOCIAL CAPITAL AND INEQUALITIES IN MENTAL HEALTH AMONG YOUNG ADOLESCENTS IN SWEDEN

MIKAEL AHLBORG

Halmstad 2022

DOCTORAL THESIS

Social capital and inequalities in mental health among young adolescents in Sweden

Mikael Ahlborg

School of Health and Welfare
Doctoral Thesis | Halmstad University Dissertations no. 86

Social capital and inequalities in mental health among young adolescents in Sweden

Mikael Ahlborg

DOCTORAL THESIS | Halmstad University Dissertations no. 86

Social capital and inequalities in mental health among young adolescents in Sweden

Halmstad University Dissertations no. 86
ISBN 978-91-88749-81-9 (printed)
ISBN 978-91-88749-82-6 (pdf)
Publisher: Halmstad University Press, 2022 | www.hh.se/hup
Printer: Media-Tryck, Lund

Happiness is only real when shared

Christopher McCandless (1968-1992)

Abstract

The aim of this thesis was to explore social capital and inequalities in mental health among young adolescents in Sweden. This is a compilation thesis comprising four studies. **Studies I** and **II** are quantitative studies of cross-sectional data from the Swedish Health Behaviour in School-aged Children survey. The aim of **Study I** was to investigate socioeconomic inequalities in health using both a subjective and an objective measure of socioeconomic status among Swedish adolescents. The findings showed that subjective socioeconomic status robustly and independently predicted mental health problems, poor life satisfaction and poor general health perception. The association between objective socioeconomic status and mental health was weakened, and even reversed, when subjective socioeconomic status was accounted for in regression models. A Latent Profile Analysis was applied in **Study II** with the aim of identifying distinct profiles of family, school and peer social capital in a nationally representative sample of adolescents and to explore health outcomes in those profiles. The findings showed that five distinct profiles best represented the data for 11 and 15-year olds, while a four-profile model was optimal for 13-year olds. Significant inequalities were identified between profiles when these were examined in terms of mental health problems and life satisfaction. The design of **Study III was** a qualitative semi-structured interview study. The aim was to explore social capital from the perspective of adolescents in relation to mental health. Adolescents spoke of having access to a safe space, feeling connected to others and predictability as important aspects of social relationships and networks in relation to mental health. The aim of **Study IV** was to identify and evaluate the design and psychometric properties of instruments for assessing social capital specifically developed and validated for self-reporting among adolescents (10-19 years). The design was a systematic review, in which 20 instruments were identified. The results revealed a lack of instruments that covered both the multidimensionality of social capital and contextual relevance in relation to adolescents. **The conclusion from this thesis** is that social capital may be useful for identifying vulnerable individuals and for differentiating between the natural imbalance of adolescence and what may lead to serious illness. Longitudinal research and refinement of the operationalization of the concept are, however, needed to enhance the understanding of these findings.

Keywords: Adolescence; Inequalities; Lifestyle; Mental health; Social capital; Socioeconomic status

Contents

Abbreviations

COSMIN	COnsensus-based Standards for the selection of health Measurement INstruments
FAS	Family Affluence Scale
HBSC	Health Behaviour in School-aged Children
LPA	Latent Profile Analysis
OR	Odds Ratio
SD	Standard Deviation
WHO	World Health Organization

List of scientific papers

This thesis is based on the following studies, referred to in the text by their Roman numerals.

I. Ahlborg, M., Svedberg, P., Nyholm, M., Morgan, A., Nygren, JM. (2017). Socioeconomic inequalities in health among Swedish adolescents – adding the subjective perspective. BMC Public Health, 17:838.

II. Ahlborg, MG., Svedberg, P., Nyholm, M., Morgan A., Nygren JM. (2019). Into the realm of social capital for adolescents: A latent profile analysis. PLoS One, 14(2):e0212564.

III. Ahlborg, MG., Nyholm, M., Nygren, JM., Svedberg, P. Social capital in relation to mental health – the voices of adolescents in Sweden. [In manuscript].

IV. Ahlborg, MG., Nyholm, M., Nygren, JM., Svedberg, P. Current conceptualization and operationalization of adolescent's social capital: a systematic review of self-reported instruments. [Submitted to Heliyon].

Introduction

If mental health is understood as the aim to establish an internal balance of the mind, then it is not difficult to imagine the constant battle that adolescents face when trying to navigate societal norms and expectations and also a seemingly infinite number of opportunities in a rapidly changing and globalized society, all while going through physical and psychological maturation. Most adolescents living in Sweden today have everything they require and much else to stay alive. On the other hand, adolescents need a sense of purpose, social interaction, connectedness, physical touch, and love to be able to thrive as human beings.

The overall aim of this thesis is to explore social capital and inequalities in mental health among young adolescents in Sweden. The main motive for this research project can be found in the large number of public health reports and research studies that have testified to an increased prevalence of mental health problems among adolescents over the past decades, of which a disproportionate ratio is among girls (Bor et al., 2014; Bremberg, 2015; Currie et al., 2012; Inchley et al., 2016). The environment that adolescents live in contains a multitude of factors that work as facilitators and/or barriers, depending on the cultural and societal structures, for maintaining a healthy lifestyle and a balanced mental health (He et al., 2004; Solar & Irwin, 2010). The focus lies here on young adolescents (age 11-15 years) and the social contexts of their everyday life, which means that diagnosed mental illness, the healthcare setting and the aspect of medication and patient-professional interaction is outside the scope of this thesis.

Inequalities in mental health can be viewed from a number of perspectives, for example; gender, geographical, ethnic, cultural or socioeconomic, each revealing a different reality (Arcaya et al., 2015). Socioeconomic status (Reiss, 2013) and gender (Campbell et al., 2021) are considered important determinants of adolescent mental health. It has, however, been suggested that social aspects such as social interaction, culture and behaviour may generate insights into the pathways between social determinants and mental health that help fill in the gaps of other explanatory factors (Stanton-Salazar, 2011; Viner et al., 2012). The perspectives of subjective socioeconomic status

and social capital in young adolescents are therefore explored here in relation to mental health.

A critical realist approach (Sturgiss & Clark, 2020) informs this thesis project by favouring the use of a variety of research designs and careful consideration of the influence of context, which entails an approach of adolescents as active agents. Finally, existing theories and the role of the researcher are approached from a critical perspective.

Background

The background combines a review of theoretical and empirical literature relevant for this thesis. It presents adolescent health and lifestyle, followed by theoretical and empirical perspectives on adolescent mental health and the complexity of its measurement. The social determinants of adolescent mental health are then described and inequalities in adolescent mental health are discussed from the perspectives of socioeconomic status and gender. The final part of the background provides an in-depth exploration of social capital and how the concept has been described in relation to adolescents and mental health.

Adolescent health and lifestyle

Adolescence is perhaps the most intense period in life in terms of the physical and psychological development that occurs in combination with the challenges of transitioning into adulthood (Dahl, 2004). Adolescence is thought of as a time during which the forming of a social identity takes place, largely influenced by the independence from existing social relationships and the establishment of new ones. It is also during this phase that autonomous health behaviours emerge, and the body image is shaped, factors that are likely to impact the health trajectory into adulthood (Patton et al., 2016; Sousa et al., 2014). Adolescents have historically been given scant attention in the work on health promotion and disease prevention, perhaps because of the preconceived idea of adolescence being the healthiest time in life (Patton et al., 2016). It is only recently that global progress in reducing communicable diseases and maternal and child mortality has given way to the enlightenment of adolescence as a key phase for health education and the promotion of healthy lifestyles, which have immediate as well as long-term effects (Patton et al., 2016).

Early adolescence

It is important to elaborate on what signifies young adolescents since the primary focus of this thesis lies on this group. Physical growth normally reaches its peak during the early stage of adolescence, between 10-15 years of age (WHO, 2010). Cognition is often limited to the "here and now", accompanied by a vague understanding of how present actions can impact the future. Mood changes become more frequent and a struggle between independence and dependence commonly occurs. Social interaction within the family often entails a naturally increasing presence of arguments and disobedience, together with a continued close attachment to parental figures (WHO, 2010). Strong peer group attachment forms and same sex friendships are considered crucial while interaction with the opposite sex typically occurs in group constellations. Generally, the onset of puberty begins earlier for girls (9-13) than for boys (10-14), which also implies maturation of the body (Eckert et al., 2020) and brain (Lenroot & Giedd, 2010). Concern with body image and worrying about being normal are common in early adolescence related to the rapidly changing body. Social skills and more advanced problem-solving start to develop towards the end of the early stage and cognition can thus involve more abstract and consequential thinking (WHO, 2010). Adolescents start to identify as something more than simply the offspring of their parents during this period and develop a sense of self, uniqueness and value in relation to others (Teipel, 2013). Cognitive abilities such as rational thinking about the future, seeing long-term consequences of present actions and being able to "put yourself in another person's shoes" are still yet to develop for most, which demarcate early adolescence from late adolescence and young adulthood (Teipel, 2013). The term "young adolescents" is used interchangeably to adolescents in the early stage of adolescence in this thesis.

Adolescent health

Health is a broad concept that covers physical, mental and social aspects. The often cited definition from the WHO implies that merely the absence of disease or infirmity is not enough to "have" health, but to experience feelings of well-being are necessary as well (WHO, 2006). Another definition of health implies that there are two dimensions, abilities and well-being (Tengland, 2007). Health is having the abilities that people generally possess or develop. The individual's goals are thus not necessary to account for when ability is assessed objectively. This makes sense since comparisons between peers and against the norms of society are perhaps occurring more often in early adolescence than during any other period in life. The other dimension refers to wellbeing as an important part of health, with suffering as an opposite.

Together, these dimensions either bring positive value or negative value for individuals (Tengland, 2007). Taking into account what makes this life period unique, adolescent health involves transitions within the physical, social, cognitive and intellectual domains (WHO, 2021). The growth of these domains often occurs at different paces, which may increase the risk of emerging mental health problems and engagement in risk-taking behaviours, which can lead to unhealthy lifestyles (WHO, 2021)

There are a few studies in recent times that have investigated the ways in which adolescents define health. Many aspects are recurrent in the existing literature, but there is some variation in how adolescents themselves describe the concept of health. This differentiation appears to depend on the cultural context, societal norms and religious beliefs, but is also connected to gender and age (Parvizi & Hamzehgardeshi, 2014). Health is commonly expressed by adolescents as "being healthy", which implies eating healthily, exercising regularly, having energy and feelings of well-being (Sousaet al., 2014). Another way of defining health has been by stating the absence of risk factors such as being fat, stressed out, consuming alcohol, tobacco or drugs or engaging in sexual risk behaviour and violence (Ott et al., 2011). However, as adolescents are given the chance to elaborate on health, a more complex image is communicated. It includes psychosocial aspects and factors such as independence and autonomy, social relations, socioeconomic conditions and societal attributes that interact in preventing, encouraging and/or maintaining healthy behaviours (Ott et al., 2011; Parvizi & Hamzehgardeshi, 2014). It seems as if adolescents, even in early adolescence are able to state that health and health behaviour are not only influenced by individual-level factors and the environment surrounding them, but also by the complex interaction connecting the two.

Adolescent lifestyle

The term lifestyle simply means the way in which a person lives (Oxford University Press, 2021). In relation to health, lifestyle can be understood as long-term health behaviours that involve, for example; physical activity, diet, screen time, tobacco use and alcohol consumption. Lifestyle in adolescence is closely related to health and social behaviours and relies on the active or unconscious choices that adolescents make (He et al., 2004).

A causal link between lifestyle and the prevalence of chronic diseases has been established, which has contributed to general world-wide recommendations for physical activity, diet and sleep (WHO, 2018b; WHO, 2020). Certain recommendations have also been put forward specifically for children

and adolescents concerning screen time, fruit intake and physical activity. However, research from a number of countries shows that many young adolescents adhere poorly to lifestyle recommendations with a consequential greater risk of future ill-health; from Canada (Loewens et al., 2019) Europe (Moreno et al., 2014), the UK (Sandercock, et al., 2012), Australia (Hayward et al., 2016) and Sweden (Winkvist et al., 2016). Only about 15% of young adolescents in Sweden reach the recommended levels for physical activity, with lower percentages for girls and higher for boys. Research also shows how participation rates in organized sports and healthy lifestyles decrease with age among both boys and girls (Marques et al., 2020; Wagnsson, et al., 2014). Approximately one third of adolescents aged 13-15 years get less than eight hours of sleep per night and about half spend three hours or more per day in front of a screen not related to schoolwork (Garmy et al., 2019). Girls tend to use social media apps more while boys spend significantly more time playing computer games than girls (Dahlgren et al., 2021). An indication of adolescents' adopting unhealthier lifestyles over the past two decades is the slight increase in overweight among adolescents (Eriksson et al., 2018).
An explanation for poor compliance with recommendations may be that few consequences of unhealthy lifestyles are revealed in the short-term in adolescence. Adolescents experience little effect of low physical activity, poor diet, and smoking or alcohol consumption in comparison with adults, and those whose physical appearance is close to what is considered normal have in interviews described little concern for their present and future health and lifestyle (Van Exel et al., 2006). There is an outspoken careless attitude in this group towards lifestyle choices. In contrast, overweight adolescents or those who have gained more weight than their peers during puberty describe greater concern about their lifestyle, especially their diet habits (Van Exel et al., 2006).

What influences adolescents' lifestyles and to what extent do they make active choices? Biological factors, socioeconomic status, societal attributes and social relations influence adolescents' lifestyles in the same way as with health behaviours described above (Cortis et al., 2017; Short & Mollborn, 2015; Stierlin et al., 2015). It is a natural part of adolescence to experiment and to start to question rules set by adults and involvement in risk-taking behaviour generally increases throughout early adolescence (He et al, 2004). However, research shows that parental guidance, monitoring and an articulate disapproval of unhealthy behaviours is associated with a healthy lifestyle in adolescence. Social influence has thus been found to adequately predict adolescents' attitudes towards their own health and lifestyle choices (Harton & Latane, 1997; He et al., 2004). Boys who engage in risky behaviour have historically been considered popular and interesting for the opposite sex

(Harton & Latane, 1997). Similarly, if peers approve of what is considered unhealthy behaviour, adolescents are more likely to adopt an unhealthy lifestyle (He et al., 2004, Adams et al., 2021). Young adolescents are also prone to form homogenous peer networks that can either normalize negative health behaviours and attitudes or encourage a healthy lifestyle (Hutchinson & Rapee, 2007; Adams et al., 2021).

The link between lifestyle and the physical dimension of health is quite clear (WHO, 2020b). The association between lifestyle and mental health is, however, not as straightforward. There is research indicating that adolescents meeting recommendations for physical activity and screen time guidelines experience fewer depressive thoughts (Hayward et al., 2016; Hoare et al., 2016; Dahlgren et al., 2021). Compliance with lifestyle recommendations has also found to be associated with a lower frequency of visits to mental health clinics among young adolescents (Loewen et al., 2019). The association is, however, not very strong and there is more evidence pointing towards a bi-directional association than a matter of causality (Hayward et al., 2016). Depression and suicide are among the major health risks in adolescence (WHO, 2018a). Since both are linked to mental health, it is important to direct particular interest towards the psychological dimension of adolescent health

Adolescent mental health

Mental health is one dimension of the multidimensional concept of health. Mental health itself contains multiple dimensions or components that have been labelled and described in various ways with the commonality that they relate to well-being (Headey et al., 1993; Keyes, 2005; WHO, 2014). Researchers have more recently reflected about the shortcomings of the WHO definition of mental health from 2004, suggesting that overemphasizing the positive feelings of individuals can be problematic depending on where these feelings originate from or what actions cause them (Galderisi et al., 2015). A new definition of mental health has been proposed by Galderisi and colleagues (2015):

> Mental health is a dynamic state of internal equilibrium, which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium.

"Universal values" refer in this definition to "respect and care for oneself and other living things; recognition of connectedness between people; respect for the environment; respect for one's own and others' freedom". The argument is made that the weight or importance of the different components in contributing to a state of balance vary depending on, for example, personality, age and culture. Moreover, Galderisi and colleagues (2015) emphasize how different periods in life lead to disturbance and require an active search for a new balance, pointing out adolescence as a period of crisis. One of the reasons why this definition is intriguing in theory is that it leaves room for some of the "mental chaos" that occurs naturally during adolescence and embraces the fact that life is sometimes joyful and sometimes sad. It may be sensible to suggest that periods of imbalance are bound to occur while coping with physical and mental maturation, striving for academic achievements, social status and self-realization in an expanding social network.

With the above definition of mental health in mind, it is interesting to see how adolescents themselves define mental health. Research has shown that aspects of mental health are influenced and shaped by culture (Gopalkrishnan & Babacan, 2015). These cultural differences include perceptions of health and illness, coping, help-seeking and a differentiating impact on gender, family and stigma. Adolescents' views on what constitutes mental health may thus differ depending on nationality, gender, class, religious views or other factors. Adolescents in Sweden have described mental health as feelings or emotional experiences of internal or relational character (Johansson et al., 2007). From a positive view, internal feelings that adolescents describe are happiness, feelings of being a good person and a sense of harmony. Negative internal feelings are meaninglessness and hopelessness, feeling stressed out or unhappy. These depictions of feelings relate strongly to hedonistic and eudaimonic well-being as described by Keyes et al. (2002) and Westerhof and Keyes (2009). A social dimension of mental health is evident from what adolescents describe both in early and late adolescence (Johansson et al., 2007; Landstedt et al., 2009). It consists of positive feelings of a relational character, described as feeling loved, liked, and having people to talk to, while negative examples are loneliness and feeling unhappy (Johansson et al., 2007). Altogether, these emotions lead to what adolescents describe as having lots of energy, going into a bad mind-spiral, anxiety, irritation and anger, headaches, backache and having trouble sleeping. Mentioned in relation to mental health is also a desire to be kind to others and to be perceived as an honest person (Johansson et al., 2007). Girls emphasize expectations and demands as a stressor to a greater extent than boys do (Landstedt et al. 2009), while the latter accentuate self-confidence and courage in relation to mental health and describe an unwillingness to share emotions with others (Johansson et al.,

2007; Landstedt et al., 2009). These differences are perhaps not surprising given the well-documented gender differences in the prevalence of mental health problems, which is elaborated on later in this thesis.

There are thus evident points of contact between how adolescents in Sweden describe mental health and the definition by Galderisi and colleagues (2015). Apart from the obvious social dimension, a balance or harmony is described that helps adolescents to act according to norms and be kind to others (i.e. universal values). What the adolescents themselves further contribute with are depictions of gender differences and that the most important relationships are found within the family, in school and between peers (Johansson et al., 2007; Landstedt et al., 2009). Additionally, adolescents in the study by Johansson et al. (2007) described how expressions of well-being can sometimes be a façade and that just because someone seems happy does not mean that they are, which Galderisi and colleagues (2015) have also reflected on.

Well-being in adolescence

Well-being for adolescents has been considered vital for promoting and maintaining a positive mental health (Park, 2004). Well-being and mental health problems correlate inversely but should be viewed as two separate dimensions of mental health because they can co-exist (Granlund et al., 2021). Well-being in adolescence implies having the support, confidence, and resources to thrive in contexts of secure and healthy relationships (Ross et al., 2020). In the definition of mental health used in this thesis, the dynamic state leaves room for the imperfect functioning of a variety of emotional states, meaning a mentally healthy adolescent may experience fear, sadness, anger and to some extent anxiety naturally. While well-being is thus considered an important dimension of mental health, a too greater emphasis on expressions of, for example, happiness may be misleading (Galderisi et al., 2015). Well-being itself is inclusive of various forms, such as physical, emotional, relational, embodied as confidence, inner strength and spirit and overall satisfaction with life (Cahill, 2015). Keyes et al. (2002) described well-being to include an emotional (hedonia), psychological (eudemonia) and social dimension where the continuum of well-being stretches from languishing to flourishing. Some of these forms of well-being can be interpreted as more representative of the "here and now" while others better connect to the long-term evaluation of one's life. For example, young adolescents likely experience various levels of well-being during a day with reference to emotional and relational well-being. Confidence and an overall satisfaction with life on the other hand are not "budged" as easily by minor events such as arguing with a friend or feeling low after a bad night's sleep. Instead, these are formed from childhood,

with a strong link to parental supervision, support, and the promotion of autonomy (Park, 2004). It is important to keep in mind that certain cognitive functions, such as ability to think ahead and outside of the self, begin to develop during early adolescence (WHO, 2010). Greater value is attached to peer groups at the same time. Whether faced with minor daily events or more profound life events (parental divorce or similar), this probably means the triggering of different forms of well-being depending on the cognitive development. It would also mean a varying impact on the balance and ability to regain balance. This is important for our understanding of how adolescents react when faced with everyday obstacles or serious adversity, but also has implications for how adolescents rate their well-being.

Trends in adolescent mental health

The prevalence of mental health problems among adolescents has increased over the past decades (Bor et al., 2014; Collishaw, 2015; Ottova-Jordan et al., 2015; Hagquist et al., 2019), while adolescents' satisfaction with life has decreased in many European countries (Cavallo et al., 2015). Research concludes that adolescents in Sweden are not exempt from this development (Due et al., 2019; Potrebny et al., 2017). The national trend raises concern when looking at the proportion of adolescents who report frequent mental health problems such as feeling down, anxious and irritated, increasing significantly since the 1980's (Dalman et al., 2021). Contacts with healthcare professionals related to mental health problems such as anxiety and signs of depression have increased concurrently over the same time-period, as have related drug prescriptions (The National Board of Health and Welfare , 2017). Girls are overrepresented in these statistics, but it is important to consider that the prevalence also increases with age through adolescence (Hagquist, 2010), highlighting the need of early promotion and prevention.

A multitude of possible explanations for this rather steady trend has been put forward, one suggesting that these statistics are the result of an increased willingness to share feelings due to general improved mental health literacy and reduced stigma related to mental health problems (Dalman et al., 2021; Gunnell, 2018). Another explanation emphasizes the personal traits of "Millenials" and "Generation Z" who are faced with new risks, stressors and demands in today's society that expose their vulnerability and lack of coping skills (American Psychological Association, 2018). More attention has been given in Sweden to structural changes in the school system and job market, increased individualisation and expectations of self-realization as contributors to the worrying development (Public Health Agency, 2018b). Moreover, these structural and sociocultural changes have been maintained as not only

having a negative impact at an individual level, but also to contribute to reinforced inequalities in mental health at the group level (Public Health Agency, 2018b).

Operationalizing adolescent mental health

The diversity of the ways in which mental health problems manifest and affect individuals makes it a complex matter for distinguishing between what is harmless and what should raise concern. Longitudinal research shows that the prevalence of mental health problems in early adolescence predicts future mental health problems, physical health, and general health perception (Otto et al., 2021). Moreover, the presence of mental health problems early in life increases the risk of future mental illness and an increased use of mental health services (Mulraney et al., 2020). However, depending on which indicator of mental health is used and which methodological approach is used to analyse the data, differing images are visible (Tannenbaum et al., 2009). For example, while frequent mental health problems have increased, a negative trend in life satisfaction is less clear (Dalman et al., 2021).

It has been suggested that mental health problems should be viewed as a continuum, from naturally occurring temporary expressions to severe and life-long conditions (Patel et al., 2018). Granlund and colleagues (2021) have put forward a model to bring some clarity in order to resolve some of the conceptual confusion that exists in mental health research.

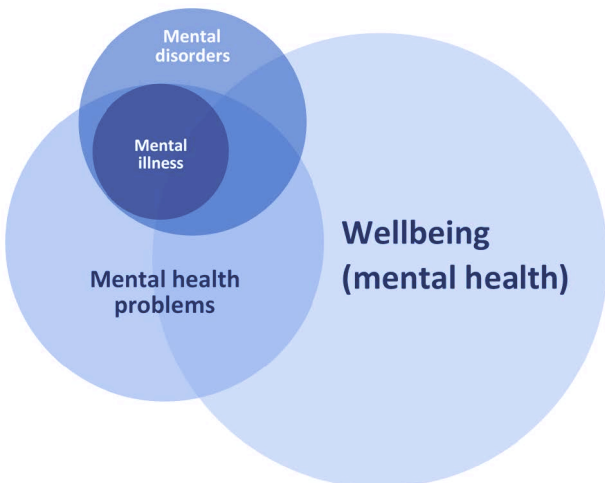

Figure 1. Relations between different concepts used when discussing mental health (Granlund et al., 2021).

The concepts of well-being, mental health problems, mental illness and mental disorders are visualized in Figure 1. Well-being and mental health problems overlap, and both are understood as a natural part of adolescents' lives. The risk of future mental illness increases with a prolonged presence of mental health problems (Copeland et al., 2013). Some mental disorders, such as neurodevelopmental disorders, are not necessarily linked to mental health problems and do not involve mental illness, which is why mental disorder is a broader concept than the others in the figure (Granlund et al., 2021). Mental illness refers to other conditions than neurodevelopmental disorders and exists within the continuum of mental health problems.

In the definition of mental health previously described, it is stated that a harmonious balance between body and mind and the ability to cope with adverse events are important components of mental health. In events of imbalance, it is well known that when the human body experiences stress and distress under an extended period of time, the physiological response of the body entails impaired immune and cognitive functions (Romeo, 2013), as well as psychosomatic expressions (Ursin, 1997). This corresponds well with the descriptions made by adolescents and is incorporated in the definition of mental health adopted in this thesis. But how does one distinguish the natural occurrence of imbalance that manifests as mental health problems in adolescence from a level that leads to increased risk of severe consequences? A common way is to draw attention to the amount and frequency of experienced symptoms and include indicators of well-being (Rose et al., 2017). Although there are drawbacks to using threshold values, that are like the disadvantages of a strong generalization, a common level for distinguishing the frequency of mental health problems that is likely to impair everyday functioning is "at least two symptoms more than once per week" (Currie et al., 2012; Levin et al., 2009; Pförtner et al., 2014; Ravens-Sieberer et al., 2009).

It would be problematic to assume that an absence of mental health problems equals a balanced mental health, just as it may be misleading to focus solely on expressions of well-being. Life satisfaction, in combination with mental health problems, is therefore frequently used as an indicator of well-being as a counterweight to the deficit approach, see for example Levin et al. (2012). In summary, it is not a simple task to distinguish adolescents at risk of developing more severe mental health problems or mental illness from those that experience the natural imbalance of adolescence (Najman et al., 2008). Since mental health in adolescence is a complex process encompassing multiple factors that are unique for each individual (Naninck, et al., 2011; Patel et al., 2018) we need to look beyond expressions of mental health.

Social determinants of adolescent mental health

Health inequalities are merged into the structures of our society and depending on what perspective the observer chooses a different reality emerges. Inequalities in health can be viewed from a number of perspectives, for example; gender, geographical, ethnic, cultural or socioeconomic, each revealing a different reality (Arcaya et al., 2015). Inequality in this sense is a generic term, used to describe differences or variations without a moral or political loading. Health inequity on the other hand, is the term used to describe inequalities that stem from social injustice, often considered avoidable or unnecessary (Kawachi et al., 2002).

One model that is used to explore and understand inequalities in adolescent mental health is the framework for action on the social determinants of health put forward by the Commission on Social Determinants of Health (CSDH) (Solar & Irwin, 2010), which was presented in 2010. The goal was to summarize what was known about how the structures of society, institutes, norms and social interactions affected population health (Figure 2). A key aspect of this task was to highlight the direction of associations and through which mechanisms social hierarchies in society were created and sustained. The level of impact that structural determinants have on intermediary determinants and consequently population health differs depending on the macrostructures in the socioeconomic and political context. Such structures include form of governance in a country, the economic, social, and public policies that are put in place and whether these are enforcing inequities or working against them (Solar & Irwin, 2010). Socioeconomic status, gender and ethnicity represent determinants of health inequities that also sustain social inequalities and division of power. These operate through a set of intermediary factors to shape the health of the population by determining differences in individuals' vulnerability and exposure to negative health conditions.

Social cohesion and social capital, which are included in the framework are especially relevant to this thesis. Social cohesion refers to the strength of relationships and solidarity among members of a community and one indicator of social cohesion is the amount of social capital in a community (Kawachi et al., 2000). Social capital is understood as a determinant that cuts across the social and intermediary factors due to its structural and cognitive components. Social capital is described in the CSDH framework as a key for understanding and promoting population health, although concerns are raised with reference to the conceptual heterogeneity of the concept (Solar & Irwin, 2010).

The CSDH framework was not developed with a specific focus on adolescents. It is therefore necessary to describe in greater detail relevant social determinants from the perspective of adolescents.

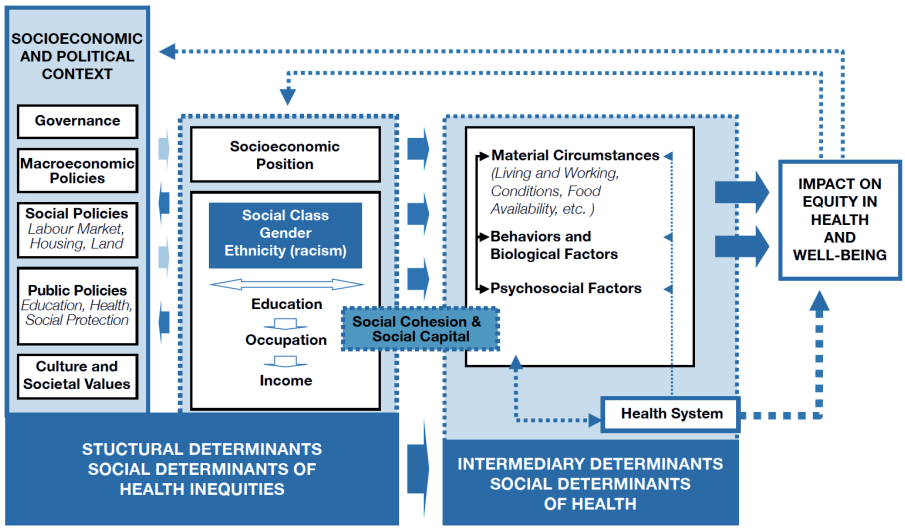

Figure 2. The CSDH framework for action on the social determinants of health (Solar & Irwin, 2010).

Structural social determinants

Socioeconomic status

Socioeconomic status has been intensively investigated as a determinant of health over the past decades and is a common theme in discussions about health inequalities and inequities in social sciences and politics. There is substantial support for a social gradient in population health, implying a strong causal relationship despite accounting for alternative explanations (Pickett & Wilkinson, 2015). Socioeconomic status is traditionally assessed through indicators of individuals' job positions, education, income and/or material wealth (Currie et al., 1997). Depending on the educational level, individuals or families have different opportunities for accessing information and benefiting from new knowledge. Higher income level is associated with better living conditions, access to nutritional food, material gods and healthcare. Job position is linked to other aspects but can also add particular benefits through job-related privileges, power and skills (Solar & Irwin, 2010).

Adolescents are not the "keepers" of socioeconomic status, instead information is gathered either through parents or by proxy measures that adolescents themselves report via, or both (Reiss, 2013). Research has shown evidence of socioeconomic inequalities in adolescent mental health, revealing that socioeconomically disadvantaged adolescents are approximately twice as likely to experience mental health problems than their advantaged peers (Reiss, 2013). Findings related to adolescents in Sweden are similar, yet not as strong, when investigating parental education and depressive symptoms (Wirback et al., 2014). Macro-level data indicates that income inequality has increased significantly from relatively low levels in Sweden since 2005 (The World Bank, 2021). Socioeconomic inequalities in adolescent mental health can thus be expected to follow the same pattern. However, it is known that mental health problems are prevalent among adolescents in all levels of socioeconomic status and it has been suggested that consideration of relative comparison can offer insights that objective socioeconomic status fail to highlight (McLaughlin et al., 2012).

Gender

Gender is used to describe the characteristics of women and men that are socially constructed (WHO, 2021b). This thesis incorporates gender as an important explanatory factor to inequalities in mental health. It is arguably irresponsible to discuss adolescent mental health without giving attention to the clearly visible gender differences in the prevalence of mental health problems. Girls and women suffer far worse consequences from a perspective of inequity than men from the gender-based social hierarchies (Solar & Irwin, 2010). These structures entail lower social status, less access to and possession of resources as well as different employment conditions. Reducing inequality in access to resources through active policy making has been described as one of the most important steps towards gender equity in health (Doyal, 2000).

The gender gap in adolescent mental health has been highlighted in a global study with a substantial sample size (over 500,000), (Campbell et al., 2021). The main findings showed that girls reported significantly worse than boys for life satisfaction, psychological distress, hedonia and eudaimonia. A surprising result is that the gender gap was more pronounced in countries with greater income equality (indicated by Gini index) and gender equality (indicated by Gender Inequality Index, Global Gender Gap Index and Gender Social Norms Index). Sweden was among the top 10 countries with the largest gender gaps in life satisfaction, eudaimonia and hedonia. Sweden displayed the largest gender gap for psychological distress of all the 73 participating countries, followed by six other European countries (Campbell et al., 2021).

A disproportionate increase in school stress among girls has been suggested as one explanation of the expanding gap (Hogberg et al., 2020). Another explanation concerned lower levels of physical activity among girls compared to boys (Halliday et al., 2019) and a higher degree of smart-phone dependence as a third one (Yang et al., 2018). However, it is reasonable to consider these explanations as merely symptoms of a deeper problem that the feminist perspective better elucidates. Apart from the previously mentioned gender-based structures, girls are faced with greater pressure linked to patriarchal structures and misogynistic attitudes in society that includes body image control, early sexualisation and sexism (Ng, 2016). There are bound to be consequences when this is combined with the expectations of growing up in a country that one is told is gender equal. It is possible that the gender gap in adolescent mental health is a result of a double burden carried by young girls and women, where new possibilities and expectations are simply placed upon traditional roles and structures (Campbell et al., 2021).

One additional and crucial point to make is that a binary perspective on gender has been adopted in the above-referenced studies. We know that transgender, gender fluid and non-binary adolescents are made invisible in most research while simultaneously disproportionately suffering from discrimination, mental health problems, depression, violence, and suicidality (Newcomb et al., 2020). It is important to remember that these adolescents are forced into, or left out of, the generalizations that we as researchers draw from studies that adopt a binary perspective on gender.

Intermediary social determinants

The intermediary determinants included in the CSDH framework are material circumstances, behavioural, biological, and psychosocial factors. These determine differences in individuals' vulnerability to structural inequities and level of exposure to negative health conditions (Solar & Irwin, 2010). Social inequities are believed to play a major role for an individual's risk of being exposed to health-compromising circumstances, influence their lifestyle and vulnerability to adversity and stressors by restricting access to resources for groups (Solar & Irwin, 2010). The intermediary determinants thus work as determinants of adolescent mental health on their own but are heavily influenced by structural inequities. For example, research shows that socioeconomic status determines inequalities in material circumstances (Solar & Irwin, 2010). In turn, material circumstances also predict inequalities in adolescent mental health, as well as dietary habits and level of physical activity (Currie et al., 2008). Moreover, pressure for adolescents to conform to gender

roles determines differences in social and health behaviours, which have been found to impact mental health (Priess, et al., 2009).

It is often a simplified version of reality we are shown regardless of which perspective we view these inequalities from, and it is necessary to consider alternative ways of revealing inequalities in order to complement our understanding of how inequities affect populations. A commonality raised by researchers is that social aspects such as social interaction, culture and behaviour seem to generate insights into the pathways between social determinants and mental health and help fill in the gaps of other explanatory factors (Stanton-Salazar, 2011; Viner et al., 2012). Social capital contains features that link to both the structural and intermediary determinants. It has been discussed intensively in relation to inequity, social mobility, access to resources and population health over the past decades being as it is a "property" of both individuals and the community (Moore & Kawachi, 2017).

Social Capital

There is as yet no shared consensus on the definition of social capital. Furstenberg and Kaplan (2004; p.219) made their opinion clear on the ambiguities and gaps in its use already in 2004:

> "The idea of social capital, while attractive, is being used so promiscuously that it is on the verge of becoming quite useless in empirical research. Unlike its conceptual cousin, human capital, social capital has achieved no common definition, much less common measurement"

In a historical perspective, Lyda Hanifan was perhaps the first to coin the term in writing in 1916 as he described social capital as "good will, fellowship, sympathy and social intercourse" (Putnam, 1995). This remained until the late 1980's when the concept became more famous mainly through the work of Bourdieu (1986), Coleman (1988) and Putnam (1995), who together triggered the still on-going discussions on social capital. According to Bourdieu, social capital is the sum of resources, which are linked to possession of a durable network of relationships of mutual recognition (Bourdieu, 1986). He emphasizes profit, often interpreted as reducible to economic profit, for which he has received critique (Tzanakis, 2013), as being the main reason actors engage and maintain links in social networks. Networks have different potential depending on size, economic, social, cultural and symbolic capital, which is unevenly distributed across society through a complex web of

individuals' social positions, referred to as social space. This leads to different opportunities for groups to accrue profit and control of capital, thus preserving social reproduction (Furstenberg, 2005). Coleman agrees with Bourdieu that social capital resides in the social structure of social relations and that social capital is productive (Coleman, 1988). Coleman also maintains that individuals are embedded in a system built on normative obligations created by social consensus. Individuals can benefit from this themselves but also feel obliged to help others and individual actions benefit the whole (Furstenberg, 2005), sort of like a "favour for a favour"-system built on trust. Although Coleman's notion sounds optimistic, it also assumes that the self-interest of individuals is a main driver for action (Tzanakis, 2013) and that lack of social capital is an inadequacy (Morrow, 1999). Robert Putnam praises the conceptualization put forward by Coleman and has adopted many of his ideas, but has also been accused of reducing the concept to the sum of voluntary associations and the amount of trust available in society (Siisiäinen, 2003). Moreover, Putnam argues that the accumulation of social capital is the key to societal success, both politically and economically.

Social capital among adolescents

Social capital theory and adolescents

Social capital according to Bourdieu is a collective phenomenon, but a property of the individual, built on the desire to attain and maintain social status (Bourdieu, 1986). The size and the aggregated amount of social, economic, cultural and symbolic capital is what positions a network in the hierarchy of society, and makes it stay there with little chance of mobility. Capital and particularly social capital are thus privileges existing primarily in the adult world and mainly determine inequalities in society. Based on this definition, adolescents can be interpreted as a group of little importance for the accumulation of capital in a network. A network of adolescents would be lowly placed in the hierarchy and mobility would only be achievable by acquiring the characteristics of adults, i.e. education, employment, income and adult-oriented culture. They are still able to benefit from the capital of their parents, and other adults, which places them in a hierarchical structure relative to other peer networks. Bourdieu's notion (1986) thus offers interesting aspects for the understanding of inequalities for adolescents also. However, viewing adolescents as deficient is in stark contrast to youth literature where adolescents, young adolescents included, are viewed as capable active agents (Daniels & Harnischfeger, 2010). If we are to understand adolescent social capital, we

should acknowledge that there are differences and not deficits by default (Billet, 2012).

Coleman acknowledges the individual by considering social capital productive, making it possible for members of a network to reach individual goals (1988). Individuals invest in networks by sharing norms, information and obligations that translate into specific (i.e. thick) and generalized trust (Dufur et al., 2019). Robert Putnam extends this reasoning by adding that although incentives for actions in social relationships can be regarded as altruistic, individuals anticipate some form of reward later on (Putnam, 1995). In relation to adolescents, these norms create expectations in social relationships and networks. When these expectations are met, trust is formed, and adolescents gain more control of their social life. When actions and gains from those actions become predictable, the latent value in that network arguably extends what individuals "cash in" on a daily basis and thus turns into capital.

Individual and network perspective

Social capital can be seen from both an individual and a network perspective. Bourdieu (1986), Coleman (1988) and Putnam (1995) have described individual interaction and networking as an essentiality to what social capital can yield in terms of payoffs (Lin, 1999). The focus from the individual perspective is on access and utilization of resources within the network, how that is achieved by the individual and what gains can be made. However, the reasoning of original theorists leads to the conclusion that the individual perspective is only interesting for exploring certain processes of social capital as a collective asset. This is not surprising since interest in maintenance, production and profit of the collective are the original focal points of social capital theory (Bourdieu, 1986). Viewing social capital from the network level perspective for adolescents revolves around how belonging to a group with high social status provides advantages for the entire group to influence the surrounding social environment and trajectory into adulthood. Another example is when the spreading of risk behaviour, such as smoking, binge drinking or violence, in and between networks signified by strong bonds affect how a community view and treat these groups, with no regard for individual differentiation (Deuchar, 2011). As in the latter example, shared culture or norms that people outside of the group are unaccustomed to may strengthen the bond between members of the group even more. Here, a network perspective on social capital can elucidate how that group fits in in the rest of society, while an individual perspective may give a misleading image that fail to

visualize the complex mechanisms and impact of, for example, socioeconomic status, gender, ethnicity and culture (Billett, 2011).

Social capital is described as an ecological-level property today, meaning that social capital exists on multiple levels, ranging from the interpersonal to the macro-political (Moore & Kawachi, 2017). Depending on what we are trying to understand, an individual or community perspective can be more relevant. To understand and solve collective issues, the traditional point of reference has been a community perspective on social capital focussing on how generalized trust and bridging networks impact the capabilities of the group as a whole (Bassani, 2007). For the purpose of understanding adolescents and mental health, this thesis centres on individual social capital and explores the ties that seem most relevant for adolescent mental health.

Strong and weak ties – Bonding and bridging

The family is the first social context that a child faces and it generally houses the longest relationships for a person throughout their life, and is thus an important context that has been described from the view of the child and from the adult perspective. Coleman (1988) gave particular focus to family social capital and how social capital was transferred between generations through parental investment in strong bonding parent-child relationships. Bonding social capital refers to strong ties characterized by thick trust that is built over time through close interaction (Putnam, 1995). When referring to adults, these groups or networks are most often homogeneous in terms of class, ethnicity and age (Moore & Kawachi, 2017). Apart from a natural presence in family relationships for adolescents, bonding social capital signifies peer groups that are generally homogeneous in terms of social identity, shared values and norms and perhaps most true for young adolescents also gender (Billett, 2011; Szreter & Woolcock, 2004). These networks are believed to constitute the main source of support, both emotional and through various forms of favours.

Bridging social capital is used to describe relationships that are founded upon generalized trust between members who are unalike in socioeconomic or sociodemographic characteristics (Moore & Kawachi, 2017). Common examples of relationships for adolescents include those with teachers, neighbours, counsellors, friends' parents, sport coaches etc (Dufur et al., 2019). While the strong ties of bonding social capital have been described as vital for adolescents to "get by", weaker ties that are synonymous with bridging social capital would provide means for adolescents to "get ahead" since they involve ties to other networks (Billet, 2012). This makes sense from a perspective of social status and a general attitude that being prosocial is

something positive that helps individuals access multiple networks and therefore in theory more resources. However, Billet (2012) mentions how being part of a large network or multiple networks signified by weak ties may reduce the possibility of creating meaningful bonding relationships, especially among young adolescents who naturally desire close bonds with peers. A lack of strong supportive relationships may leave adolescents vulnerable to stressors and unable to cope with adversity. In contrast, exclusively strong ties may in theory restrict adolescents from bridging networks, limiting the chances of social mobility and the opportunity to leave a network with values or behaviours that differ from the rest of society (Billet, 2012).

Linking social capital is an extension of bridging social capital described as social resources accessed across hierarchical levels (Moore, Kawachi, 2017). This conceptual refinement arose from a need to distinguish the vertical ties in bridging social capital that were previously grouped together in the adult context (Szreter & Woolcock, 2004). The literature on social capital and adolescents has not drawn much attention to the linking ties as opposed to the bridging ties and instead focused on their commonalities (Billett, 2011). As a result, a broader notion of bridging social capital has been suggested to include the hierarchical ties of linking social capital (Billett, 2011).

Building adolescent social capital

Social capital develops between individuals and in networks through social interaction (Portes, 1998), and thus presupposes sociability (Bourdieu, 1986). The family context is most commonly the main source of bonding and bridging networks in childhood and early adolescence (Coleman, 1988). Although the notion of the nuclear family was the focal point in theoretical discussions about family social capital and its impact on society in large (Putnam, 1995), much is still relevant today. Parents transfer norms, information and obligations through interaction as well as providing different types of support, which result in mutual trust between family members (Dufur et al., 2019). Children gain access to parental networks and resources in them during childhood, creating a structure for their own network. Being simply consumers of social capital is accompanied by competence to also produce social capital in independent networks as they transition into adolescence (Morrow, 2002; Holland, 2008). Older siblings have been described as providing resources that enable adolescents to develop new relationships and access resources in previously inaccessible networks (Holland et al., 2007). Knowledge of norms and expectations give adolescents an advantage to negotiate both bonding and bridging relations and networks, especially in the transitions between grades and schools (Holland et al., 2007). School provides a platform for social

interaction with both peers and adults. Relationships formed in the school context can entail a sense of belonging, security and provide various forms of support (Morrow, 1999). However, peer networks in school signified by strong bonds are known to produce social exclusion (Morrow, 2001), limiting the ability for surrounding individuals to develop social capital. The teacher-student relationship is also a source of social capital. While peer networks in school are somewhat disclosed from parents, parental school involvement often influences what constitutes social capital in the teacher-student relationship, partly based on the parents' own educational attainment (Crosnoe, 2004).

As mentioned, adolescents' networks often expand rapidly during early adolescence, by creating bridging ties that are formed through leisure activities, sports and other social arenas where adolescents meet. This means that each individual is part of multiple overlapping networks with a unique composition. Individual resources in those networks become accessible through positive social interaction and thus turn into capital for members (Bassani, 2007).

Interest in the online context has grown over the past decade. It is considered a social arena for adolescents to develop social capital and nurture existing relationships without geographical limitations, but also with much less oversight of adults (Spottswood & Wohn, 2020). Online social capital can be viewed from two perspectives. First, as distinct from what exists in the offline context, implying that online social capital is what would not have been formed offline (Spottswood & Wohn, 2020). However, since adolescents today use the online arena more as an extension of the offline context, there is an evident grey zone of what can be labelled online social capital. Internet was thought of as an arena with endless possibilities of where to go and what to do in its nursery (Norris, 2002). It has become clear that complete utilization of this freedom today is limited both by online corporate business model structures and young adolescents' unawareness of these early days of the Internet. Most adolescents are primed into using a handful of social media apps and searching information for schoolwork. The notion that the Internet would bridge traditional social divides such as gender, socioeconomic status, ethnicity and age (Norris, 2002) is still true in "parts" of the Internet, but it has also become a platform for exclusion, bullying and polarization (Kowalski et al., 2019). Adolescents' social behaviour has been shown to reflect their online behaviour and even reinforce both positive and negative behaviours (Tian, 2016). In summary, the online context is believed to hold potential for adolescents to develop social capital. Nevertheless, because of the difficulty of drawing a line where offline social capital ends and online social capital

begins, this thesis makes no distinction between the two and considers them to be intertwined.

Social capital and adolescent mental health

In theory

While there are good theoretical reasons to suggest that strong social capital would improve the mental health of adolescents, both concepts are themselves complex and additional factors are at play (Dufur et al., 2019). If we were to set aside the structural and intermediary determinants previously described and consider the theoretical benefits of strong social capital, the multidimensionality of the concept still generates issues. For example, it is reasonable to state that trusting and supportive relationships would influence adolescent mental health in a positive direction. In the family, such a relationship often entails a sound level of parental monitoring and involvement that is perceived as comforting (Dufur et al., 2019). If involvement escalates to something that can be perceived as surveillance, adolescents may feel that their independence and capabilities are questioned. This in turn may result in decreased trust. Similarly, shared norms and expectations in networks that usually influence individuals in a positive way, may in theory be perceived as stressors and a source of mental health problems rather than a safe framework for behaviour (Dufur et al., 2019).

Another issue concerns the bi-directionality of the association between social capital and mental health that in theory is convincing. Lin (2002) argues that apart from the existence of and accessibility to resources, individual's need to have the ability to utilize resources in order to possess capital. This is where the complexity becomes visible since mental health imbalance impairs the ability to act according to norms and expectations, referred to as universal values by Galderisi and colleagues (2015). The ability to utilize resources is most likely impaired with poor mental health, and thus also the ability to maintain social capital.

A final issue revolves around structural and cognitive components of social capital. Structural components, such as how many friends an adolescent has or the quantity of time they spend with family and friends is argued to be inferior to cognitive social capital (the perceived quality of relationships) in relation to mental health (Bassani, 2007). Large bridging networks arguably bring other benefits for young adolescents, such as social status, but may be less able to function as a protective factor for poor mental health.

In empirical research

Research investigating the causal effect of social capital has shown an effect on academic achievement and delinquency (Mouw, 2006), and population health (Kawachi et al., 2013). A causal effect on mental health has yet to be thoroughly established. There are indications that favour strengthening social capital to promote mental health (De Silva et al., 2005) but gender differences have been found that reduce the certainty of causal inferences (Landstedt et al., 2016). The association between social capital and adolescent mental health has generally been investigated using cross-sectional data, through one or two indicators of social capital and an equal number of outcomes. The linear relationship between social capital and mental health has been the focus of most empirical research within the field.

A systematic review found results that support an inverse association between social capital and mental health problems and a positive relationship with well-being among adolescents (McPherson et al., 2014). Higher levels of family, school and peer social capital, indicated by both structural and cognitive components, have been found to be associated with lower levels of anxiety and higher self-esteem (Li et al., 2017). Higher levels of family social capital, measured through quality of relationships, eating together, parental monitoring and parental involvement in school, are shown to be associated with lower odds of having mental health problems (Rothon et al., 2012). School social capital, assessed through level of trust among classmates has been found to be associated with lower risk of daily symptoms such as feeling low, irritated, nervous or having trouble sleeping (Nielsen et al., 2015). Moreover, family, peer and community social capital is positively associated with well-being (Yamaguchi, 2013). Cognitive components (especially in the family) seem to account for the strongest association with mental health, however the strength varies when other factors are accounted for, such as neighbourhood characteristics and socioeconomic status (McPherson et al., 2014). The dark sides of social capital have been revealed in relation to risk behaviours such as drinking and substance use, where bonding social capital is believed to enforce negative behaviour (Villalonga-Olives & Kawachi, 2017). However, direct negative effects on mental health of strong bonding ties have yet to be established.

Other research has explored the potentially protective effects of social capital. A systematic review showed social capital working as a protective factor in the association between socioeconomic status and general health among adolescents (Uphoff et al., 2013). Less research is available related to mental health, but social capital has been found to buffer some of the negative effects of socioeconomic status on mental health in adolescence (Bohn & Richter, 2012). A review with a focus on neighbourhood social capital showed results

that suggested that strong neighbourhood social capital could be beneficial in levelling the social gradient in mental health for children and adolescents, although some results were contradictive (Vyncke et al., 2013). In another study it was found that the impact of socioeconomic status on life satisfaction was reduced when adolescents experienced a high level of community social capital (Buijs et al., 2016).

To summarize, there is little evidence in the literature that disputes the potential of reversing negative trends in mental health by strengthening social capital among adolescents. However, transferring this knowledge into useful and evidence-based policy and practice is not straightforward.

Challenges in adolescent social capital research

There are on-going discussions in the research about social capital and adolescents that are important to highlight. The discussions, which have been summarized and emphasized by Morgan and Haglund (2012), concern the transfer of an adult concept to adolescents, the overall heterogeneity in conceptualization and measurement methods and consequently the validity of social capital instruments.

First, Virginia Morrow raises relevant questions about the transfer of social capital, originating from an adult framework, from adults to children and adolescents (Morrow, 1999; 2005). Underestimating the agency of adolescents, overemphasizing parental influence and preconceived ideas of how adolescents define important keywords are pitfalls that she highlights. Moreover, it is necessary to consider that social networks for adolescents differ from those of adults (Morgan, 2010). The researcher gets closer to understanding social capital for adolescents by adapting the vocabulary and adjusting contexts to those that are relevant for adolescents. Researchers should be susceptible to the variation in social behaviour between early and late adolescents and between genders according to Currie et al. (2009), and not assume one definition will fit all. It is problematic to simply transfer what is known about adult social capital without hearing the voice of adolescents and taking into account the complexity of this period in life and the sociocultural context in which they live in (Schaefer-McDaniel, 2004). Qualitative research can thus offer rich contextual content and reveal the culture-bound meaning of social capital and health (Carpiano & Moore, 2020)

Second, the diversity in the ways in which social capital is conceptualized has led to a major debate within the field (Carrillo-Álvarez & Riera Romaní, 2017). Some consider it to be a weakness that questions the usefulness of the concept and the validity of the research findings. Others optimistically

describe it as vibrant (Moore & Kawachi, 2017), where various hypotheses are tested in order to provide a deeper understanding of the pathways between social capital and health (Carrillo-Álvarez & Riera Romaní, 2017). What is evident is that the lack of an agreed definition has led to great methodological heterogeneity in how social capital is operationalized for adolescents. While multiple studies conclude a relationship between social capital and adolescent health and health behaviours, a higher-level synthesis of results becomes a challenge (McPherson et al., 2014). It is rare that single studies adopt a broad definition of social capital and apply measurement that covers the multidimensionality of the concept (Carrillo-Álvarez & Riera Romaní, 2017). Furthermore, the ambiguity of social capital becomes even more evident when looking at the systematic review by McPherson and colleagues (2014), which included studies that did not explicitly state "social capital" in either the aim or the theoretical background.

It thus seems as if many researchers draw from the various conceptualizations and develop tailor-made measures of social capital for each new study. Either by rephrasing items in questionnaires developed for adults or hand-picking items from existing surveys that may or may not have been developed with the purpose of assessing social capital. Unfortunately, and perhaps because of the heterogeneity, researchers are excused for not using thoroughly validated instruments, which can be considered a vital flaw in this field of research. A way forward is to apply mixed-methods and qualitative research to social capital since findings of such studies can help advance theory, reveal sociocultural differences in social capital (Carpiano & Moore, 2020) and distinguish adolescent social capital from that of adults (Schaefer-McDaniel, 2004).

Knowledge gaps and rationale

A social gradient exists in adolescent mental health in Sweden (Wirback et al., 2014). However, increased socioeconomic inequalities can only to some extent explain the negative trend of adolescent mental health that is discernible across all socioeconomic levels in Sweden. With multiple plausible explanations put forward, social determinants remain of great interest. These can be investigated from a structural, intermediary and individual perspective. While the mechanisms between structural and intermediary determinants have been made clear (Solar & Irwin, 2010), the role of subjective appraisals of one's situation is less clear (McLaughlin et al., 2012). Subjective appraisals should be of great interest to elucidate because of the developmental differences in relative comparison during adolescence (Goodman et al., 2007). It remains unclear how well subjective appraisals represent an objectively assessed image of adolescents' situation in a Swedish context, and how the two perspectives differ in relation to adolescent mental health.

Social capital is described as a determinant that can offer important insights into the social pathways of health inequities (Uphoff et al., 2013). Social capital, including both structural and cognitive components, has the potential for adding a deeper understanding of the complexity within this research field. Despite this awareness, the research on the social capital of adolescents has primarily been studied with a focus on linear relationships and to a great extent with outcomes other than mental health, such as academic achievement and health behaviours. We thus know little about the status and shape of social capital among adolescents in Sweden and how differences translate into inequalities in mental health. It is thus of interest to explore socioeconomic status, subjective appraisals and social capital, how they relate to one another and adolescent mental health. Applying novel approaches that go beyond the linear relationship may help disentangle some of the complexity of the inequalities in adolescent mental health. The existing gender inequalities in adolescent mental health should thus be acknowledged.

Theoretical and conceptual issues in the research field of social capital have led to a methodological heterogeneity that threatens the validity and usability of research findings. These issues also impede higher-level synthesis and transferability of results (Kawachi, 2010). To enhance stringency and

validity in the assessment of social capital among adolescents, a greater level of self-critical reasoning among researchers when designing studies is warranted. Moreover, there is a lack of qualitative research that is needed to help advance theory on social capital (Carpiano & Moore, 2020), and perhaps especially in relation to adolescents and mental health. Qualitative methods may reveal age-specific and sociocultural differences that should be accounted for in the design of quantitative studies on social capital among young adolescents. Giving adolescents a voice is thus a necessary step forward, but also to map and evaluate which validated measures exist, so that in going forward we do not neglect what has been achieved so far.

Overall aim and research questions

The overall aim of this thesis was to explore social capital and inequalities in mental health among young adolescents in the Swedish context.

The research questions for this thesis are:

- How can we understand the inequalities in adolescent mental health in Sweden from the perspective of subjective socioeconomic status and social capital?

- How can we conceptualize and operationalize social capital in relation to mental health among young adolescents in Sweden?

Specific aims for each study were:

- The aim was to investigate socioeconomic inequalities in health using both a subjective and an objective measure of socioeconomic status among Swedish adolescents

- The aim was to identify distinct profiles of family, school and peer social capital in a nationally representative sample of adolescents and to explore health outcomes in those profiles

- The aim of this study was to explore social capital from the perspective of adolescents in relation to mental health.

- The aim was to identify and evaluate the design and psychometric properties of instruments for assessing social capital specifically developed and validated for self-reporting among adolescents (10-19 years).

Conceptual framework

In this section I aim to position my understanding of the concepts described in the background, in which way they relate to this thesis and clarify my understanding of how social capital, social determinants and adolescent mental health are linked with each other. The framework presented here will help guide the discussion of the findings from the two research questions.

The combined understanding of adolescent mental health that this thesis builds on is visually represented in Figure 3. Mental health for young adolescents is a dynamic state where imbalance is naturally occurring, perhaps more so than during other periods in life due to the interaction between biological and social factors (Galderisi et al., 2015).

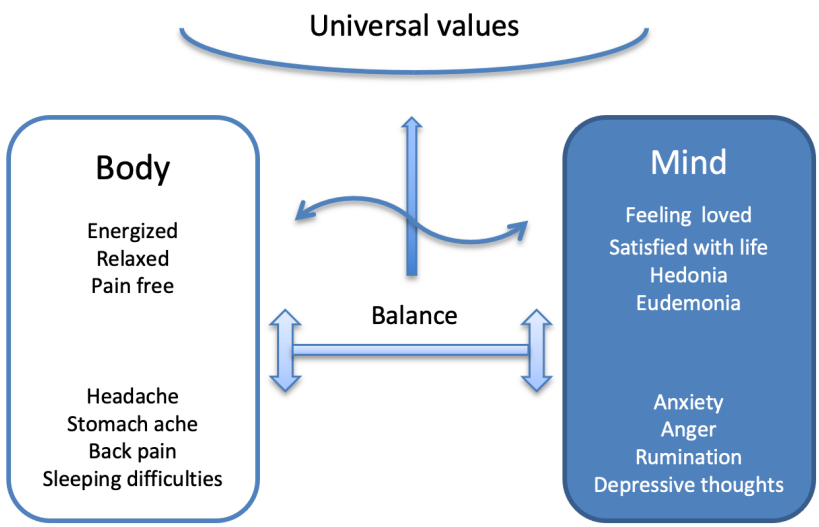

Figure 3. Visual representation of adolescent mental health inspired by the definition by Galderisi et al. (2015) and the qualitative study by Johansson et al. (2007).

A balanced mental health means that individuals can express and modulate their emotions, cope with adverse events and use social skills. Balance also enables the individual to act in and contribute to its surrounding society according to universal values, but does not necessitate expressions of well-being (Galderisi et al., 2015). Expressions of imbalance are understood as mental health problems, exemplified in Figure 3. Temporary imbalance does not have to involve both the body and the mind, but as time passes, a one-sided imbalance becomes more likely to also cause imbalance in the other, a scenario also described by adolescents (Johansson et al., 2007).

Social capital in this thesis is viewed from the individual level, with a focus on early adolescence and in relation to mental health. Individual social capital is defined as the accessible resources embedded in the social structure or social networks that will bring benefits to their owners (Lin, 2001). Notwithstanding the indications of social capital to be double-edged (Villalonga-Olives et al., 2019), the postulation here is that a higher level of social capital is positive in relation to adolescent mental health. Or at the least, decreased social capital does not affect the mental health in a positive way.

Although the community perspective has guided most social capital theory, the individual perspective has been promoted as the point of reference in studies of adolescents and mental health (Bassani, 2007; Almedom, 2005). Acknowledging bonding and bridging social capital and their differences as well as distinguishing between structural and cognitive components is important since these are described to have different meaning and purpose for adolescents (Holland et al., 2007; Bassani, 2007). Common cognitive and structural components that recur in theory and empirical research are trust, support, sense of belonging and safety (cognitive), frequency and form of interaction, parental involvement and monitoring and density and structure of networks (structural). These components should be understood merely as examples and not as a delimitation of the interpretation of research findings presented in this thesis. The relevant contexts of social capital for young adolescents comprise the family, school, peers and neighbourhood due to their reappearance in literature on adolescent health and lifestyle, mental health and social capital.

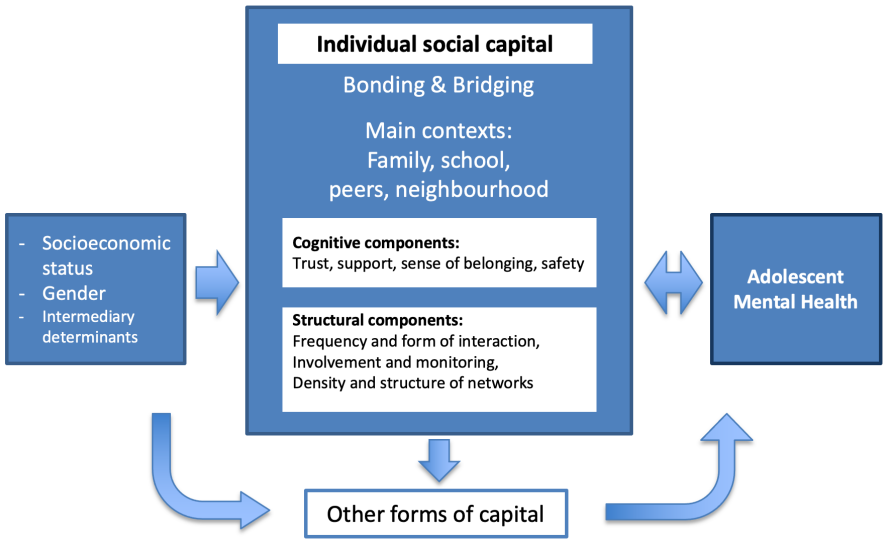

Figure 4. Model showing the connection between structural social determinants, social capital and adolescent mental health.

A condensed image is presented in Figure 4 that combines relevant parts of the CSDH framework for this thesis, social capital and mental health to show how they are linked with each other. First, it is implied that social capital can work as a mediator in the relationship between structural social determinants and adolescent mental health, as shown by Vyncke et al., (2013) and Bohn and Richter (2012). Second, social capital is important for adolescents' mental health. The importance of being part of a positively characterized social network is endorsed from three perspectives: biological (WHO, 2010), social theory (Dufur et al., 2019) and empirical (McPherson et al., 2014). To explain the plausible bi-directionality between social capital and mental health, Lin's (2001) notion of how social resources turn into capital is useful. There are social resources that become accessible through bonding and bridging relationships within the relevant contexts shown in Figure 4. All individuals possess some level of ability to utilize resources and therefore accrue varying levels of individual social capital. Imbalance in mental health can have a negative impact on social relationships because of social withdrawal (Morese et al., 2020) or rejection by peers (Aronson & Bergh, 2021). An imbalanced mental health is thus detrimental to individuals' ability and/or possibility to utilize the resources in social networks. Using Lin's logic, this would reduce the level of social capital and therefore also the ability to cope with adversity

through the help of others and possibility to express emotions in supportive relationships. Third, structural social inequities in a society can explain inequalities in resources between networks. Bourdieu (1986) describes how adults' awareness of what constitutes admirable and/or "reachable" resources steers social behaviour and the reproduction of social networks. Consequently, the sum of capital in its different forms determines the capabilities and limitations of the group and subsequently what is achievable. Social capital for the individual is a prerequisite for access to other forms of capital, shown in Figure 4. Despite the evident elements of structural deterministic views and adult focus in his work, Bourdieu's reasoning can be used to explain how social capital connects social inequalities to adolescent mental health. Nevertheless, this connection may be weaker in Sweden, with a relatively low income inequality and subsidized healthcare, than in countries experiencing greater inequality. From the perspective of young adolescents, they are naturally confined to and impacted by, for example, the human and financial resources possessed by actors in their immediate social relationships, first and foremost the parents (Bassani, 2007). However, with reference to social agency and in contrast to Bourdieu's notion of adolescents as unfinished recipients of social capital, young adolescents are considered here as active agents in shaping their own social relations and networks. Adolescents thus form social networks that extend beyond the influence of their parents, which will be further explored in this thesis. Attention will also be given to gender and age differences in the exploration of social capital and mental health inequalities.

Methodology

Ontological and epistemological position

What started out as a view of the researcher as a prodigious gatherer of data, dependent on quantifiable observations to make true inferences about the world, ended up in a much humbler view. My preconceived idea of research was inspired by the positivist paradigm and relied mainly on a quantifiable reality and genetic predisposition to explain prevalence rates despite coming from the holistic view of nursing. I have strayed across the epistemological spectrum during this doctoral education and landed in-between the polarization of the positivist and the social constructionist paradigm.

Critical realism is a philosophy originating from the criticism of positivism and the view of reality as something derived from what we know and can measure (Bhaskar, 1975). Critical realism posits that the truth is out there but the reality we observe is a social and subjective account of reality, and therefore always imperfect (Maxwell & Mittapalli, 2010). By stating that reality also exists independently from the mind, critical realism challenges the constructionist view that equates the socially constructed reality to reality itself (Collier, 1994). The experienced reality consists of beliefs and personal understandings that do not alter the independent reality. Critical realism favours a use of a variety of research designs and is described as useful for understanding complex phenomena and the influence of context (Sturgiss & Clark, 2020).

The way that critical realism has informed this thesis is the involvement of mixed methodologies to explore complex phenomena and how they relate. In doing so, findings may be synthesized to gain knowledge that is greater than the sum of each part (Maxwell & Mittapalli, 2010). Another aspect influential to this thesis is that value is placed on context-based validity and the importance of mental aspects and perceptions, acknowledging the voices of others while recognizing their independence from reality (Shannon-Baker, 2016). Theory is seen as helpful for the understanding of phenomena and guiding research, but since theories are incomplete views of reality they should not be used as truths and may be questioned (Shannon-Baker, 2016). However, research inspired by critical realism commonly applies abduction in the analysis of data (Shannon-Baker, 2016). The gathering of qualitative

data and the analysis procedure in Study III has in my view an inductive approach, but the findings are discussed in relation to social capital theory to add new context-specific theoretical and conceptual insights. Moreover, inspired by critical realism, arguments around causal inference are valuable if the context and circumstances are thoroughly explained, and one is humble about the generalizability and transferability of research findings (Maxwell & Mittapalli, 2010). Discussions should, however, revolve more on feasibility in relation to findings than unquestionable causality (Sturgiss & Clark, 2020).

Overview of empirical Studies I-IV

An overview of studies I-IV is presented below.

Table1. Overview of Studies I-IV.

	Design	Data gathering	Sample	Analysis
Study I	Cross-sectional design	The Health Behaviour in School-aged Children Questionnaire 2001/02-2013/14	23,088 adolescents 11-15 years old	Descriptive, Pearson's correlation coefficient, independent samples t-test, logistic regression
Study II	Cross-sectional design	The Health Behaviour in School-aged Children Questionnaire 2013/14	7,804 adolescents 11-15 years old	Descriptive, Pearson's correlation coefficient, latent profile analysis, auxiliary outcomes, multiple regression
Study III	Qualitative design	Semi-structured interviews	23 adolescents 11- and 15-year-olds	Qualitative content analysis (Erlingsson & Brysiewicz, 2017)
Study IV	Systematic review	Database search: PubMed, Scopus, Cinahl, PsycInfo, Sociological abstracts, Web of Science core collection	1,956 hits. Twenty articles meeting eligibility criteria	COSMIN methodology for systematic reviews of Patient Reported Outcome Measures (PROMs) user manual (Mokkink et al., 2018)

This thesis comprises four studies: two quantitative studies, one systematic review study and one qualitative interview study (see Table 1). Studies I and II were designed to increase the understanding of inequalities in adolescent mental health in Sweden. Study III was designed to create new knowledge on what constitutes social capital for young adolescents in the sociocultural context of Sweden. For this purpose, a semi-structured qualitative interview study was conducted with an inductive approach. Study IV applied a

systematic review-design to evaluate instruments of social capital validated for adolescent samples.

Design

Studies I & II

The design of Study I combined cross-sectional data collected at four time points with an investigation of the linear relationships between multiple dependent and independent variables. This enabled an investigation of the trends of the observed relationships.

The cross-sectional data from one of the time points included in Study I was used in Study II, where an explorative methodology was applied that incorporated probability to uncover subgroups and explore patterns within populations. The Latent Profile Analysis (LPA) was used and the aim was to identify latent profiles within the data. It has been proposed for helping to unravel some of the complex interactions that occur between independent variables that may, to a varying degree, be associated with one another (Ivarsson & Stenling, 2018). Suitable for continuous indicators, LPA uses a probabilistic model as opposed to an arbitrary chosen distance measure, found in for example cluster analysis, and is more flexible by offering multiple goodness-of-fit indices (Tein et al., 2013).

Study III

The design of Study III was a semi-structured qualitative interview study with an inductive approach to capture the adolescents' perspectives of social capital in relation to their mental health. The semi-structured qualitative design employs a mixture of mostly open-ended questions where follow-up questions such as *how* and *why* are used frequently (Adams et al., 2015). An inductive approach implies an unprejudiced exploration of data, as oppose to the deductive approach where a guide, model or theory directs the analysis process (Hyde, 2000). Qualitative content analysis is a method defined as "subjective interpretation of the content of text data through systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005). By following the systematic procedure of content analysis, researchers are able to create an understanding of the studied phenomenon and develop new or extend pre-existing knowledge of human experiences. The present study applied a conventional content analysis, described as an

appropriate design when research literature on a phenomenon is limited (Hsieh & Shannon, 2005). A key feature of content analysis is, according to Krippendorf (2013), to conduct a reliable analysis in order to generate reproducible findings.

Study IV

It was decided that a methodological framework was needed to help structure the process in Study IV, the systematic review. A methodology proposed by the COSMIN initiative was chosen to guide the study after an initial review of methodological literature. The COSMIN initiative was founded by a multidisciplinary team of researchers with the aim of developing new and update existing methodology and practical tools for evaluation, selection and use of outcome measurement instruments for research and clinical practice (COSMIN, 2021). Although this methodology is designed primarily for outcome measures in areas where a gold standard exists, it has beneficial features that were in line with the aim of this study. The methodology provides, besides well-formulated steps from the initial search to the presentation, a thorough description of how to evaluate the measurement properties once instruments are identified.

Study population, data and procedures

Young adolescents were the focus of this thesis project as previously stated. Studies I, II and III include data involving adolescents between the ages of 11 and 15. Study IV involved the full range of adolescence (10-19 years) since an initial review of the literature showed that data was commonly gathered in the school setting and often included both younger and older adolescents. It was thus deemed appropriate in order to identify instruments that assessed social capital for adolescents as a group distinct from adults.

Data in Studies I & II

Studies I and II were based on cross-sectional data from the Swedish Health Behaviour in School-aged Children (HBSC) survey. Study I included cross-sectional data from four survey waves between 2001/02 and 2013/14 to include time as a variable in the investigation of health inequalities. The sample was evenly distributed across gender and age (11, 13 and 15 years). The sample size for the four waves was 3926 (2001/02), 4415 (2005/06), 6880

(2009/10) and 7867 (2013/14), giving a total sample of 23088 adolescents. Data from the 2013/14 survey was used for Study II, comprising an analytical sample of 7804 adolescents, evenly distributed between gender and age, 11- 13- and 15-year olds.

The HBSC survey is a large international survey, which has been carried out on behalf of the WHO every four years since the early 1980's, and now includes more than 45 countries in Europe and North America (Inchley et al., 2020). Sweden has been participating since the 1985/86 survey. Data has been gathered from 11-, 13- and 15-year olds since then on self-rated health and well-being, health and social behaviour and socio-demography. The core parts of the questionnaire have remained mainly unchanged over the years to enable quantification of patterns and to reveal trends among adolescents. To increase sensitivity with regard to swiftly arising health issues and behavioural trends, the HBSC-collaborative offers additional sets of questions on a particular topic for each wave. The contribution of the HBSC is crucial for enabling cross-national comparisons as well as mapping of adolescent health within countries despite the drawback of the cross-sectional nature of the data produced (Inchley et al., 2020). The Swedish survey is carried out by the Swedish Public Health Agency who themselves release reports after each wave with descriptive presentations off the results of the data. The sampling technique is a randomized two-stage cluster sample, strategically designed to create a nationally representative sample of adolescents. The sample in Study II contains the individuals already representing part of the sample in Study I, meaning that the number of unique individuals in the quantitative studies are equal to the sample size of Study I.

Study I

Measures

Two contrasting measures of socioeconomic status were chosen as independent variables for this study. First, a four-item measure relying on adolescents' reporting of material wealth and habits was included, known as the "Family Affluence Scale". The scale was developed for use in the HBSC survey and has previously shown to be reliable and in agreement with parental socioeconomic status (Currie et al., 2008). This measure was thus included to represent an objective assessment of socioeconomic status. The second measure aimed to capture a subjective appraisal of socioeconomic status. Subjective socioeconomic status is defined as a person's perception of his/her social standing in reference to the other members of a group (Singh-Manoux et al., 2003). A single question was used for this purpose: "How would you describe the economic situation in your family?". Response alternatives were: "not at

all well off", "not so well off", "average", "quite well off" and "very well off". This item is easily understood and has been used in previous research (Quon & McGrath, 2014).

Two measures were chosen to represent mental health accompanied by a measure of general self-rated health. These three were treated as dependent variables. The first measure was the 8-item HBSC-symptom checklist (Gariepy et al., 2016). It combines somatic and psychological health complaints that can be interpreted as mental health problems; headache; abdominal pain; backache; dizziness; feeling low; irritability/bad temper; feeling nervous; sleeping difficulties. Respondents are asked how frequently they have experienced each symptom during the last six months with response alternatives ranging from "seldom or never" to "about every day". The second mental health measure was the "Cantril's ladder", which shows respondents a ladder and asks them to rate their life satisfaction from the bottom "worst life possible" (0) to the top "best life possible" (10). This measure is easily understood and has shown high validity and reliability among adolescents (Levin et al., 2013). The third measure assessed self-rated health with one question: "Would you say your health is…?" followed by response options "poor", "fair", "good" and "excellent". This measure has been found to be associated with health behaviours and risk taking among adolescents (Boyce et al, 2008; Holstein et al., 2007). Gender, age and survey year were determined to be relevant confounding variables.

Statistical procedures

Descriptive statistics were presented in terms of totals and percentages for categorical variables and means and standard deviations (SD) for continuous variables. Significance was assumed at $p < 0.05$ and all tests were two-sided. Pearson's correlation coefficient was calculated between socioeconomic variables and between the three health variables. The trend for inequalities in self-rated health by socioeconomic status between 2002 and 2014 was investigated descriptively by calculating mean values and SD followed by independent samples t-tests. Logistic regression with Odds ratios (OR) and confidence interval (95%CI) were applied to investigate the relationship between socioeconomic status and health variables, first through crude analyses followed by four multivariate models. Following recommendations, a two-way interaction by cross-product terms was applied between gender and the two socioeconomic variables, one at a time. Model fit was assessed using Nagelkerke R Square. The method of Benjamini & Hochberg was applied on all p-values in the final models in order to control the false discovery rate at 5% (Benjamini & Hochberg, 1995), and adjusted significance levels were

considered. The statistical analyses in this study were performed using SPSS, version 20.0 (IBM corp. 2015).

Study II

Measures

Cognitive social capital was assessed in the contexts of family, school and peers. The measures for this study were chosen to represent the constructs of trust, sense of belonging and emotional support. Family social capital comprised four items, school social capital seven items and peer social capital four items.

This study included the HBSC-symptom checklist and Cantril's ladder to represent mental health problems and life satisfaction as in Study I. Additionally, the Family Affluence Scale was included to assess socioeconomic status, but an updated version consisting of six items was used on this occasion. The findings from qualitative and quantitative research showed that additional items needed to be added in a new version of the scale (Hartley et al., 2016; Torsheim et al., 2016) and introduced in the 2013/14 wave. Two new items were added assessing the number of bathrooms in home and dishwasher-ownership over and above the previous items covering car ownership, having an own bedroom, computer/tablet-ownership and travelling abroad. The scale has been validated in the Swedish context and shown to be moderately correlated with objective socioeconomic status (Corell et al., 2021). Finally, gender distribution was shown descriptively in LPA and treated as a confounder in the regression analyses.

Statistical procedures

Three datasets, one for each age group (11, 13 and 15 years), were constructed and descriptive analyses were calculated using SPSS 21.0 (IBM corp., 2018). First, mean values with SD were calculated for social capital dimensions in each age group and for boys and girls separately. Pearson's correlation coefficient was used between the three social capital variables in each age group to denote the strength of the linear association between social capital variables.

LPA was run for each dataset respectively using Mplus Software v.8 (Muthen & Muthen). We estimated and compared LPA models with an incremental number of profiles to identify the best model fit. Models of up to eight profiles were tested in this study. Following the procedure suggested by Tein, Coxe and Cham (2013), several model fit criteria were considered when comparing models to obtain the best solution; Log-likelihood (LL), Bayesian information criteria (BIC), Sample-size adjusted BIC (SSA-BIC), Entropy,

Lo-Mendell-Rubin adjusted likelihood ratio test (LMR) and Bootstrapped likelihood ratio test, (BLRT). Lower values of LL, BIC, SSA-BIC indicate better model fit.

Then, health variables, frequent mental health problems and life satisfaction, along with FAS and gender were included in LPA as auxiliary variables (not affecting the models) to produce distal (evaluating) outcomes for each profile. The profiles were compared pairwise within each age group to explore differences in distal outcomes means and probabilities between profiles (p-value to indicate significant difference was set at $p< 0.05$).

Finally, multiple regression analysis was conducted to see what information the identified profiles might add to the linear relationship between social capital and adolescent health. Social capital variables were treated as independents and health outcomes as dependent variables. Both models were adjusted for gender and FAS-scores. Latent profiles were then added and model fit indices, Akaike's information criteria and an F-test, were used to compare models.

Study III

Recruitment and participants

Study III included adolescents from 5th and 9th grades in a qualitative interview study. Pupils begin first grade at age seven in Sweden, the informants were thus 11-12 and 15-16 years old.

A purposive sampling technique was applied to include schools that represented a diverse sample of adolescents in terms of gender, socioeconomic status and living conditions. Unfortunately, due to the spread of Covid-19 in March of 2020, school sampling was compromised and a school in a larger city was unable to allow recruitment of participants. The included schools were thus situated in one smaller municipality, with a total population of about 26,000. Approximately 14 per cent of the inhabitants are born abroad, which is comparable to the national average of 16 per cent. Two of the schools (range 300-370 pupils) were situated in the largest town in the municipality while one school of about 550 pupils was situated in a smaller town.

All pupils in the 5th and 9th grades, who were present during the day that the researcher visited, were given oral and written information about the study. Absent pupils were given the written information by teachers. Thirty pupils, from a total of approximately 300 eligible pupils, gave their informed written consent. Ten pupils from 5th grade (11-12 years old) agreed to participate and provided additional written consent from parents. Twenty pupils in 9th grade gave their informed consent. Due to the spread of Covid-19 in March

of 2020, seven pupils could not be interviewed since the schools did not allow the researchers to make further visits. A total number of 23 interviews were thus conducted, six boys and four girls in 5th grade and six boys and seven girls in 9th grade. All the participants had good to excellent skills in the Swedish language and represented different levels of socioeconomic status (parental employment), family constellations (divorced parents, bonus family members), religious views and different living conditions (rural, urban, apartment, house).

Interview procedure

Interviews were conducted in small, casual rooms made available by teachers with insurance of no disturbance. Interviews were semi-structured and open-ended questions were used. The interviews were audio recorded digitally and transcribed verbatim. Interviews started by asking informants to talk a little bit about themselves. Next, informants were asked what they considered to be the underlying meaning of the response "I am fine", when asked the question "How are you?". The interview then proceeded with questions such as "what persons do you consider to be important for you to feel fine?", "what is it in your relationship that makes you feel that way?" and "can you give examples of what you do together with that person?". Examples of follow-up questions were "could you tell me a bit more about that?" and "can you give any examples of that?"

Interviews were conducted between May of 2019 and February of 2020. Interviews lasted between 17 and 58 minutes (median=26). Audio was recorded during interviews and transcribed verbatim.

Data analysis

The analysis followed the detailed process put forward by Erlingsson and Brysiewicz (2017), who in turn were inspired by the work of Hsieh and Shannon (2005). First, the transcribed interviews were read several times to gain a sense of the whole. The text was then divided into meaning units, which were discussed in the research group regarding their relevance to the aim of the study. The third step was to condensate the meaning units. Condensed meaning units were reviewed among all the authors and discussed to ensure the meaning was not lost in the process. Fourth, codes were formulated by labelling all meaning units with a few words to describe the content. After the first round of coding, which was conducted by two authors, the coding process included all the authors. Discussions led to several revisions with the aim of keeping codes on a more manifest level. When consensus was reached about coding, the fifth step was to group codes into sub-categories followed by main categories. The codes, sub-categories and categories were

continuously compared with the original transcripts to ensure the meaning was not lost throughout steps four and five. Categories and sub-categories were discussed and refined several times until consensus was reached among the authors. The analysis did not go beyond and above the manifest level.

Table 2. Example from qualitative content analysis

Condensed meaning unit	Code	Subcategory	Category
It feels good having siblings, you've always got someone you can go to.	Siblings are always there	**To always have someone**	**Access to a safe space**
You've got something to do you're not alone and then it's more fun, having friends is fun. I can always get in touch with them.	Can always get in touch with friends		
They usually play table tennis together, but I usually don't join in. I could join in if I wanted to.	Being able to join in if one wants to	**An inclusive and honest atmosphere**	
I can always say what I think with my friends.	Able to say what you think to your friends		

Study IV

The fourth study was a systematic review guided by the COSMIN methodology for systematic reviews of Patient Reported Outcome Measures (PROMs) *(Mokkinket al., 2018).*

Preparation and performance of the literature search (Steps 1-4)

First, the aim was formulated by clarifying the construct of interest (social capital), the population (adolescents), the type of instrument (developed and psychometrically validated for adolescent samples) and the measurement properties of interest. This process also included articulating the research questions:

1. What are the dimensions, constructs and contexts of interest within the instrument?
2. In which ways have adolescents been involved in the development and validation process of the instrument?
3. How have instruments been validated in terms of face and content validity; internal structure; reliability and responsiveness?

The criteria for eligibility were thoroughly discussed between the authors in Step 2. Informed by the aim and research questions, the following criteria were decided on to be included in the review:

Inclusion criteria:

- Instrument developed for, or adapted to, adolescent samples (10-19 years)
- Explicit use of the term social capital in relation to instrument
- Development and validation process described
- Explicit focus on adolescents as a group distinct from adults

Exclusion criteria:

- No included statement regarding items development or no reference to the original source of items or instrument
- No description of, or references to a validation procedure that included adolescents
- Reporting by proxy such as parents or other
- Review articles.

The search was performed in the third step. Keywords, titles and abstracts were searched together with free text searches in six electronic databases with a focus on health and social sciences: PubMed, Scopus, Cumulated Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, Sociological abstracts, Web of Science core collection.

The fourth step entailed screening all titles and abstracts and comparing with the eligibility criteria. A total of 54 articles were thus reviewed in full-text, which led to the inclusion of 20 articles that met the criteria and were evaluated according to Steps 5-7 in the COSMIN methodology.

Evaluation of measurement properties of the instruments (COSMIN Steps 5-7)

The measurement properties of each instrument were evaluated in accordance with Steps 5-7 in the COSMIN methodology, where Step 5 concerns content validity, Step 6 the internal structure and Step 7 involves reliability and responsiveness. Content validity is commonly defined as 'the extent to which the items on a test are fairly representative of the entire domain the test seeks to measure' (Salkind, 2010). Content validity is understood, according to the COSMIN methodology, as the degree to which the content of a PROM is an adequate reflection of the construct of interest (Mokkink et al., 2018). Content validity consists of two aspects, logical validity that involves connection to

theory and expert reviews against specific criteria or theoretical framework (Streiner & Norman, 2008), and face validity. Face validity is defined as the degree to which the instrument and its items are understood as a reflection of the construct (Mokkink et al., 2018). Face validity is generally investigated by having members of the target group and sometimes experts in the research field go through the instrument and then take into account any concerns raised (Streiner, 2008).

Internal structure consists of two main domains that are investigated quantitatively, namely construct validity and structural validity (Mokkink, 2018). Construct validity assumes that the instrument validly measures the construct of interest and asks to what degree the scores are consistent with hypotheses of between-group differences or internal relationships. Structural validity refers to the degree to which scores are an adequate reflection of the dimensionality of the construct. Finally, the reliability of an instrument denotes to what extent measurement errors exist while responsiveness concerns the ability to detect change over time (Mokkink et al., 2018). An evaluation concerning a comparison with a gold standard was inapplicable to this review due to the lack of such a standard for the measurement of social capital.

Citations and further validation of the instruments

As an additional step, an exploration was conducted to see if any of the identified instrument had been validated in other contexts or age groups (still between 10-19 years old). Each original article included in the review was thus searched via Google Scholar with the function “cited by” being used to manually search for articles that had used the instrument in an adolescent sample. Additional information on validation was extracted.

Ethical considerations

Involving children and adolescents in research that is not strictly therapeutic has not been straightforward since the Nüremberg code in 1947 and the Declaration of Helsinki in the mid 60’s (Levine, 2008). Making sure the risk of causing harm is minimal and getting consent from parents has been, and still is today, the first level of assurance for research involving adolescents before it can be permissible. The ethical principles formulated in the Declaration of Helsinki have guided research ethics in research involving human subjects for decades. The main principles concern the safety and health of subjects, non-maleficence and beneficence, equity and justice, confidentiality and consent (World Medical Association, 2013). The researcher needs to be able to justify why a particular group is included in the research and why others are

excluded (Powell et al., 2013). This task in this thesis involves motivating the focus on young adolescents, including a formulation of potential benefits for participants and the target group, both in the short and long term.

As noted in the Background section, increasing attention has been given to adolescents in the fields of health promotion and disease prevention (Patton et al., 2016). It is now known that the early signs of mental illness are in many cases detectable in early adolescence (Kessler et al., 2007), which in combination with the development of autonomy and improved psychological functioning, highlights adolescence as an area of interest for public health research. Consideration of adolescents as active agents should also generate an incentive to enable their active participation in discussions that clearly concern them (Shelbe et al., 2015). Ethical issues and potentially unreliable information have in a historical perspective been common arguments for conducting research on children and adolescents, rather than with them (Docherty & Sandelowski, 1999). The involvement of adolescents in research requires a careful evaluation and explication of non-maleficence and, in particular, beneficence as Alderson and Morrow (2011) point out.

A systematic review investigated the perspectives of children and adolescents participating in research and found that the ability to understand the essential elements of research was impressive (Crane & Broome, 2017). However, the single most important factor influencing participation was trust for the researcher and not how informative and elaborate the procedure and regulations on privacy were explained. Trust was also found to influence the adolescent's risk assessment. By treating adolescents as active agents, fully capable of grasping what participation in research entails, we as researchers also hand over some of the responsibility of dealing with unanticipated long-term consequences.

Most guidance on ethics concern issues that are relevant during, and shortly after, the data collection phase (Alderson & Morrow, 2011). Less attention is given to envisioning possible long-term consequences, at least from the perspective of non-maleficence. Involving adolescents in research with the aim of empowering them and providing them with a chance to make their voice heard, arguably entails a risk since research that favours children and adolescents as the main source of information tends to have little influence in implementation, distribution of funds and policy (Alderson & Morrow, 2011). The opportunity for a young person to share their story and contribute to research that has the potential of helping others may be empowering and therefore beneficial (Powell et al., 2013). The role of the researcher is then to make use of the trust given in the best way possible.

One strength of this thesis project is that it combines quantitative and qualitative methods in the hopes of giving adolescents a voice that may enrich the

quantitative findings and enhance the interpretation further, creating a sum greater than its parts.

The data in the HBSC-survey in Studies I and II were gathered anonymously, which means there is minimal risk of exposing the identities of participants. The HBSC-data is available for researchers upon request from the Public Health Agency if the requirements for a correct handling of the data are met and the purpose and aim of the research are explained and approved. All participating countries in the HBSC survey are required to: seek approval from an ethics committee within their country or adhere to national ethics guidelines, guarantee that schools and pupils are made aware of the procedure, voluntariness and their own rights, and that the procedure is fully documented (Currie et al., 2014).

Research on sensitive personal information requires an ethical approval in Sweden (SFS 2003:460). The design of Study III was approved by the Swedish Ethical Review Authority (Dnr: 2019-00068 & 2020-00741). Participation was voluntary and informed consent was sought from the participants, as well as from parents if the informants were under the age of 15. Written informed consent was received from 30 adolescents. Seven interviews were cancelled in March 2020 due to schools not allowing outside visitors because of the spread of Covid-19. It was decided that teachers would inform the seven pupils about the data gathering being cut short due to the pandemic restrictions after communication between the school principal and the research team. It would in hindsight have been possible to ask each school principal about the possibility of inviting the remaining pupils to online interviews in school or from home, but such a procedure was not described in the protocol that was approved by the Ethical Review Authority. From an ethical perspective it might have been motivated to consult the review board about changing to an online interview setting, and thereby honour the trust given by the remaining pupils through their informed consent.

The handling of data followed the recommended guidelines of Halmstad University to ensure confidentiality, and fictional names were used in the presentation of the findings. The study adhered to the principles of the Declaration of Helsinki (2013). General information about the study and its aim was given to pupils in their classroom, during school hours with their teacher present. Voluntariness and confidentiality were explained at that time. Pupils, both above and below the age of 15, were encouraged to share the written information with their parents in case they could not understand any part of the written content. The interviews were held in school and school nurses and counsellors were made aware of the interviews taking place. Participants were informed of this in the written information and advised to go there should they experience any distress after the interviews.

There is naturally a disparity in power between the researcher and the person being interviewed in qualitative research that involves children or adolescents, which calls for reflexivity (Powell et al., 2013). The relationship that is formed between the researcher and participant relies on the amount of trust that can be formed within a short period of time. This impacts, to some extent, the quality of the data that is created, and the consideration of power dynamics is therefore of great importance. It is therefore necessary for the researcher to be self-aware and make use of strategies to reduce the inequality in power (Powell et al., 2013). The strategies that were used in Study III were dressing casually, not sitting directly opposite to the adolescents and trying to maintain a relaxed body language. One possible way of changing power dynamics that is commonly used is to perform focus-group interviews (Powell et al., 2013). This option was discussed within the research group during the design process but was decided against because of the aim of the study, which implied having adolescents describing in depth their relationships with others.

Ethical considerations in the conducting of a systematic review involve an accurate interpretation of the work of other researchers, conflicts of interests and representation (Suri, 2020). Researchers need to reflect on their understanding and knowledge of the research field, but also concerning bias and an awareness of the potential impact of the findings. The issue of representation in Study IV was addressed by a careful selection of databases that would be relevant to the aim of the study. The included studies represented countries from different parts of the world and no time limit was applied in the search procedure. An accurate interpretation of the work of other researchers requires humility for one's own knowledge and an audience-appropriate transparency to reduce potential influence of biases (Suri, 2020). To address this, any issues or uncertainties that could not be resolved in consensus within the research team led to contacting the authors of that specific study and requesting advice or any additional information that would help to resolve the issue.

Results

The overall aim of this thesis was to explore social capital and inequalities in mental health among young adolescents in Sweden. Two main research questions (p. 36) were formed that guides the presentation of the following section. To answer the first research question, the main findings of study I and II are presented and then merged into a synthesis. To answer the second research question, the main findings of studies III and study IV are presented, and then synthesized.

Main findings of Study I

The results showed that girls experienced mental health problems, low life satisfaction and low health perception to a greater extent than boys. Furthermore, 15-year olds were two to three times more likely to rate their mental health and general health perception as poor compared to 11-year olds. Findings showed that socioeconomic inequalities in mental health were visible when relying on adolescents as the single source of information. However, subjective socioeconomic status better predicted mental health problems (OR:0.66, 95%CI: 0.63;0.68), poor life satisfaction (OR:0.51, 95%CI: 0.49;0.53) and poor general health perception (OR: 0.62, 95%CI: 0.59;0.65) than did the objective measure. This differentiation was consistent over the four survey waves between 2002 and 2014. A gender interaction was found in the relationship between subjective socioeconomic status and mental health that indicates that the association was stronger for girls than boys. Another important finding from the study was how the two socioeconomic variables behaved when entered simultaneously in regression models. The explanatory capabilities of the model improved when subjective socioeconomic status was added, and a reversed association was seen between objective socioeconomic status and mental health problems, from an odds ratio of 0.96 (95%CI: 0.94;0.98) to 1.02 (95%CI: 1.00;1.04). It thus appears as if the assessment of actual resources and material wealth in the family poorly relates to adolescents' perception of their socioeconomic status relative to others, at least in the Swedish context. Initial correlation analysis as well as regression

analysis supported this finding. Although the subjective measure used here concerned the perceived economic situation in the family, findings indicate the importance of asking what lies beneath subjective socioeconomic status.

Main findings of study II

We identified latent social capital profiles that are likely to reflect different typologies of young adolescents in Sweden by using variables that represented individual-level cognitive social capital in the contexts of the family, school and peers. Robust inequalities were identified between profiles when these were examined regarding mental health problems and life satisfaction (see Figure 5). An almost identical profile was identified in 11 and 15-year olds, where sense of belonging, trust and support were poor in all three contexts. The adolescents who fitted this profile also experienced worrying levels of mental health problems and low life satisfaction. The most likely profile solution for 13-year olds revealed instead one with a strong and supportive peer network but low social capital in the family and school context. Despite an anticipated compensating effect of a strong peer network in this profile, similar worrying levels of mental health problems and life satisfaction were seen. Another interesting result was an indication of a link between family and school social capital since no profile had contrasting levels in the two contexts. Meanwhile, contrasting levels of peer social capital was seen in at least one profile in each age group, indicative of peer networks as an independent context from the family and school. A sense of belonging, support and trust in peer networks, or lack of the same, made little difference for mental health problems and life satisfaction among 11-year olds and 13-year olds as substantiated by regression analysis. However, a more pronounced link between peer social capital and life satisfaction was detected for 15-year olds. Younger adolescents reported higher school social capital, somewhat higher in the family but about the same as 15-year olds on peer social capital.

Finally, we wanted to see if the identified profiles differed in socioeconomic status and if any gender patterns were visible. No differences in socioeconomic status could be found in the 11-year olds. The only statistically significant difference for the 13-year olds was between the profile with strong social capital in all contexts and the other profiles. The same pattern was seen for 15-year olds. Boys were overrepresented in all profiles with low social capital except in profiles of strong peer social capital, where girls accounted for a majority by about a two to one ratio.

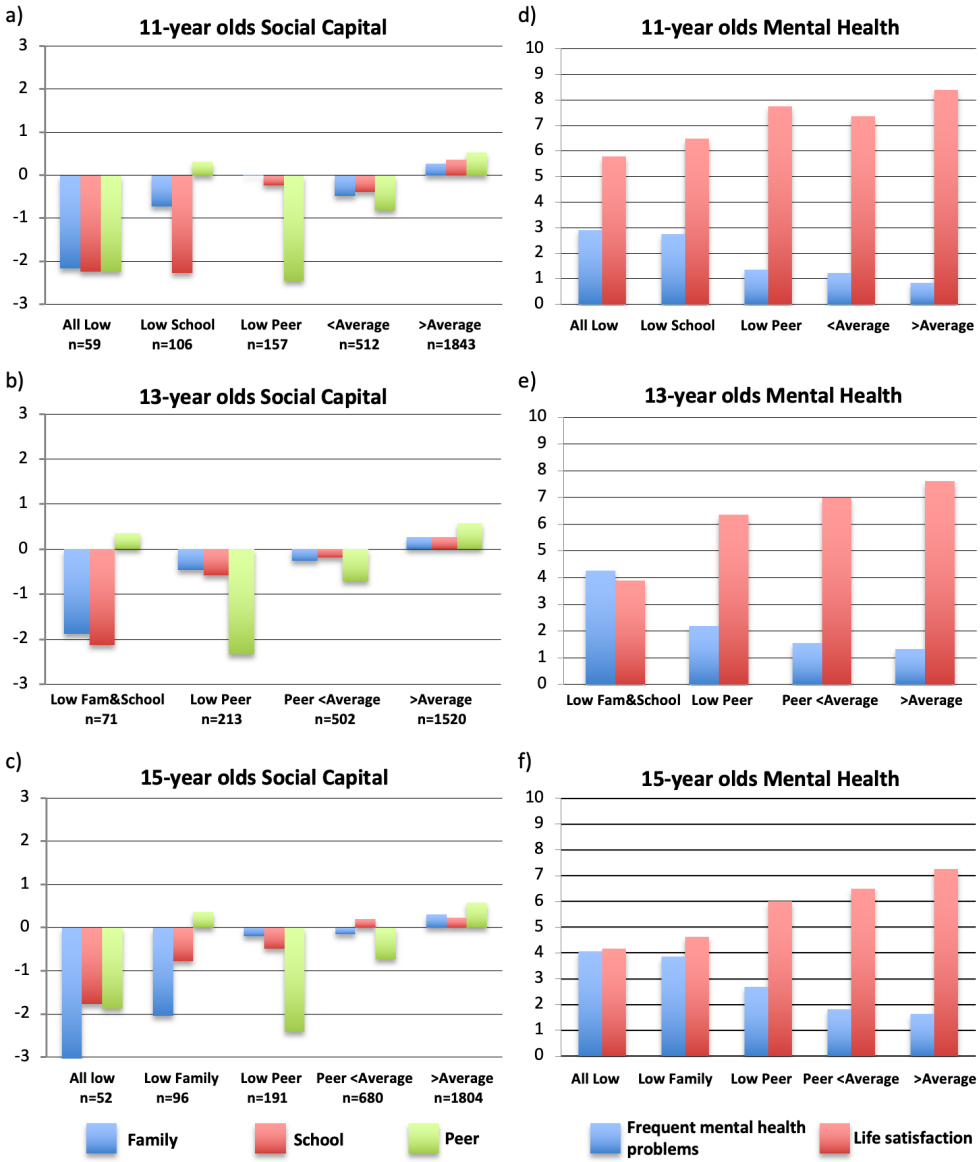

Figure 5. Study II, profiles of social capital and frequent mental health problems (range 0-8) and life satisfaction (range 0-10) in each profile.

Synthesis of findings from Studies I & II

How can we understand the inequalities in adolescent mental health in Sweden from the perspective of subjective socioeconomic status and social capital?

Findings show that it is essential to give attention to how young adolescents perceive their situation as a complement to relying solely on the objective perspective in the Swedish context. The results indicate that relative comparison of economic situation is an indicator that is reliable for revealing disparities in mental health since it seems insensitive to changes of objective socioeconomic status over the time period represented in study I. It may also reveal disparities in the mental health among adolescents across all socioeconomic levels in the Swedish context. Study II revealed different images of adolescents from the point of family, school and peer social capital, how common each profile is and a plausible prevalence of mental health problems and level of life satisfaction associated with each profile. While profiles revealed robust and therefore meaningful inequalities in mental health, the differentiation of socioeconomic status between profiles was inconclusive.

In summary, when young adolescents themselves are the only source of information, it is shown how relying on objective or proxy-measures of parental socioeconomic status to examine inequalities in mental health provides only a limited picture in the Swedish context. By adding the lens of subjective appraisals of one's situation and cognitive social capital we find that most adolescents in Sweden perceive their situation as good and that they are a part of networks signified by trust and a sense of belonging. It is also evident is that we should pay particular attention to young adolescents who experience a lack of support, trust and sense of belonging at home and in school. The levels of frequent mental health problems and life satisfaction found in adolescents with low social capital in the family and in school show that these adolescents are likely struggling daily. Especially since two vital supportive contexts are unlikely to fulfil their need of support. Moreover, a clear compensating effect of strong peer social capital could not be seen. Although adolescents with strong social capital also experience mental health problems, being in a supportive social environment offers better conditions to cope and regain balance again.

These studies do not rule out or question the possibility of a bi-directional relationship with mental health. If indeed the mental health partly determines how adolescents perceive their economic situation and affect their social capital, these findings are still relevant. The two studies together offer a nuanced image of inequalities in adolescent mental health. Among adolescents who report poor social capital, we learn that levels of mental health problems vary

significantly above the cut-off point used in study I, between the social capital profiles. This variation was also seen in levels of life satisfaction.

There were multiple identified gender differences in Studies I and II, which when combined demonstrate the necessity of addressing gender before inferences are made. First, the findings substantiated evidence of a higher prevalence of frequent mental health problems and low life satisfaction among girls. Second, a gender difference was found that indicates a stronger link between subjective socioeconomic status and mental health among girls than of boys. Third, gender patterns in the social capital profiles were found that are worth mentioning. Boys were overrepresented in profiles with low peer social capital and girls in profiles characterized by strong peer networks.

Main findings of study III

> How I feel has probably a lot to do with my friends … I can really talk to them about …. not feeling well … when it comes to everything … while if it's my parents then I can say like this … it's tough now … it's stressful in school and so … but I perhaps can't talk about everything with them

Adolescents described their social relations and networks in relation to their mental health. The categories that emerged in the analysis were, access to a safe space, feeling connected to others and maintaining control. Their personal agency was seen in how they continuously evaluated their closest bonds, how they were sensitive to differences of opinion and interests and tried to maintain control through social behaviour.

Aside from some participants mentioning their home, a safe space was not defined as a physical location but rather as relations or networks signified by mutual trust, honesty and an unconditional access. Participants attributed these characteristics to their closest relations within the family, extended family and predominantly same-sex networks of peers. The feeling of access appeared important in relation to mental health rather than reliant on utilization. Adolescents described how trusting others was a prerequisite for sharing feelings and problems or seeking support in relations and networks. Sharing in this context was thus not about everyday topics or small talk, but about sensitive matters that were shared very selectively within the relationships characterized by trust. Trust was a product of for example mutual sharing, experiences and history together and interpreted as something dynamic. Whenever adolescents felt the need to share something with someone, the nature of the

issue, which people were involved, and which feelings were triggered influenced their decision of who to turn to. Some girls expressed how they would not share feelings with, or confide in boys because of their inability to discuss and show feelings. The older girls also preferred confiding in a best friend, rather than their parents, which was not described so explicit by boys.
Feeling connected to other people revolved around connectedness in close relations and networks but also in a broader context, aspects that helped shape the identity of adolescents and give them a sense of belonging and purpose. Doing things together with family members, friends and others, regardless of activity, contributed to a sense of purpose. Apart from not having to feel alone, hanging out together meant enjoying things together, sharing laughs, being spontaneous, remembering the past and making plans for the future. Sharing a history, interests and values with other people both led to expanding networks and acted as glue in adolescents' existing relations and networks. Adolescents described it as being easier to socialize with people who shared their interests but could also dissociate them from people unlike them. The shared interest(s) then seemed to function as a self-sustaining source of connectedness. Adolescents had this experience with family members, peers, but also with teachers, sports coaches or other adults that they described as important. The online context was frequently mentioned when describing connectedness, as a means of interacting despite geographical distance, to enable passive participation in peer networks and to broaden networks by finding similar-minded people.

Adolescents were actively and subconsciously trying to maintain control in their social relations and networks. This was developed from adolescents reasoning around their own behaviour, habits, decision-making and motives. A loss of control was described to create negative feelings such as stress or distrust towards others. Social control and parental monitoring included a sense of freedom. It was important to learn and be aware of the social boundaries and power dynamics that existed in different networks and act within these to maintain control. It was when their degree of freedom within those boundaries, or ability to make autonomous decisions, was questioned that they reacted negatively. Adolescents expressed how challenges in their life, such as parents getting divorced, moving to a different city or outgrowing friends, impacted their social relations and networks. While some accepted changes in relations and networks as something that naturally occurred, others described how changes resulted in a loss of control, triggering distress and insecurity about the future. Finally, adolescents described conscious choices and actions that they used frequently in their networks. These skills were learned through previous experiences and the incentive to use them seemed to be to steer outcomes or consequences in an anticipated direction, in order

to maintain control. Apart from the conscious choices and actions, adolescents described something that seemed to derive from a universal value or norm of wanting what was best for others, despite not serving their best self-interest.

Main findings of Study IV

The systematic review identified 20 studies that described development and validation procedures of instruments for assessing social capital for adolescent samples. A list of the studies can be found in Appendix 1. Adolescents were involved in the development of four instruments (Ergün et al., 2018; Hall et al. , 2014; Lau & Li, 2011; Onyx et al., 2005) and thirteen included the target group in face validity procedures. The most recurring resources (or constructs) used to operationalize social capital in the instruments were trust, support, sense of belonging, participation, connectedness and cohesion.

The Instruments differed in their dimensionality and not a single instrument covered all four contexts of family, school, peer and neighbourhood. Seventeen instruments were designed with the intention of assessing social capital in relation to a specific issue. Specific issues that were addressed were for example: social media use, sexual health, substance use, risk-taking behaviour and exposure to armed conflict or violence. Six instruments were developed with the intention of assessing social capital in relation to mental health. The indicators of mental health in the six studies were life satisfaction (Geraee et al., 2019), depressive symptoms (Hall et al., 2014; Magson et al., 2014), mental disorders (Harpham et al., 2005), subjective well-being (Lau & Li, 2011) and depressive symptoms (Takakura et al., 2014). Three instruments were developed and designed to assess social capital in general among adolescents, without connecting theory to other specific outcomes. Nine instruments were thus designed to capture either social capital in general or in relation to mental health. Two of these instruments (Lau & Li, 2011; Paiva et al., 2014) had a particular focus on young adolescents while the others included adolescents that exceeded the range of 10-15 years. Two instruments were thus more relevant to highlight in relation to young adolescents.

The Social Capital Questionnaire for Adolescent Students (SCQ-AS) that was developed in Brazil by Paiva and colleagues (2014) is a short 12-items instrument designed to capture bonding social capital in the school, neighbourhood and peer context. Trust, social participation and social cohesion are represented in their conceptualization of social capital guided primarily by Coleman's concept. The target group was not included in the development of the instrument but involved in face validity procedures. The instrument

developed by Lau and Li (2011) involved young Chinese adolescents during both the development and validation of their 38-items instrument that covers bonding social capital in the family and school context. Conceptualization of social capital included indicators of trust, connectedness and social participation, citing Bourdieu (1986), Coleman (1988) and Putnam (1995). The aim of their study was to see how family and school social capital was associated with variations in well-being, with findings supporting a positive association.

Synthesis of findings from Studies III & IV

How can we conceptualize and operationalize social capital in relation to mental health among young adolescents in Sweden?

From the voices of young adolescents, we learned about how they perceive, access and utilize social resources in relation to mental health.

Resources in their social relationships and networks appear to function in different ways in relation to their mental health. Mutual trust was the common denominator of safe spaces, and this resource needed to exist in more than one network because different relationships filled different purposes, preferably in networks that were somewhat independent from one another. Fifteen instruments, out of the twenty that were evaluated in Study IV, assessed social capital in multiple contexts, which further supports the notion that multiple contexts are relevant from the perspective of individual social capital. The resources that adolescents described in Study III when referring to a safe space were trust, a sense of belonging and support, which was also among the most frequently used indicators of bonding social capital in the instruments that were identified in Study IV.

Feeling connected to others was described at two levels. In bridging networks, an emphasis was placed on shared interests, social behaviour and type of activity in order to benefit from interaction. Once a bonding tie was formed, values and expectations were more implicit, and the type of activity seemed less important. There was a latent form of connectedness that increased whenever interaction occurred.

The strive for, or ability to, maintain control is interesting with regard for the conceptualization of social capital in relation to mental health and social control was included in the operationalization of social capital in two instruments from Study IV. Social control seemed to be a product of social interaction, both past and present, and more so than an ability. It relied upon events that occurred not only within the immediate surroundings but also in adolescents' extended networks. The resource proposed here to represent what

maintaining control is all about, is thus predictability. Predictability as a resource in adolescents' social relations and networks functions as a compass. When events and their consequences become unpredictable, many adolescents may not have the capacity or experience to navigate. Many adolescents may not have the capacity or experience to navigate when events and their consequences become unpredictable. Instead, having the possibility of returning to a predictable environment where actions and their consequences can be anticipated is vital for adolescents in times of mental imbalance.

A conceptualization of social capital for young adolescents in relation to mental health would, based on what they described, need to implicate the multidimensionality of the concept. Multiple contexts, which include structural and cognitive components, are thus needed to cover different network constellations and significant relationships with, for example, relatives, neighbours or school counsellors. The results of Study III support the need to distinguish between bonding and bridging social capital, and study IV shows that this is commonly done when social capital is operationalized in measurement. Bonding ties appear to be important in relation to mental health, retaining value through their mere existence. Bonding social capital is thus beneficial in its latent form, i.e. as capital, and is put to the test when adolescents are faced with adversity or experience distress and seek support. Bridging ties appear to be more reliant on interaction to be meaningful, more closely connected to general well-being and maintaining balance rather than seen as resourceful when faced with adversity. Moreover, predictable social relationships and networks seem important as young adolescents strive to maintain social control and a balanced mental health. Finally, the findings of Study III support the individual perspective when investigating social capital among young adolescents in relation to mental health.

It is evident from the findings of Study IV that the top-down approach (derived from theory) dominates the operationalization of social capital for adolescents. Adolescents were involved in the developmental process of only four instruments and among them, only one focused specifically on young adolescents. Overall, the studies lacked a combination of thorough validity procedures with inclusiveness of both multidimensionality and multiple contexts in the instruments. None of the instruments, which were focused on the assessment of social capital in relation to mental health, seem to match the breadth of what the adolescents in Study III themselves described as social capital.

Methodological reflections

Studies I & II

Studies I and II were based on data from the Swedish HBSC-survey. The survey and sample procedure are designed in order to produce a sample that is nationally representative for adolescents aged 11, 13, and 15 years old. This entails a sample that is diverse in terms of socioeconomic status, urban and rural living environment and geographical distribution of population (Public Health Agency, 2014). The data in Study I represents four waves from the 2001/02 survey to the 2013/14, while Study II focuses on the 2013/14 survey. The proportion of schools that have agreed to participate in the survey between those years range from 77% to 88%. The percentage of students who subsequently have agreed to undertake the survey, in the participating schools, has ranged from 85-90%. This means that about 70% of eligible students have participated in these survey waves. A report states that an investigation found non-random patterns of missing data to be unlikely which strengthens the claim that the sample is nationally representative (Public Health Agency, 2018a). Nevertheless, research indicates that mental health problems increase the odds of school absenteeism among adolescents (Ingul et al., 2012). It is thus a possibility that non-random patterns among absentees would include greater levels of mental health problems since data is gathered in a school context.

The HBSC-survey collects cross-sectional data, which restricts the possibility to make causal inferences of findings. This is a common limitation, which can only be overcome by a longitudinal deign. The contribution of the HBSC is, however, valuable for the mapping of adolescent health, health behaviours, lifestyle factors and socioeconomic conditions within and between countries (Currie & Alemán-Díyaz, 2015).

Study I

The dichotomization of health variables was conducted to distinguish high scores from low scores, which unavoidably generates a loss of information and hides the variation in the data (Fedorov et al., 2009). This type of data manipulation is frequently carried out despite the risk of choosing arbitrary thresholds, or setting thresholds based on the distribution in the data, referred to as "norming" (OECD, 2013). The cut-off points used in this study for mental health problems and general health perception were, however, based on recommendations of the HBSC and previously conducted studies (Ravens-Sieberer et al., 2009; van Beuningen et al., 2014). The threshold set to distinguish between high and low levels of life satisfaction can be considered to be high and was based on the high mean value of the sample. Researchers have argued, in a more recently published study, that although the commonly used threshold is set to 5 or 6 on the 11-point scale used in the HBSC-survey, the threshold used to distinguish a high level of life satisfaction should be >8 (Due et al., 2019). They base their argument on the high mean value of 7,58 from cross-national data on adolescents. Choosing a cut-off point based on the sample at hand may increase the relevance in a given context but may reduce transferability of results and cross-national comparisons. The large sample size in Study I may at least counteract the potential loss of power following dichotomization (Fedorov et al., 2009).

The mean value of the indicator for subjective socioeconomic status was very high, 4,17 out of a maximum of 5. This may be a consequence of how the question is designed in the questionnaire where the option "average" is assumed to be differentiated from "quite well off" and "very well off". It is likely that adolescents assess their situation differently depending on how they interpret the meaning of "average". This may be influenced by how they compare themselves to others, which perhaps should not be considered a weakness with regard to what is being measured. Analyses were conducted to investigate possible non-random patterns for missing data in the study and no strong indications of such patterns were found.

Study II

Latent Profile Analysis has been suggested as providing complementary insights to that of regression analysis and other statistical techniques that assumes a linear relationship (Oberski, 2016). LPA offers multiple assessments of model fit indices that assists the researcher in choosing an ideal number of latent profiles (Tein et al., 2013). This reduces the risk of arbitrary decisions regarding an optimal model. Nonetheless, theoretical meaningfulness derived from a reality-connected understanding of the data should be embedded in the

decision. Visual evaluation and the size of the profiles for each solution was discussed within the research team and weighed in to complement the evaluation of model fit indices. Also, profiles identified through latent profile analysis have a degree of class probability, profiles are thus not "true", per se, but individuals instead have a high probability of belonging to this group while being unlikely to belong to another depending on their reporting. When treating latent profiles as observed variables in subsequent analysis to predict distal outcomes, here represented by mental health problems and life satisfaction, any uncertainty in the individuals' true class membership is ignored and so is the maximum posterior-probability rule. Combined with the limitations of imputing data under a model that is more restrictive than the latent profile analysis model, a risk of bias and attenuated results occurs (Lanza et al., 2013). This might have been a contributing factor to why our profiles were unable to add information to the multiple regression analysis.

The major limitation in Study II concerns the measurement of social capital. Variables were chosen to represent cognitive social capital through trust, support and sense of belonging within the family, in school and among peers. The items that were chosen are part of the HBSC-questionnaire, which does not explicitly incorporate the concept of social capital in the description of these items. There is thus reason to question the content validity of these items. The items were, however, a part of composite sets that were intended to reflect the social culture and perceived support in each context (Currie et al., 2014).

Study III

The trustworthiness in qualitative research should be discussed in relation to different quality criteria (Graneheim & Lundman, 2004; Lincoln & Guba, 1985). *Credibility* refers to the confidence in the research findings and thus how credible the interpretation of the raw data is. A total of 23 adolescents were interviewed and the data content was rich in total, although with some variation between interviews. The credibility was strengthened by the experience of performing qualitative content analysis that existed within the research team, and the detailed descriptions presented of the collection and analysis of the data. *Dependability* refers to the stability of data and the conditions under which the data was collected and analyzed (Graneheim & Lundman, 2004; Lincoln & Guba, 1985). All the interviews were conducted by the first author and the semi-structured interview guide was used consistently. The analysis process was in line with the standards of the particular design, and all researchers were involved continuously in the discussions

throughout the analysis. The *transferability* of the findings to other contexts is strengthened by a diverse sample. The adolescents represented boys and girls, different ages and levels of socioeconomic status, family constellations, religious views and living conditions. A potential weakness of the study is that all the adolescents were from the same municipality, representing three schools, and no adolescents from larger cities were included. This is compensated with a clear description of the setting and participants of the study, allowing the reader to evaluate the transferability to other contexts. Finally, *confirmability* refers to the degree to which the results accurately reflect the voices of the participants (Graneheim & Lundman, 2004; Lincoln & Guba, 1985). The findings of the study are grounded in the narratives of adolescents with diverse experiences and demonstrated by quotations that enhance and illustrate the content and provide the reader with an opportunity to determine the trustworthiness of the data.

Study IV

The trustworthiness of any systematic review concerns the level of clarity, transparency and reproducibility (Garcia-Doval et al., 2017). The present study followed the detailed COSMIN methodology, which strengthens the trustworthiness of the study. Each step is thoroughly described, and the findings are presented in detail. Some steps in the COSMIN methodology were, however, not applicable to this systematic review. These steps referred to comparison with a golden standard and ranking of instruments. Patient-reported outcome measures more often adhere to areas where a golden standard is present and where the outcome measure is more stringently defined, such as in the field of medicine. Nevertheless, the methodology provided a robust framework that was suitable for the aim of the study. Experts on search strategies were consulted to reduce the risk of missing any existing instruments for assessing social capital that were developed and validated for adolescent samples.

Six of the included instruments were validated in samples that involved participants below the age of 10 or exceeded 19 years. Although individuals outside this range were a minority in each sample, it is necessary to mention since this may affect the results of the validation procedures.

All the authors were involved in the procedure of each step in conducting this systematic review and any uncertainties that arose were discussed until consensus was reached. By having all authors initially reviewing a randomized sample of studies independently followed by a discussion, the reliability of the screening procedure was increased. While one author took the lead in

performing the screening and evaluation, discussions preceded each step and were held along the way and any issues were resolved amongst all authors. To further enhance the trustworthiness of this study, we contacted a number of authors on issues that could not be resolved amongst the authors of this study and received multiple responses, for which we are grateful.

Discussion

This discussion highlights the major findings of this thesis that concern the exploration of social capital and inequalities in mental health among young adolescents in Sweden. The findings are compared and discussed in light of the empirical and theoretical literature, both previously presented and new to this discussion. The reflections that are made are built on the conceptual framework and the two research questions but are detached from their structure and presented in a way that elucidates the interfaces between all four studies and their combined understanding.

Mental health problems and life satisfaction – prevalence, gender and age

This thesis found a considerable gender gap in the prevalence of mental health problems and low life satisfaction among adolescents in Sweden, which concurs with recent research (Campbell et al., 2021). Prevalence was also found to be greater among older adolescents compared to younger, which was expected. Where trends are concerned, Study I could not support a linear increase in mental health problems and low life satisfaction between 2002 and 2014. Although a more recent report from the HBSC-survey does again show rising levels of mental health problems (Public Health Agency, 2018a). The effects of the Covid-19 pandemic and the circumstances around it on adolescents in Sweden are still to be thoroughly investigated, and results from around the world on the effects on adolescents' mental health are inconclusive so far (Ford et al., 2021). The question remains, however, how we should interpret reports of mental health problems and life satisfaction. The imbalance in mental health is manifested in different ways and adolescents in Sweden have described mental health problems as something that is naturally occurring, connected to multiple factors such as lifestyle and social interaction, but also sometimes indicative of more deep-rooted problems (Wickström & Lindholm, 2020). The findings of study II clearly show variation in the burden of mental health problems and low life satisfaction above and below the cut-off points applied in study I. Taken together, these facts question the

usefulness of threshold-levels to report poor mental health among adolescents. The importance of using multiple indicators of mental health has been suggested by others (Tannenbaum et al., 2009), which is further supported by this thesis. When adolescents in Sweden speak of mental health, they describe a complex and multifaceted concept (Johansson et al., 2007). The reporting of mental health indicators in isolation, reduced to a measure above or below a threshold, will thus not suffice to distinguish adolescents at risk of severe mental health problems, from those who experience a natural imbalance in adolescence. These shortcomings are necessary to consider in order to bring greater nuance to the discussion and improve preventive and promotive work. The emphasis on the social dimension of mental health in the definition of adolescent mental health, which this thesis adheres to (Galderisi et al., 2015), together with the empirical contributions of Studies II and III, show that integration of the social dimension into the evaluation of adolescents' mental health clearly provides insights.

Inequalities in adolescent mental health

The perspective of objective socioeconomic status

Study I revealed socioeconomic inequalities in mental health through the intermediary determinant of family affluence. Swedish adolescents from less affluent families are more likely to report mental health problems and low life satisfaction. The explanatory capabilities were however limited and adolescents across the socioeconomic spectrum reported poor mental health. The measure of family affluence has been deemed a reliable proxy for socioeconomic status (Currie et al., 2008), but previous research has found more convincing support for socioeconomic inequalities in adolescent mental health in Sweden when parental information was gathered (Wirback et al., 2014). However, with increasing income inequality in Sweden over the past decades (World Bank, 2021), it is necessary to be observant about how socioeconomic inequalities develop and translate into disparities in the mental health of adolescents. There are reasons, however, for looking beyond socioeconomic status to make disparities in adolescent mental health visible. First, relatively few adolescents in Sweden live in material deprivation (Luczak & Kalinowski, 2020). Second, social and political policies exist, such as socialized healthcare and education, which work against inequities and the effects of social inequalities on adolescent mental health (National Board of Health and Welfare, 2020). The protective mechanisms of investment in health promotion programs and education are apparent in more egalitarian societies (Elgar

et al., 2009; Elgar et al., 2015; Picket & Wilkinson, 2007). Such investment on the structural level trickles down to positive effects on populations, such as increased generalized trust, feelings of equality and community empowerment (Odgers, 2015). There are no indications of a positive mental health trend among adolescents in Sweden despite the existence of such policies and it is therefore reasonable to discuss how services can be steered to increase the effect of preventive and promotive work.

The perspective of subjective socioeconomic status

The findings in Study I provide support for using subjective socioeconomic status to reveal disparities in mental health among young adolescents in Sweden. The association between family affluence and mental health problems and life satisfaction was reduced and reversed when adolescents' perception of their economic situation was accounted for. The subjective measure, meanwhile, showed consistent strong predictive capabilities. Similar results have been found when socioeconomic status is assessed directly through parental information and compared with subjective measures (Goodman et al., 2007; McLaughlin et al., 2012). More recent research has shown that the benefits of higher objective socioeconomic status is dependent on social comparison and that the correlation between the objective and subjective status is relatively low in adolescence (Bøe et al., 2019), and especially in early adolescence (Svedberg et al., 2016). A strong positivity bias among young adolescents may explain these findings, which brings a rather low vulnerability to upward social comparison (Van der Aar et al., 2018). In contrast, researchers found adolescents aged 15-17 to be the most noticeably affected by social comparison in the same study. Social comparison via online platforms has increased among adolescents over the past decade and investigations indicate an association with depressive symptoms and self-objectification that is unrelated to frequency and time spent online but rather to negative upward comparison (Schonning et al., 2020; Nesi & Prinstein, 2015). As also seen in Study I, girls appear to be more vulnerable to negative comparison, which has also been found for socially excluded adolescents, irrespective of gender (Nesi & Prinstein, 2015).

Adolescents who believe they are worse off than their peers are thus more likely to report poor mental health, regardless of their objective socioeconomic status. The case for directing attention to subjective measures of socioeconomic status in Sweden is therefore strong when considering the national context. The question is what can be done with this information. Is it possible to change how adolescents compare themselves with others in order to improve the mental health? Researchers have suggested that the subjective

dimension of socioeconomic status needs to be acknowledged at the very least (Quon & McGrath, 2014), and that interventions should be aimed at reducing status-based disparities in adolescent health along with efforts to reduce social inequities on the structural level (McLaughlin et al., 2012; Quon & McGrath, 2014). Another suggestion, which is particularly interesting in relation to the findings of this thesis, is that being a part of tight social networks may buffer the negative effects on mental health of low subjective socioeconomic status (Nesi & Prinstein, 2015; Präg et al., 2016). The association between subjective socioeconomic status and social capital was not investigated in this thesis but the findings of the Nesi and Prinstein (2015) and Präg et al. (2016) studies, accompanied by the findings in the study of Ye and colleagues (2020) support the promotion of social capital to reduce the negative effects of social comparison in adolescence.

The perspective of social capital

The profiles identified in Study II revealed significant disparities in mental health from the perspective of cognitive social capital. The latter appears to have the potential of providing meaningful information that arguably exceeds that of subjective socioeconomic status since it offers a clearer image of circumstances that can be subjected to interventions. Social capital may provide advantages if the goal is to identify vulnerable adolescents and learn more about how to distinguish between natural imbalance and what should raise concern.

If the sample of the HBSC-survey can be considered as nationally representative for adolescents in Sweden, Study II provides us with a probable image of what cognitive social capital may look like. Approximately two-thirds of adolescents between the age of 11 and 15 have strong social capital in the family, in school and in peer networks. About 6% of 11-year-olds experienced low trust and sense of belonging and support within their family and in school with teachers and classmates. Some of these young adolescents had strong peer networks but many lacked that as well. The proportion of 13-year-olds with similar levels of social capital was 3-12%, and 5-12% in 15-year-olds, depending on how the profiles are interpreted. We may translate these findings into a school class of about 25 students and say that 1-2 students are likely to fit the above description among 5th graders, while 1-3 students would be likely for in 7th and 9th grade classes. It is uncertain whether this proportion differs between high and low affluent communities due to the inconclusive support for a social gradient in social capital among adolescents, which is also seen in another study (Morgan, 2011). These adolescents are, based on the qualitative findings of this thesis, unlikely to feel that they have

access to a safe space with a possibility of sharing their feelings and concerns in relationships signified by trust and honesty at any given time, at least not in multiple networks. It is instead likely that they experience loneliness and exclusion (Snape & Manclossi, 2018) and that social interaction in their family and in school is less predictable, which may reduce the ability to maintain control and exercise their agency. Whether or not this causes the high prevalence of mental health problems and low life satisfaction seen in Study II cannot be determined here, but it most likely brings a heightened risk of more serious illness, such as depression, due to the lack of support for coping with adversity (Rueger et al., 2016).

Yamaguchi and colleagues (2013) have uncritically cited the work of Coleman (1988) in the interpretation of their empirical findings and conclude that social capital contributes significantly to adolescents' well-being by providing the possibility to share feelings and receive support. If a social environment thus becomes more supportive, it reduces mental health problems and strengthens well-being (Yamaguchi, 2013). These are compelling arguments and there are few reasons to question this causal inference. The problem is however that the assumption is based on cross-sectional data, and previous systematic reviews conclude that evidence of a causal link is missing (De Silva et al., 2005; McPherson et al., 2014). Longitudinal data suggests a causal link with general health perception and health behaviours, but indicators of mental health are not included in these studies (Klocke & Stadtmüller, 2019; Nieuwenhuis, 2020). The assumed bi-directional association between social capital and mental health, building on Lin's notion (2001), provides an alternative line of thought. The heavy burden of mental health problems and low satisfaction with life that was synonymous with certain profiles in Study II, assumes an imbalanced mental health. This imbalance, regardless of its origin, would likely lead to a reduced ability to sustain trust and utilization of resources in important relationships, causing a decline in social capital.

Previous studies by Almgren et al. (2009) and Boyce et al. (2008) have not been able to clarify the link between gender and social capital in the association with adolescent health. The gender differences that were seen in Studies II and III could not further explain the gender gap in adolescent mental health in Sweden. Girls seem to have stronger peer social capital in general, which might indicate a higher level of sociability in girls than boys, but this did not provide a clear protective effect. Boys were overrepresented in the profiles of poor social capital generally, which may be another sign of girls' sociability. The adolescent girls in Study III appeared to be more aware of, and impacted by, the gendered social roles they described than boys did, but no evident difference was seen apart from that. It may be so that the gender gap in mental health is better explained by the double burden of gendered social

expectations and lingering traditional roles (Campbell et al., 2021) and that the perspective of social capital provides limited complementary insights into gender inequalities in adolescent mental health in the Swedish context.

In summary, there is reason to believe that increased social capital benefit adolescents collectively in general, but more factors are at play when we consider the mental health of the individual and we should therefore not assume all will benefit from the strengthening of social capital. We should instead be prepared for the opposite effect in some individuals, caused by social exclusion (Aronson & Bergh, 2021). The association between social capital and mental health arguably becomes more useful if we consider it bi-directionally. Inequalities from the perspective of social capital may thus be limited in their ability to guide initiatives of mental health promotion on the macro or community level. They may, however, prove to be useful to identify vulnerability in adolescence and to distinguish natural imbalance from what may lead to serious illness. The findings of Studies III and IV raise concerns about the validity of the measurement of social capital in adolescent samples that suggest the inequalities revealed here should be interpreted with caution. A more comprehensive approach to the operationalization of social capital that consider the breadth of the multidimensional concept, any sociocultural-specific manifestations and all relevant contexts may provide further insights. Nevertheless, the family, school and peer networks are acknowledged as important everyday contexts, and much can be learned from the interplay between them in relation to adolescent health and well-being (Morrow, 1999; Bassani, 2007).

Independent and interactive effects of different networks

Another important finding of this thesis, supported by quantitative and qualitative results, is that it is necessary to view and evaluate social capital in its respective contexts or networks. Attempts to summarize scores into an aggregated social capital variable would cloud the differentiation between the profiles identified in Study II. The independent and interactive effects of different networks, represented quantitatively here by the family, school and peers, on mental health is important to consider (Bassani, 2007). The findings suggest that the family and school contexts are strongly linked among adolescents in Sweden, and that peer social capital is more independent. Associative effects of bridging networks have previously been described to include a boosting, a double jeopardy and a compensating effect (Bassani, 2007). A boosting effect applies well to the family and school context in Study II. It is the most beneficial and occurs when two networks of strong social capital are

bridged. Adolescents who experience this sensation are most likely to have a high level of well-being. This boosting effect is supported by another study conducted in Sweden, showing a cumulative protective effect on the mental health for family and school social capital, and a limited additive effect of neighbourhood social capital (Eriksson et al., 2012). The negative equivalent to boosting is the double jeopardy effect (Bassani, 2007). It occurs when two networks of poor social capital are bridged, which has serious negative consequences for the individual. Whenever networks of contrasting social capital are bridged, the possibility of a compensating effect arises. A compensating effect of strong social capital among peers could not be supported by the findings of Study II, despite the descriptions by the adolescents about their peer networks and best friends as important for their mental health in Study III. The compensating effect does, however, appear to exist in the opposite direction, but it may also be a sign of the independence of peer networks among adolescents. Another explanation refers to measurement and whether the items capture the essence of what is important in peer networks. The combined findings of Studies III and IV suggest a need for new instruments, thoroughly validated for young adolescents. Other research, however, supports the conclusion that the family and school context are more strongly related to mental health problems and well-being while peer networks play a different role in adolescence (Upphoff et al., 2013). Strong peer networks are instead linked to health and risk behaviours, and longitudinal research shows that lifestyles and peer networks are deeply intertwined and are rather localized and remain fairly consistent over time (Adams et al., 2021). The interpretation of interactive and independent effects made here is, however, limited by the fact that all relevant contexts that were described by adolescents in Study III, were not represented in Study II. It becomes evident from the findings of study IV that the exclusion of important contexts is a common limitation in the operationalization of social capital.

Conceptualization and operationalization of social capital in relation to mental health

It is debatable whether social capital should be conceptualized and operationalized differently depending on the target group, or in relation to a particular outcome when it is in itself a complex and contested concept. Portes (1998) and Furstenberg and Kaplan (2004) argued, around twenty years ago, that the concept was being used recklessly and that its usefulness deteriorated together with every new discipline that interpreted and added to the theoretical literature. Putting a theory to practical use always carries a risk of over-

simplifying or missing complexities, but we should not refrain from operationalizing theories simply for fear of not doing them justice. It may be so that choosing to use the term social capital can be counterproductive, and that misunderstandings or critique are avoided by calling it by its components or manifestations. There would be no point in embracing the term attributed to the original theory if we aim too far away, but instead to call it something else. There are undoubtedly those who hold such an opinion today, but there are also other views.

Researchers within the health sciences today are being encouraged to; specify how they envisage the concept of social capital; construct specific theories on how the concept relates to certain health issues; and build on the existing theories in order to make social capital more empirically useful (Carpiano & Moore, 2020). Harpham et al. (2002) add that when doing this that quantitative research needs to build upon the qualitative work available to date.

The safe space that adolescents described in Study III resembles that of bonding social capital. The family is described in the literature as the primary source of bonding social capital (Coleman, 1988, Putnam 1995), and the findings in Study III does not dispute that. It is important to clearly delimit what constitutes the "family" and a definition should consider the sociocultural meaning of family (Carrillo-Álvarez et al., 2017). The findings here revealed that the notion of family needs to go beyond parents to include siblings and the extended family, including stepfamilies. This extends previous qualitative research that showed how relationships with for example grandparents can be rich in bonding social capital and may offer support and guidance in difficult times (Raymond-Flesch et al., 2017). Some of the adolescents described how close relationships with non-parent adults offered a safe space. Other research supports the importance of adult role models as sources of guidance, support and encouragement in adolescence, especially for adolescents who experience adversity in other social contexts (Richardson Jr, 2012). The safe space in peer networks revolved mostly around a being able to share everything with a like-minded person, with reference to age, gender and values, which is similar to what has been described previously about homogeneity in bonding peer networks among adolescents (Szreter & Woolcock, 2004; Billett, 2011). These descriptions of close peer networks as important for adolescents' mental health partially contradict the quantitative findings of Study II. Reuger and colleagues' (2016) study showed that support from a broader network of supportive relationships, such as classmates in the school context, brings mental health benefits that exceeds those of close friends because they provide a sense of general trust and predictability in their social environment. It may be so that bridging ties, such as those the adolescents described when talking

about school in general, teachers or people in their neighbourhood have greater value in relation to mental health than adolescents themselves are aware of.

The category feeling connected to others, described relationships and networks of both bonding and bridging ties in multiple contexts. Sharing values, norms and interests with others created a sense of belonging that was important for adolescents. The adolescents described how hanging out with peers, regardless the activity, meant a great deal to them. Hanging out has been described in other research as an important part of life in adolescence that is facilitated by the limitlessness of the online arena (Billett, 2011). This category in Study III also visualized structural components of social capital, apart from the evident cognitive components described above. Doing activities on a regular basis, whether it was together with the family, peers or organized sports, the quantity appeared to matter, as well as being part of multiple overlapping networks. This can be connected to fear of loneliness, social exclusion as described by Morrow (1999), or the more recent phenomenon of Fear of Missing Out (FOMO) since the online context was addressed foremost in this category. Research has shown that the social environment in the family is related not only to depressive symptoms among young adolescents, but also to FoMO, which triggers excessive internet use for example (Sela et al., 2020). Both cognitive and structural components are thus important to consider, and they may be double-edged in relation to mental health depending on the context and the nature of the relationship. Parental involvement in excess may be perceived as surveillance and a high frequency of hanging out with friends may be a sign of adversity in other contexts. The adolescents in Study III described the neighbourhood or community mostly in relation to a sense of safety, but no participant expressed the neighbourhood explicitly as important for their mental health. Empirical findings suggest that neighbourhood social capital explains little of the variation in adolescent mental health in Sweden (Eriksson et al., 2012). The adolescents in Study III were, however, not living in a large city and the importance of neighbourhood social capital in relation to mental health therefore needs further qualitative exploration.

Maintaining control, interpreted from what the adolescents described, was about personal agency and navigating social relationships. The desire for control was strong, and its manifestations ranged from daily evaluation of relationships to avoidance of seeking support from parents because of uncertainty about their reaction and to spare them emotional burden. Predictability in relationships and networks as a resource appeared to facilitate control. The adolescents in Study III spoke of boundaries, responsibilities and expectations in both positive and negative ways, but it seemed as if uncertainty was the

common denominator for negative experiences. The meta-analysis by Rueger and colleagues (2016) shows that when social contexts are perceived as stressful, adolescents are less likely to draw on the benefits of social support. Portes (1998) has described social control from an external perspective rather than internal. Institutional and social rules and norms, upheld by social capital, give people a sense of control, but predictability as a resource is not men-tioned explicitly (Portes, 1998). Predictability is here put forward as being reliant on both internal and external factors. Agency and the ability to act according to universal values constitute internal factors, which means that an imbalance in the mental health would reduce predictability. External factors involve the mental health of others, the presence and nature of norms and social expectations and the occurrence of events that may disrupt existing structures and resources, such as parental divorce.

The conceptual framework for this thesis presented components of social capital that can be considered universal in relation to adolescents due to their appearance in both theoretical and empirical literature. Altogether, this brief conceptualization acknowledges bonding and bridging social capital and its distinctions, the presence of cognitive and structural components and relevant contexts that adolescents described. The adolescents in Study III were diverse in terms of socioeconomic status and culture and religious/secular views but comprised a relatively small sample, from one municipality. Adolescents living in other parts of the country and in larger cities were not represented and additional qualitative research may elucidate further insights. The latent constructs or resources of social capital, i.e., trust, sense of belonging etc may be universal, but the socio-culturally specific pathways and expressions can be better understood by involvement of the target group in qualitative research (Carpiano & Moore, 2020). We may come closer to conceptualizing and operationalizing social capital for young adolescents in a way that covers the breadth of what constitutes social capital in the adolescent population by considering the uniqueness of social capital on an individual level. The findings in Study IV contradict this notion by showing that the theory-driven top-down approach predominantly guides quantitative research, revealing a lack of adolescent involvement in the development of instruments for assessing social capital. A scoping review study by Morgan et al. (2021) adds to this by showing that social capital seldom has been comprehensively conceptualized for adolescents as a group distinct from adults in studies on the association between social capital and mental health.

The social environment and the ways in which adolescents socialize and communicate have undoubtedly changed over the past decades alongside the societal advancements in mobility, communications and economy, and so has also the relationship with adolescent health and wellbeing (Patton et al.,

2016). Relying too heavily on theories that date back over thirty years is not the way forward if the goal is to translate research findings into policies and evidence-based interventions aimed at utilizing social capital as a means to improve the mental health of young adolescents in Sweden and elsewhere.

Morrow (1999) argued that social capital, as described by Bourdieu (1986), was a way forward in research involving adolescents, in contrast to Coleman (1988; 1990) or Putnam's notion (1993;1995) that implied that unsuccessful adolescents were somehow inadequate. A view of social capital as a privilege as opposed to something all individuals by nature help produce may generate advantages, since it acknowledges adolescence as a turbulent time and recognizes the importance of mental health for building and accruing social capital. The link between social capital as a privilege and socioeconomic status in the Swedish context is however not made clear by the findings of this thesis where focus lies on the mental health of adolescents. This does not rule out that social capital may have a stronger protective effect among those less fortunate, as other research concludes (Uphoff et al., 2013). In conclusion, Bourdieu's notion of social capital may fall short in explaining the findings of this thesis. A humility towards social capital theory and regard for different sociocultural contexts is therefore proposed in order to move forward.

Conclusion

This thesis explored social capital and inequalities in mental health among young adolescents in Sweden. Two quantitative studies were performed that together showed a nuanced image of inequalities in adolescent mental health. Subjective socioeconomic status was robustly and independently associated with mental health problems and life satisfaction in young adolescents, while the association between family affluence and mental health was reduced and reversed when adolescents' perception of their economic situation was accounted for. Another contribution is a nationally representative image of what social capital looks like from the individual perspective in the adolescent population and how this translates into disparities in mental health. The findings showed that particular attention should be given to young adolescents who experience a lack of trust, support and sense of belonging at home and in school.

Social capital remains a contested concept where a theory-driven top-down approach with an adult focus predominantly guides research. The conceptual understanding of social capital in relation to mental health is enriched here by the adolescents' own descriptions of what constitutes social capital for adolescents in Sweden. The resourcefulness of a safe space, feeling connected to others and maintaining control was described as important aspects of social relationships and networks in relation to mental health. Predictability is proposed as a resource of increasing importance that is influenced by internal and external factors. Findings from this thesis show that there are instruments that assess social capital which have been developed and validated for adolescent samples. Existing instruments do not, however, cover the breadth of social capital as described by the adolescents here and greater involvement of adolescents in the validation process when operationalizing social capital in research studies is called for. Mental health inequalities from the perspective of individual social capital may be limited in its ability to guide initiatives of mental health promotion on the macro or community level. The concept may, however, prove to be useful to identify vulnerable individuals and to differentiate between the natural imbalance of adolescence and what may lead to serious illness.

Implications

Practical implications

- Subjective socioeconomic status offers an important contribution to the understanding of socioeconomic inequalities in adolescent mental health in Sweden. It is necessary for politicians and decision-makers to address the increasing income inequalities in Sweden and prevent the impact of social inequities on adolescent mental health. Nevertheless, the findings presented here show that a consideration of how young adolescents perceive their situation and compare themselves to others is relevant across the socioeconomic spectrum.

- The profiles of social capital identified here revealed significant disparities in the mental health of young adolescents. The national representativeness of the sample together with careful consideration of finding the model with the highest probability infer that these profiles are highly likely to be recognizable by practitioners who are working with adolescents in schools, sports organizations, social services or similar fields. It is therefore suggested that paying attention to social behaviour and the social ties that young adolescents form and speak of, may enhance our ability to identify vulnerable individuals, and also to inform mental health promotion.

- The ways in which adolescents contribute to, benefit from and are affected by the resources that exists in their social relationships and networks are shown in this thesis, which provide us with an image of what it can be like to be a young adolescent in Sweden today. The formation of strong bonds, characterized by trust, honesty and unconditionality, in multiple networks seems vital to and constitutes a part of a balanced mental health. This knowledge may inform mental health promotion and interventions, but may be especially important to consider for parents of young adolescents who struggle with understanding the social behaviour of their maturing children.

- The understanding of adolescents as active social agents is further enhanced by the findings of this thesis, but so is also their vulnerability to uncertainty in social interaction. Whether it be by involving adolescents in decision-making, preparing them by sharing experiences or following through on promises made, nurturing predictability in social networks may be an important resource in relation to mental health. These findings may inform parents, practitioners and adolescents themselves for building healthy relationships and promoting healthy social behaviour.

Research implications

- The values and applicability of qualitative and mixed-methods research are multiple. There is a need to conduct studies with similar design as Study III in other parts of Sweden to further elucidate sociocultural variation in the formation, utilization and manifestation of social capital among young adolescents. Qualitative research may also help advance social capital theory and conceptualization of social capital for adolescents. Finally, doing research with as opposed to about adolescents is encouraged from an ethical and quality perspective.

- The findings question the usefulness of the threshold values of mental health problems and life satisfaction that is commonly used to report prevalence of poor mental health in the adolescent population. There are indications suggested elsewhere that an increased mental health literacy and reduced stigma of mental illness in society necessitates reconsideration of how mental health is reported. This thesis supports this and adds that looking beyond common indicators of mental health into the social circumstances may offer additional insights.

- There is a need to develop new instruments for assessing social capital among adolescents. Qualitative methodology would thus complement theory in the developmental phase, preferably applying an abductive approach, as well as informing face validity procedures during the validation of the instrument. There is as yet, to the best of my knowledge, no thoroughly validated instrument that covers the breadth and multidimensionality of social capital as described by the adolescents in Study III.

- The quantitative research of this thesis is limited by the cross-sectional nature of the data. Longitudinal research designs allow for making inferences that approach causality. This would permit further investigation of independent and interactive effects of multiple networks and the assumed bi-directionality between social capital and mental health. There are longitudinal projects in motion but few that specifically target social capital in relation to mental health in the transitional stages between childhood and adulthood. It is therefore suggested that future longitudinal research incorporates the findings of this thesis in order to enhance the validity and reliability of the results.

Svensk sammanfattning

Ungdomstiden är kanske den mest intensiva perioden i livet med hänsyn till den snabba fysiska och kognitiva utveckling som sker i kombination med de utmaningar som det innebär att bli vuxen. I åldrarna 10–15 år sker normalt en social utveckling där de sociala nätverken utökas samtidigt som starka vänskapsband formas som är viktiga delar av identitetsskapandet. Samtidigt utvecklas inte sällan en kritisk självbild och funderingar över vad som är normalt som en följd av puberteten.

Psykisk hälsa kan förstås som ett dynamiskt tillstånd bestående av basala kognitiva och sociala förmågor såsom att tolka, hantera och uttrycka egna känslor, känna empati för andra, förmåga att kunna hantera motgångar samt att agera i sociala situationer. Olika perioder i livet medför naturligt en obalans och ungdomsåren beskrivs som en kritisk period där individen aktivt arbetar för att återfinna en harmoni mellan kropp och sinne och en balanserad psykisk hälsa. Den psykiska hälsan tar sig fysiska och psykiska uttryck som vanligtvis delas in i välbefinnande och psykiska besvär. Dessa kan samexistera på olika nivåer, dvs att det är möjligt för en individ som lider av psykiska besvär att ändå exempelvis känna lycka och tillfredsställelse. Emellertid anses en långvarigt obalanserad psykisk hälsa medföra risk för allvarligare former av psykisk ohälsa, såsom psykisk sjukdom. Den övervägande majoriteten av ungdomar i Sverige uppger att de har ett högt välbefinnande. Samtidigt har andelen ungdomar mellan 11 och 15 år som rapporterar psykiska besvär ökat markant sedan 1980-talet, och en ökning ses speciellt under de senaste tio åren, där flickor är överrepresenterade. Skillnaden i förekomst av psykiska besvär mellan flickor och pojkar i Sverige är bland den högsta i världen vilket beskrivs som förvånande då Sverige objektivt sett anses vara ett jämställt land. Det är känt att socioekonomisk status, det vill säga föräldrars utbildning, typ av jobb och lönenivå, kan förklara skillnader i psykisk hälsa ibland ungdomar globalt. I Sverige där inkomstskillnader är relativt låga, men stigande, ses även socioekonomiska skillnader i ungdomars psykiska hälsa men detta samband är inte lika starkt och psykiska besvär rapporteras bland ungdomar på alla nivåer av socioekonomisk status. Det är därför av vikt att utforska andra metoder för att synliggöra skillnader i psykisk hälsa bland ungdomar och därmed öka kunskapen om den trend som ses, om hur vi kan identifiera

ungdomar som riskerar att drabbas av allvarligare former av psykisk ohälsa samt hur vi kan främja den psykiska hälsan bland ungdomar generellt i Sverige.

I den här avhandlingen undersöks subjektiv socioekonomisk status och socialt kapital som medel för att synliggöra skillnader i psykisk hälsa. Subjektiv socioekonomisk status handlar om ungdomars syn på sin egen situation i förhållande till andra och socialt kapital handlar om resurser i sociala relationer och nätverk som människor bidrar till, påverkas av och gynnas av. Exempel på resurser är tillit, trygghet, känsla av samhörighet och emotionellt stöd. Socialt kapital är ett omdiskuterat koncept med flera definitioner och dimensioner som skapat en stor metodologisk heterogenitet i empirisk forskning, vilket synliggörs i den här avhandlingen. Därför utforskas även hur socialt kapital beskrivs av ungdomar i relation till deras psykiska hälsa.

Denna sammanläggningsavhandling består av fyra delstudier där två studier är av kvantitativ metod, en är en kvalitativ intervjustudie och en är en systematisk litteraturöversikt. Studie I och II baseras på nationellt representativa data från den svenska Skolbarns Hälsovanor-undersökningen som genomförs i Sverige var fjärde år på uppdrag av WHO. Studierna utforskar hur skillnader i ungdomars psykiska hälsa kan förstås utifrån perspektiven av subjektiv socioekonomisk status och socialt kapital. Studie III utforskar hur ungdomar själva beskriver socialt kapital i relation till sin psykiska hälsa, dvs vad i deras sociala relationer och nätverk som är viktigt för deras välbefinnande. Studie IV syftar till att identifiera och utvärdera instrument som mäter socialt kapital och som har utvecklats och validerats för självrapportering bland ungdomar.

Resultatet från studie I och II visade att subjektiv socioekonomisk status och socialt kapital kunde synliggöra tydliga skillnader i psykiska besvär och välbefinnande bland ungdomar i åldrarna 11–15 år. I studie I uppvisade ungdomarnas subjektiva uppskattning av sin familjs situation ett starkt samband med psykisk hälsa som var oberoende av deras objektiva socioekonomiska status. Sambandet mellan objektiv socioekonomisk status och psykisk hälsa försvagades och till och med inverterades när analysen korrigerades för ungdomarnas subjektiva socioekonomiska status. I studie II användes ungdomarnas skattning av socialt kapital inom familjen, i skolan och bland vänner för att identifiera profiler som med hög sannolikhet kan beskriva hur socialt kapital ser ut bland ungdomar i Sverige. Profilerna var tydligt differentierade från varandra i nivåer av socialt kapital i de tre kontexterna och de modeller som passade data bäst gav fem profiler bland 11- och 15-åringarna, medan fyra profiler bäst beskrev 13-åringarnas skattningar. De allra flesta ungdomarna tillhörde profiler med höga nivåer av socialt kapital i de tre kontexterna. Andelen ungdomar i profilerna med mycket lågt socialt kapital

motsvarar ca 1-3 ungdomar i en skolklass på 25 elever. Därefter jämfördes profilerna utifrån förekomst av psykiska besvär och nivåer av välbefinnande och statistiskt signifikanta skillnader kunde ses. Hög förekomst av psykiska besvär och lågt välbefinnande återfanns i profilerna med lågt socialt kapital i alla tre kontexterna, men även i de profiler där låga nivåer i familjen och i skolan kontrasterades med starkt socialt kapital bland vänner. Således kunde inte resultatet styrka en tydlig kompenserande effekt av starkt socialt kapital bland vänner för den psykiska hälsan. Inga tydliga socioekonomiska skillnader kunde identifieras mellan profilerna. I studie III beskrev ungdomarna vikten av att ha tillgång till ”safe spaces”. Ett ”safe space” skapades i nära relationer och nätverk och utgjordes av ömsesidig tillit, ärlighet och en känsla av villkorslöshet. Ungdomarna beskrev en dynamisk process där de sökte stöd eller råd i olika relationer beroende på problem eller fundering, vilka individer som var inblandade och vilka känslor som triggades. Ungdomarna beskrev även en känsla av samhörighet som viktig för deras psykiska hälsa. I deras närmsta relationer var det inte aktiviteten som spelade störst roll utan bara att ”hänga” tillsammans beskrevs som värdefullt. Att ha saker gemensamt med andra, såsom intressen, värderingar eller åsikter bidrog även det till en känsla av samhörighet och underlättade även skapandet av nya relationer. Slutligen beskrev ungdomarna hur de strävade efter att bibehålla kontrollen i sina sociala relationer och nätverk. De använde olika strategier för att hantera osäkerhet och för att styra konsekvenser av sitt handlande i en förutsägbar riktning. Detta tolkades som att förutsägbarhet var en viktig resurs i deras relationer och nätverk för att uppnå och bibehålla en balanserad psykisk hälsa. I Studie IV identifierades 20 instrument som utvecklats och validerats för självrapportering av socialt kapital bland ungdomar. Utvärderingen av instrumenten visade en stor heterogenitet i konceptualisering och operationalisering av socialt kapital. I endast fyra av instrumenten hade ungdomar varit involverade i utvecklingsprocessen av instrumenten vilket synliggör en övervägande teoretisk utgångspunkt och ett vuxenperspektiv inom forskningsområdet. Inget av instrumenten kombinerade alla relevanta kontexter för ungdomar och dimensioner av konceptet i syfte att mäta social kapital, vilket tyder på ett behov av att utveckla nya instrument tillsammans med ungdomar.

Slutligen visar denna avhandling en nyanserad bild av ojämlikheter i ungdomars psykiska hälsa. Socialt kapital kan vara av stor nytta för att belysa skillnader i psykisk hälsa bland ungdomar i Sverige och för att identifiera sårbara ungdomar som saknar stödjande strukturer i sina sociala nätverk. På så vis kan kunskapen öka om hur vi bättre ska kunna särskilja de ungdomar som upplever en naturlig obalans från de som riskerar att drabbas av allvarligare former av psykisk ohälsa.

Acknowledgments

First, I would like to thank my main supervisor Petra Svedberg for your wisdom, support and guidance during these years. At times when I have felt lost and uninspired you have calmed me and encouraged me to keep going, making me believe in myself again. It means the world to me.

My co-supervisors Jens Nygren and Maria Nyholm — for your patience, engagement and scientifical knowledge that have contributed to the completion of this Phd. I am aware of that I am not easily supervised at times, but I want you to know that your guidance has been exactly what I have needed.

Thank you to my co-author and mentor during the first three years of my Phd, Antony Morgan. Having the opportunity to discuss, write and spend time with you has been truly inspiring. Andreas Ivarsson — for sharing invaluable knowledge in the art of statistics and what it means to be a humble researcher, thank you.

Katrin Häggström Westberg, Britt-Marie Gilljam, Carina Sjöberg and Marie Wilhsson — for welcoming me to Halmstad University and for guiding me from the start of this Phd. Our many hours of working side-by-side have been truly inspirational. A big thank you also to my colleague Louise Karlsson, who I have yet to meet in person, for sharing your energy and sense of humor. I truly appreciate our conversations and wish you all the best in your Phd and future adventures. Thank you to Ing-Marie Carlsson for always making me feel welcomed and appreciated whenever I have stopped by your office to ask for advice. A big shoutout to all my colleagues at Halmstad University for contributing to an inspiring research environment.

Thank you to Caroline Karlsson for helping me with various tasks over the course of this Phd, and sorry for always sending you at least three follow-up e-mails with things I forgot. Kennedy Ouma Sigodo — for inspirational zoom-meetings over the past two years, I wish you all the best.

I also would like to thank all the wonderful and courageous adolescents involved in the qualitative work in this thesis for generously sharing your reality with me!

A big thank you to my wise and wonderful parents, my brother and not least my sister Helene who have supported, guided and pep-talked me during the last months of this Phd. For that, I am forever grateful.

Hans and Susanne — my parents-in-law for your support during these years and for being such wonderful grandparents to our children, thank you! I am deeply thankful for all my dear old friends for reminding me who I am at times when I have let work take control over me, much appreciated and now there will be more time to hangout, I promise.

My three wonderful children Elton, Alma and August, thank you for being who you are and for interrupting me with your smiles while I have been working from home to remind me what is important in life. I cannot imagine life without you.

Thank you, Elina, my wonderful wife and soulmate who have supported me during these years. This last year has been a struggle but being by your side has kept me going tirelessly, knowing that we will spend more quality time together from now on. This journey would not have been possible without you. I love you with all of my heart.

References

Adams, J., Lawrence, E. M., Goode, J. A., Schaefer, D. R., & Mollborn, S. (2021). Peer Network Processes in Adolescents' Health Lifestyles. *Journal of health and social behavior*, 00221465211054394.

Adams, W. C. (2015). Conducting semi-structured interviews. *Handbook of practical program evaluation*, *4*, 492-505.

Alderson, P., & Morrow, V. (2011). *The ethics of research with children and young people: A practical handbook*. Sage.

Almedom, A. M. (2005). Social capital and mental health: An interdisciplinary review of primary evidence. *Social science & medicine*, *61*(5), 943-964.

Almgren, G., Magarati, M., & Mogford, L. (2009). Examining the influences of gender, race, ethnicity, and social capital on the subjective health of adolescents. *Journal of adolescence*, *32*(1), 109-133.

APA. (2018). *Stress in America Generation Z*. American Psychological Association.https://www.apa.org/news/press/releases/stress/2018/stress-gen-z.pdf

Arcaya, M. C., Arcaya, A. L., & Subramanian, S. V. (2015). [Inequalities in health: definitions, concepts, and theories]. *Revista Panamericana de Salud Publica*, *38*(4), 261-271.

Aronson, O., & Bergh, D. (2021). Adolescents who feel depressed are rejected but do not withdraw: A longitudinal study of ethnically diverse friendship networks in England, Sweden, and Germany. *SSM-Population Health*, *15*, 100889.

Bassani, C. (2007). Five dimensions of social capital theory as they pertain to youth studies. *Journal of youth studies*, *10*(1), 17-34.

Benjamini, Y., Hochberg, Y. (1995). Controlling the false discovery rate: a practical and powerful approach to multiple testing. *Journal of Royal Statistical Society B*, *57*(1), 289-300.

Bhaskar, R. (1975). Forms of realism. *Philosophica*, *15*.

Billett, P. (2011). *Youth social capital: getting on and getting ahead in life.* University of Wollongong.

Billett, P. (2012). Indicators of youth social capital: The case for not using adult indicators in the measurement of youth social capital. *Youth Studies Australia*, *31*(2), 9-16.

Bøe, T., Petrie, K. J., Sivertsen, B., & Hysing, M. (2019). Interplay of subjective and objective economic well-being on the mental health of Norwegian adolescents. *SSM-population health*, *9*, 100471.

Bohman, H., Låftman, S. B., Cleland, N., Lundberg, M., Päären, A., & Jonsson, U. (2018). Somatic symptoms in adolescence as a predictor of severe mental illness in adulthood: a long-term community-based follow-up study. *Child and adolescent psychiatry and mental health*, *12*(1), 1-12.

Bohn, V., & Richter, M. (2012). [Type of school, social capital and subjective health in adolescence]. *Gesundheitswesen*, *74*(11), 691-701. https://doi.org/10.1055/s-0031-1285860 (Schulform, soziales Kapital und subjektive Gesundheit in der Adoleszenz.)

Bor, W., Dean, A. J., Najman, J., & Hayatbakhsh, R. (2014). Are child and adolescent mental health problems increasing in the 21st century? A systematic review. *Australian and New Zealand Journal of Psychiatry*, *48*(7), 606-616. https://doi.org/10.1177/0004867414533834

Bourdieu, P. (1986). The forms of capital. In R. JG. (Ed.), *The handbook of theory: research for the sociology of education* (pp. 241-258). Greenwood Press.

Boyce, W., Davies, D., Gallupe, O., Shelley, D. (2008). Adolescent Risk Taking, Neighborhood Social Capital, and Health. *Journal of Adolescent Research*, *43*(3), 246-252.

Bremberg, S. (2015) Mental health problems are rising more in Swedish adolescents than in other Nordic countries and the Netherlands. *Acta Paediatr*. Oct;104(10):997-1004. doi: 10.1111/apa.13075. Epub 2015 Jul 14. PMID: 26096198.

Buijs, T., Maes, L., Salonna, F., Van Damme, J., Hublet, A., Kebza, V., ... & De Clercq, B. (2016). The role of community social capital in the relationship between socioeconomic status and adolescent life satisfaction: mediating or moderating? Evidence from Czech data. *International journal for equity in health*, *15*(1), 1-12.

Cahill, H. (2015). Approaches to understanding youth well-being. *Handbook of children and youth studies*, 95-113.

Campbell, O. L. K., Bann, D., & Patalay, P. (2021). The gender gap in adolescent mental health: A cross-national investigation of 566,829 adolescents across 73 countries. *SSM Popul Health*, *13*, 100742. https://doi.org/10.1016/j.ssmph.2021.100742

Carpiano, R. M., & Moore, S. (2020). So What's Next? Closing Thoughts for this Special Issue and Future Steps for Social Capital and Public Health. *Social Science and Medicine*, *257*, 113013. https://doi.org/10.1016/j.socscimed.2020.113013

Carrillo Álvarez, E., & Riera Romaní, J. (2017). Measuring social capital: further insights. *Gaceta sanitaria*, *31*, 57-61.

Cavallo, F., Dalmasso, P., Ottova-Jordan, V., Brooks, F., Mazur, J., Välimaa, R., ... & Positive Health Focus Group. (2015). Trends in life satisfaction in European and North-American adolescents from 2002 to 2010 in over 30 countries. *The European Journal of Public Health*, *25*(suppl_2), 80-82.

Coleman, J. S. (1988). Social capital in the creation of human capital. *Am J Sociol*, *94*(Supplement), 95-120.

Collier, A. (1994). Critical realism: an introduction to Roy Bhaskar's philosophy. Verso.

Collishaw, S. (2015). Annual research review: Secular trends in child and adolescent mental health. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *56*(3), 370-393. https://doi.org/10.1111/jcpp.12372

Copeland, W. E., Adair, C. E., Smetanin, P., Stiff, D., Briante, C., Colman, I., ... & Angold, A. (2013). Diagnostic transitions from childhood to adolescence to early adulthood. *Journal of Child Psychology and Psychiatry*, *54*(7), 791-799.

Corell, M., Chen, Y., Friberg, P., Petzold, M., & Löfstedt, P. (2021). Does the family affluence scale reflect actual parental earned income, level of education and occupational status? A validation study using register data in Sweden. *BMC Public Health*, *21*(1), 1-11.

Cortis, C., Puggina, A., Pesce, C., Aleksovska, K., Buck, C., Burns, C., ... & Boccia, S. (2017). Psychological determinants of physical activity across the life course: A" DEterminants of DIet and Physical ACtivity"(DEDIPAC) umbrella systematic literature review. *PloS one*, *12*(8), e0182709.

COSMIN. (2021) About the COSMIN initiative. https://www.cosmin.nl/about/

Coverdale, G. E., & Long, A. F. (2015). Emotional wellbeing and mental health: an exploration into health promotion in young people and families. *Perspect Public Health*, *135*(1), 27-36. https://doi.org/10.1177/1757913914558080

Crane, S., & Broome, M. E. (2017). Understanding Ethical Issues of Research Participation From the Perspective of Participating Children and Adolescents: A Systematic Review. *Worldviews on Evidence-Based Nursing*, *14*(3), 200-209. https://doi.org/10.1111/wvn.12209

Crosnoe, R. (2004). Social capital and the interplay of families and schools. *Journal of Marriage and family*, *66*(2), 267-280.

Currie, C., Alemán-Díaz, A. Y. (2015). Building knowledge on adolescent health: reflections on the contribution of the Health Behaviour in School-aged Children (HBSC) study. *The European Journal of Public Health*, *25*(suppl_2), 4-6.

Currie, C. E., Elton, R. A., Todd, J., & Platt, S. (1997). Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children Survey. *Health education research*, *12*(3), 385-397.

Currie, C., Inchley, J., Molcho, M., Lenzi, M., Veselska, Z., & Wild, F. (2014). Health behaviour in school-aged children (HBSC) study protocol: background, methodology and mandatory items for the 2013/14 survey.
Currie, C., Molcho, M., Boyce, W., Holstein, B., Torsheim, T., Richter, M. (2008). Researching health inequalities in adolescents: the development of the HBSC Family Affluence Scale *Social Science and Medicine*, *66*(6), 1429-1436.
Currie, C., Nic Gabhainn, S., Godeau, E., & International, H. N. C. C. (2009). The Health Behaviour in School-aged Children: WHO Collaborative Cross-National (HBSC) study: origins, concept, history and development 1982-2008. *Int J Public Health*, *54 Suppl 2*, 131-139. https://doi.org/10.1007/s00038-009-5404-x
Currie, C., Zanotti, C., Morgan, A., Currie, D., De Looze, M., Roberts, C., ... & Barnekow, V. (2009). Social determinants of health and well-being among young people. *Health Behaviour in School-aged Children (HBSC) study: international report from the*, *2010*, 271.
Currie, C., Zanotti C, Morgan A, Currie D, de Looze M, Roberts C, et al. (2012). Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the 2009/2010 survey. *Copenhagen: WHO Regional Office for Europe (Health Policy for Children and Adolescents*, *6*.
Dahl, R. E. (2004). Adolescent brain development: a period of vulnerabilities and opportunities. Keynote address. *Annals of the New York Academy of Sciences*, *1021*, 1-22. https://doi.org/10.1196/annals.1308.001
Dahlgren, A., Sjöblom, L., Eke, H., Bonn, S. E., Trolle Lagerros, Y. (2021) Screen time and physical activity in children and adolescents aged 10–15 years. *PLoS ONE* 16(7): e0254255. https://doi.org/10.1371/journal.pone.0254255
Dalman, C., Bremberg, S., Åhlen, J., Ohlis, A., Agardh, E., Wicks, S., Lundin, A. (2021) Psykiskt välbefinnande, psykiska besvär och psykiatriska tillstånd hos barn och unga – begrepp, mätmetoder och förekomst. En kunskapsöversikt. FORTE: https://forte.se/publikation/begrepp-matmetoder/omslag_kunskapsooversiktbegreppmatmetoder_sida_01/
Daniels, E., & Harnischfeger, A. (2010). Youth as Active Agents. *Youth-full Productions: Cultural Practices and Constructions of Content and Social Spaces*, *47*, 17.
De Silva, M. J., McKenzie, K., Harpham, T., & Huttly, S. R. (2005). Social capital and mental illness: a systematic review. *Journal of Epidemiology and Community Health*, *59*(8), 619-627. https://doi.org/10.1136/jech.2004.029678
Deuchar, R. (2011). 'People look at us, the way we dress, and they think we're gangsters': bonds, bridges, gangs and refugees: a qualitative study of inter-

cultural social capital in Glasgow. *Journal of Refugee Studies*, *24*(4), 672-689.
Docherty, S., & Sandelowski, M. (1999). Focus on qualitative methods: Interviewing children. *Research in nursing & health*, *22*(2), 177-185.
Doyal, L. (2000). Gender equity in health: debates and dilemmas. *Social science & medicine*, *51*(6), 931-939.
Due, P., Eriksson, C., Torsheim, T., Potrebny, T., Välimaa, R., Suominen, S., ... & Damgaard, M. T. (2019). Trends in high life satisfaction among adolescents in five Nordic countries 2002–2014. *Nordisk välfärdsforskning| Nordic Welfare Research*, *4*(2), 54-66.
Dufur, M. J., Thorpe, J. D., Barton, H. S., Hoffmann, J. P., & Parcel, T. L. (2019). Can Social Capital Protect Adolescents from Delinquent Behavior, Antisocial Attitudes, and Mental Health Problems?. *Archives of Psychology*, *3*(6).
Eckert-Lind, C., Busch, A. S., Petersen, J. H., Biro, F. M., Butler, G., Bräuner, E. V., & Juul, A. (2020). Worldwide secular trends in age at pubertal onset assessed by breast development among girls: a systematic review and meta-analysis. *JAMA pediatrics*, *174*(4), e195881-e195881.
Elgar, F.J., Craig, W., Boyce, W., Morgan, A., Vella-Zarb, R. (2009) Income inequality and school bullying: multilevel study of adolescents in 37 countries. *Journal of Adolescent Health*. 45(4):351– 359.
Elgar FJ, De Clercq B, Schnohr CW, Bird P, Pickett KE, Torsheim T, ... Currie C. (2013) Absolute and relative family affluence and psychosomatic symptoms in adolescents. Social Science & Medicine. 91:25–31.
Ergün, B., Uzunboylu, H., & Altinaz, Y. (2018). An investigation of high school students' social capital development within organizational climate. *Quality & Quantity: International Journal of Methodology*, *52*, 105-113.
Eriksson, M., Lingfors, H., & Golsäter, M. (2018). Trends in prevalence of thinness, overweight and obesity among Swedish children and adolescents between 2004 and 2015. *Acta Paediatrica*, *107*(10), 1818-1825.
Eriksson, U., Hochwälder, J., Carlsund, Å., & Sellström, E. (2012). Health outcomes among Swedish children: the role of social capital in the family, school and neighbourhood. *Acta Paediatrica*, *101*(5), 513-517.
Erlingsson, C., & Brysiewicz, P. (2017). A hands-on guide to doing content analysis. *Afr J Emerg Med*, *7*(3), 93-99. https://doi.org/10.1016/j.afjem.2017.08.001
Fedorov, V., Mannino, F., & Zhang, R. (2009). Consequences of dichotomization. *Pharmaceutical Statistics: The Journal of Applied Statistics in the Pharmaceutical Industry*, *8*(1), 50-61.
Ford, T., John, A., & Gunnell, D. (2021). Mental health of children and young people during pandemic. *bmj*, *372*.

Furstenberg, F. F. (2005). Banking on Families: How Families Generate and Distribute Social Capital. *Journal of Marriage and Family*, *67*(November), 809-821.
Furstenberg, F. F. Kaplan., S. (2004). Social capital and the family. In J. T. J. Scott, & M. Richards. (Ed.), *The Blackwell companion to sociology* (pp. 218-232). MA: Blckwell.
Galderisi, S., Heinz, A., Kastrup, M., Beezhold, J., & Sartorius, N. (2015). Toward a new definition of mental health. *World Psychiatry*, *14*(2), 231-233. https://doi.org/10.1002/wps.20231
Garcia-Doval, I., van Zuuren, E. J., Bath-Hextall, F., & Ingram, J. R. (2017). Systematic reviews: let's keep them trustworthy. *British Journal of Dermatology*, *177*(4), 888-889.
Gariepy, G., McKinnon, B., Sentenac, M., Elgar, FJ. (2016). Validity and Reliability of a Brief Symptom Checklist to Measure Psychological Health in School-Aged Children. *Child Indicators Research*, *9*(2), 471-484.
Garmy, P., Idecrans, T., Hertz, M., Sollerhed, A.-C., & Hagell, P. (2020). Is sleep duration associated with self-reported overall health, screen time, and nighttime texting among adolescents? *Journal of International Medical Research*. https://doi.org/10.1177/0300060519892399
Geraee, N., Eslami, A. A., & Soltani, R. (2019). The relationship between family social capital, social media use and life satisfaction in adolescents. *Health Promot Perspect*, *9*(4), 307-313. https://doi.org/10.15171/hpp.2019.42
Goodman, E., Huang, B., Schafer-Kalkhoff, T., & Adler, N. E. (2007). Perceived socioeconomic status: a new type of identity that influences adolescents' self-rated health. *Journal of Adolescent Health*, *41*(5), 479-487.
Gopalkrishnan, N., & Babacan, H. (2015). Cultural diversity and mental health. *Australasian Psychiatry*, *23*(6_suppl), 6-8.
Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse education today*, *24*(2), 105-112.
Granlund, M., Imms, C., King, G., Andersson, A. K., Augustine, L., Brooks, R., ... & Almqvist, L. (2021). Definitions and operationalization of mental health problems, wellbeing and participation constructs in children with NDD: distinctions and clarifications. *International journal of environmental research and public health*, *18*(4), 1656.
Gunnell, D., Kidger, J., & Elvidge, H. (2018). Adolescent mental health in crisis. *Bmj*, *361*.
Hagquist, C. (2010). Discrepant trends in mental health complaints among younger and older adolescents in Sweden: an analysis of WHO data 1985–2005. *Journal of Adolescent Health*, *46*(3), 258-264.
Hagquist, C., Due, P., Torsheim, T., & Välimaa, R. (2019). Cross-country comparisons of trends in adolescent psychosomatic symptoms–a Rasch

analysis of HBSC data from four Nordic countries. *Health and quality of life outcomes*, *17*(1), 1-13.
Hall, B. J., Tol, W. A., Jordans, M. J. D., Bass, J., & M., de Jong J. V. T. (2014). Understanding resilience in armed conflict: Social resources and mental health of children in Burundi. *Social Science and Medicine*, *114*, 121-128.
Halliday, A. J., Kern, M.L., Turnbull, D.A. (2019). Can physical activity help explain the gender gap in adolescent mental health? A cross-sectional exploration. *Mental Health and Physical Activity*. https://doi.org/https://doi.org/10.1016/j.mhpa.2019.02.003.
Harpham, T. (2002) . *Measuring the social capital of children*. Young Lives.
Harpham, T., Snoxell, S., Grant, E., & Rodriguez, C. (2005) . Common mental disorders in a young urban population in Colombia. *Br J Psychiatry*, *187*, 161-167. https://doi.org/10.1192/bjp.187.2.161
Hartley, J. E., Levin, K., & Currie, C. (2016). A new version of the HBSC Family Affluence Scale - FAS III: Scottish Qualitative Findings from the International FAS Development Study. *Child Indic Res*, *9*, 233-245. https://doi.org/10.1007/s12187-015-9325-3
Harton, H. C., Latane, B. (1997) Social Influence and Adolescent Lifestyle Attitudes, Journal of Research on Adolescence, 7:2, 197-220, DOI: 10.1207/s15327795jra0702_5
Hayward, J., Jacka, F.N., Skouteris, H., Millar, L., Strugnell, C., Swinburn, B.A., Allender, S. (2016) Lifestyle factors and adolescent depressive symptomatology: Associations and effect sizes of diet, physical activity and sedentary behaviour. *Aust N Z J Psychiatry*. Nov;50(11):1064-1073. doi: 10.1177/0004867416671596. Epub 2016 Oct 12. PMID: 27738232.
He, K., Kramer, E., Houser, R. F., Chomitz, V. R., & Hacker, K. A. (2004). Defining and understanding healthy lifestyles choices for adolescents. *Journal of Adolescent Health*, *35*(1), 26-33. https://doi.org/10.1016/j.jadohealth.2003.09.004
Headey, B., Kelley, J., & Wearing, A. (1993). Dimensions of mental health: Life satisfaction, positive affect, anxiety and depression. *Social indicators research*, *29*(1), 63-82.
Hoare, E., Milton, K., Foster, C., & Allender, S. (2016). The associations between sedentary behaviour and mental health among adolescents: a systematic review. *International journal of behavioral nutrition and physical activity*, *13*(1), 1-22.
Hogberg, B., Strandh, M., & Hagquist, C. (2020). Gender and secular trends in adolescent mental health over 24 years - The role of school-related stress. *Social Science and Medicine*, *250*, 112890. https://doi.org/10.1016/j.socscimed.2020.112890

Holland, J., Reynolds, T., & Weller, S. (2007). Transitions, networks and communities: The significance of social capital in the lives of children and young people. *Journal of youth studies*, *10*(1), 97-116.
Holland, J. (2008). Young people and social capital: What can it do for us. *London: Families & Social Capital Research Group*.
Holstein, B. E., Hansen, E. H., Andersen, A., Due, P. (2007). Self-rated health as predictor of medicine use in adolescence. *Pharmacoepidemiology and Drug Safety*, *16*, 1-7.
Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277-1288. https://doi.org/10.1177/1049732305276687
Hutchinson, D. M., & Rapee, R. M. (2007). Do friends share similar body image and eating problems? The role of social networks and peer influences in early adolescence. *Behaviour research and therapy*, *45*(7), 1557-1577.
Hyde, K. F. (2000). Recognising deductive processes in qualitative research. *Qualitative markets research: An international journal*.
Inchley, J., Currie, D., Budisavljevic, S., Torsheim, T., Jåstad, A., Cosma, A., et al. (2020). *Spotlight on adolescent health and well-being. Findings from the 2017/2018 Health Behaviour in School-aged Children (HBSC) survey in Europe and Canada. International report. Volume 1. Key findings.*
Inchley, J., Currie, D., Young, T., et al. (2016). Growing up unequal: gender and socioeconomic di erences in young people's health and well-being
Ingul, J. M., Klöckner, C. A., Silverman, W. K., & Nordahl, H. M. (2012). Adolescent school absenteeism: modelling social and individual risk factors. *Child and Adolescent Mental Health*, *17*(2), 93-100.
Ivarsson, A., Stenling, A. (2018). Prediction of Injury Risk in Sports. *Wiley StatsRef*, *(in Press)*. https://doi.org/10.1002/9781118445112.stat08141
Johansson, A. Brunnberg., E.; Eriksson, C. (2007). Adolescent Girls' and Boys' Perceptions of Mental Health. *Journal of Youth Studies*, *10*(2), 183-202. https://doi.org/10.1080/13676260601055409
Kawachi, I. (2010). The relationship between health assets, social capital and cohesive communities. In A. Morgan, Davies, M. Ziglio, E. (Ed.), *Health Assets in a Global Context: Theory, Methods, Action*. Springer.
Kawachi, I., & Berkman, L. (2000). Social cohesion, social capital, and health. *Social epidemiology*, *174*(7), 290-319.
Kawachi, I., Subramanian, S. V., & Almeida-Filho, N. (2002). A glossary for health inequalities. *Journal of Epidemiology & Community Health*, *56*(9), 647-652.
Kawachi, I., Ichida, Y., Tampubolon, G., & Fujiwara, T. (2013). Causal inference in social capital research. In *Global perspectives on social capital and health* (pp. 87-121). Springer, New York, NY.

Kessler, R. C., Angermeyer, M., Anthony, J. C., De Graaf, R. O. N., Demyttenaere, K., Gasquet, I., ... & Uestuen, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World psychiatry*, *6*(3), 168.

Keyes, C. L., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of personality and social psychology*, *82*(6), 1007.

Keyes, C. L. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, *73*(3), 539-548. https://doi.org/10.1037/0022-006X.73.3.539

Klocke, A., & Stadtmüller, S. (2019). Social capital in the health development of children. *Child Indicators Research*, *12*(4), 1167-1185.

Kowalski, R. M., Limber, S. P., & McCord, A. (2019). A developmental approach to cyberbullying: Prevalence and protective factors. *Aggression and Violent Behavior*, *45*, 20-32.

Krippendorff, K. H. (2013). *Content Analysis - 3rd Edition : an Introduction to Its Methodology*. SAGE Publications, Inc.

Landstedt, E., Asplund, K., & Gillander Gadin, K. (2009). Understanding adolescent mental health: the influence of social processes, doing gender and gendered power relations. *Sociology of Health and Illness*, *31*(7), 962-978. https://doi.org/10.1111/j.1467-9566.2009.01170.x

Landstedt, E., Almquist, Y. B., Eriksson, M., & Hammarström, A. (2016). Disentangling the directions of associations between structural social capital and mental health: Longitudinal analyses of gender, civic engagement and depressive symptoms. *Social Science & Medicine*, *163*, 135-143.

Lanza, S. T., Tan, X., & Bray, B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural equation modeling: a multidisciplinary journal*, *20*(1), 1-26.

Lau, M., & Li, W. (2011). The extent of family and school social capital promoting positive subjective well-being among primary school children in Shenzhen, China. *Children and Youth Services*, *33*(9), 1573-1582

Lenroot, R. K., & Giedd, J. N. (2010). Sex differences in the adolescent brain. *Brain and cognition*, *72*(1), 46-55.

Levin, K., Currie, C., Muldoon, J. (2009). Mental well-being and subjective health of 11-15 year old boys and girls in Scotland, 1994-2006. *European Journal of Public Health*, *19*(-), 605-610.

Levin, K., Inchley, J., Currie, D. & Currie, C. (2012). Subjective health and mental well-being of adolescents and the health promoting school: A cross-sectional multilevel analysis. *Health Education Journal*, *112*(2), 170-184.

Levin, K. A., Currie, C. . (2013). Reliability and Validity of an Adapted Version of the Cantril Ladder for Use with Adolescent Samples. *Social Indicators Research*. https://doi.org/10.1007/s11205-013-0507-4.

Levine, R. J. (2008). Research Involving Adolescents as Subjects a: Ethical Considerations. *Annals of the New York Academy of Sciences*, *1135*(1), 280-286.

Li, C., Jiang, S., & Fang, X. (2017). Effects of multi-dimensional social capital on mental health of children in poverty: An empirical study in Mainland China. *Journal of Health Psychology*, 1359105317737608. https://doi.org/10.1177/1359105317737608

Lin, N. (1999). Social networks and status attainment. *Annual review of sociology*, *25*(1), 467-487.

Lin, N. (2002). *Social capital: A theory of social structure and action* (Vol. 19). Cambridge university press.

Lincoln, Y, S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

Loewen, O.K., Maximova, K., Ekwaru, J.P., Faught, E.L., Asbridge, M., Ohinmaa, A., Veugelers, P.J. (2019) Lifestyle Behavior and Mental Health in Early Adolescence. *Pediatrics*. May;143(5):e20183307. doi: 10.1542/peds.2018-3307. Epub 2019 Apr 19. PMID: 31004047.

Łuczak, A., & Kalinowski, S. (2020). Assessing the level of the material deprivation of European Union countries. *Plos one*, *15*(9), e0238376.

Magson, N. R., Craven, R. G., & Bodkin-Andrews, G. H. (2014). Measuring Social Capital: The Development of the Social Capital and Cohesion Scale and the Associations between Social Capital and Mental Health. *Australian journal of Educational & Developmental Psychology*, *14*, 202-216.

Marques, A., Loureiro, N., Avelar-Rosa, B., Naia, A., & Matos, M. G. D. (2020). Adolescents' healthy lifestyle☆. *Jornal de pediatria*, *96*, 217-224.

Maxwell, J. A., & Mittapalli, K. (2010). Realism as a stance for Mixed Methods Research. In A. T. C. Teddlie (Ed.), *SAGE Handbook of Mixed Methods in Social & Behavioural Research (2nd ed.* (pp. 145-168). SAGE Publications.

McLaughlin, K. A., Costello, E. J., Leblanc, W., Sampson, N. A., & Kessler, R. C. (2012). Socioeconomic status and adolescent mental disorders. *American Journal of Public Health*, *102*(9), 1742-1750. https://doi.org/10.2105/AJPH.2011.300477

McPherson, K. E., Kerr, S., McGee, E., Morgan, A., Cheater, F. M., McLean, J., & Egan, J. (2014). The association between social capital and mental health and behavioural problems in children and adolescents: an integrative systematic review. *BMC Psychol*, *2*(1), 7. https://doi.org/10.1186/2050-7283-2-7

Mokkink, L. B., Prinsen, C. A. C., Patrick, D. L., Alonso, J., Bouter, L. M., de Vet, H. C. V., Terwee, C. B. (2018). *COSMIN methodology for systematic reviews of Patient-Reported Outcome Measures (PROMs)*.

Moore, S., & Kawachi, I. (2017). Twenty years of social capital and health research: a glossary. *Journal of Epidemiology and Community Health*, *71*(5), 513-517. https://doi.org/10.1136/jech-2016-208313

Moreno, L. A., Gottrand, F., Huybrechts, I., Ruiz, J. R., González-Gross, M., DeHenauw, S. (2014) HELENA Study Group. Nutrition and lifestyle in european adolescents: the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) study. *Adv Nutr*. Sep;5(5):615S-623S. doi: 10.3945/an.113.005678. PMID: 25469407; PMCID: PMC4188245.

Morese, R., Palermo, S., Torello, C., & Sechi, F. (2020). Social Withdrawal and Mental Health: An Interdisciplinary Approach. In *Social Isolation-An Interdisciplinary View*. IntechOpen.

Morgan, A. (2011). Social capital as a health asset for young people's health and wellbeing. Karolinska Institutet. https://openarchive.ki.se/xmlui/handle/10616/40819

Morgan, A. (2010). Social capital as a health asset for young people's health and well-being. . *Journal of child and adolescent psychology*, *Supplement 2: Life contexts*, 19-42.

Morgan, A., & Haglund, B. J. (2012). Researching social capital for young people's health. *Socialmedicinsk tidskrift*, *89*(4-5), 441-567.

Morgan, A., Svedberg, P., Nyholm, M., & Nygren, J. (2021). Advancing knowledge on social capital for young people's mental health. *Health Promotion International*, *36*(2), 535-547. https://doi.org/10.1093/heapro/daaa055

Morrow, V. (1999). Conceptualising social capital in relation to the well-being of children and young people: a critical review. *The Sociological Review*, *47*, 744-765. https://doi.org/10.1111/1467-954X.00194

Morrow, V. (2001). Young people's explanations and experiences of social exclusion: retrieving Bourdieu's concept of social capital. *International journal of sociology and social policy*.

Morrow, V. (2002). Children's experiences of" community" implications of social capital discourses. *Social capital and health—insights from qualitative research*, 9-28.

Morrow, V. (2005). Social capital, community cohesion and participation in England: A space for children and young people. *Journal of Social Sciences*, *9*, 57-69.

Mouw, T. (2006). Estimating the causal effect of social capital: A review of recent research. *Annu. Rev. Sociol.*, *32*, 79-102.

Mulraney, M., Hiscock, H., Sciberras, E., Coghill, D., & Sawyer, M. (2020). Mental health difficulties across childhood and mental health service use: findings from a longitudinal population-based study. *The British Journal of Psychiatry*, *217*(1), 364-369.

Najman, J. M., Heron, M. A., Hayatbakhsh, M. R., Dingle, K., Jamrozik, K., Bor, W., ... & Williams, G. M. (2008). Screening in early childhood for risk of later mental health problems: A longitudinal study. *Journal of psychiatric research*, *42*(8), 694-700.

Naninck, E. F. G., Lucassen, P. J., & Bakker, J. (2011). Sex differences in adolescent depression: do sex hormones determine vulnerability?. *Journal of neuroendocrinology*, *23*(5), 383-392.

Nesi, J., & Prinstein, M. J. (2015). Using social media for social comparison and feedback-seeking: Gender and popularity moderate associations with depressive symptoms. *Journal of abnormal child psychology*, *43*(8), 1427-1438.

Newcomb, M. E., Hill, R., Buehler, K., Ryan, D. T., Whitton, S. W., & Mustanski, B. (2020). High Burden of Mental Health Problems, Substance Use, Violence, and Related Psychosocial Factors in Transgender, Non-Binary, and Gender Diverse Youth and Young Adults. *Archives of Sexual Behavior*, *49*(2), 645-659. https://doi.org/10.1007/s10508-019-01533-9

Ng, S. V. (2016). Social media and the sexualization of adolescent girls. *American Journal of Psychiatry Residents' Journal*, *11*(12), 14-14.

Nielsen, L., Koushede, V., Vinther-Larsen, M., Bendtsen, P., Ersboll, A. K., Due, P., & Holstein, B. E. (2015). Does school social capital modify socio-economic inequality in mental health? A multi-level analysis in Danish schools. *Social Science and Medicine*, *140*, 35-43. https://doi.org/10.1016/j.socscimed.2015.07.002

Nieuwenhuis, J. (2020). Neighborhood social capital and adolescents' individual health development. *Social Science & Medicine*, *265*, 113417.

Norris, P. (2002). The bridging and bonding role of online communities. *Harvard International Journal of Press/Politics*, *7*(3), 3-13.

Oberski, D. (2016). Mixture models: Latent profile and latent class analysis. In *Modern statistical methods for HCI* (pp. 275-287). Springer, Cham.

Odgers, C. L. (2015). Income inequality and the developing child: Is it all relative?. *American Psychologist*, *70*(8), 722.

OECD. (2013). Better Life Initiative. OECD Guidelines on Measuring Subjective Well-Being OECD.

Onyx, J., Wood, C., Bullen, P., & Osborn, L. (2005). Social Capital: A rural Youth perspective. *Youth Studies Australia*, *24*(4), 21-27.

Ott, M. A., Rosenberger, J. G., McBride, K. R., & Woodcox, S. G. (2011). How do adolescents view health? Implications for state health policy. *Journal of Adolescent Health*, *48*(4), 398-403. https://doi.org/10.1016/j.jadohealth.2010.07.019

Otto, C., Reiss, F., Voss, C., Wüstner, A., Meyrose, A. K., Hölling, H., & Ravens-Sieberer, U. (2021). Mental health and well-being from childhood

to adulthood: design, methods and results of the 11-year follow-up of the BELLA study. *European child & adolescent psychiatry*, *30*(10), 1559-1577.
Ottova-Jordan, V., Smith, O. R., Gobina, I., Mazur, J., Augustine, L., Cavallo, F., ... & Positive Health Focus Group. (2015). Trends in multiple recurrent health complaints in 15-year-olds in 35 countries in Europe, North America and Israel from 1994 to 2010. *The European Journal of Public Health*, *25*(suppl_2), 24-27.
Oxford Univeristy Press. 2021. Oxford Learner's Dictionaries. https://www.oxfordlearnersdictionaries.com/definition/english/lifestyle?q=lifestyle
Paiva, P. C., de Paiva, H. N., de Oliveira Filho, P. M., Lamounier, J. A., Ferreira e Ferreira, E., Ferreira, R. C., . . . Zarzar, P. M. (2014). Development and validation of a social capital questionnaire for adolescent students (SCQ-AS). *PLoS One*, *9*(8), e103785. https://doi.org/10.1371/journal.pone.0103785
Park, N. (2004). The role of subjective well-being in positive youth development. *The annals of the American academy of political and social science*, *591*(1), 25-39.
Parvizi, S., & Hamzehgardeshi, Z. (2014). Adolescents' view of health concept and its risk factors: a literature review. *International Journal of Adolescent Medicine and Health*, *26*(3), 351-359. https://doi.org/10.1515/ijamh-2013-0311
Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., ... & UnÜtzer, J. (2018). The Lancet Commission on global mental health and sustainable development. *The Lancet*, *392*(10157), 1553-1598.
Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., ... & Viner, R. M. (2016). Our future: a Lancet commission on adolescent health and wellbeing. *The Lancet*, *387*(10036), 2423-2478.
Pförtner, T. K., Rathmann, K., Elgar, F. J., de Looze, M., Hofmann, F., Ottova-Jordan, V., Ravens-Sieberer, U., Bosakova, I., Currie, C. & Richter, M. (2014). Adolescents' psychological health complaints and the economic recession in late 2007: a multilevel study in 31 countries. *The European Journal of Public Health*. https://doi.org/: 10.1093/eurpub/cku056.
Pickett K. E., Wilkinson, R. G. Child wellbeing and income inequality in rich societies: ecological cross-sectional study. *British Medical Journal*. 2007; 335(7629):1080–1085.
Pickett, K. E., & Wilkinson, R. G. (2015). Income inequality and health: a causal review. *Social science & medicine*, *128*, 316-326.
Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology*, *24*(1998), 1-24.
Potrebny, T., Wiium, N., & Lundegard, M. M. (2017). Temporal trends in adolescents' self-reported psychosomatic health complaints from 1980-2016: A

systematic review and meta-analysis. *PloS One*, *12*(11), e0188374. https://doi.org/10.1371/journal.pone.0188374
Powell, M. A., Taylor, N., Fitzgerald, R., Graham, A., & Anderson, D. (2013) Ethical Research Involving Children. Innocenti publications, Unicef Office of Research, Florence, Italy. https://www.unicef-irc.org/publications/706-ethical-research-involving-children.html
Priess, H. A., Lindberg, S. M., & Hyde, J. S. (2009). Adolescent gender-role identity and mental health: Gender intensification revisited. *Child development*, *80*(5), 1531-1544.
Präg, P., Mills, M. C., & Wittek, R. (2016). Subjective socioeconomic status and health in cross-national comparison. *Social Science & Medicine*, *149*, 84-92.
Public Health Agency. (2014). Health Behaviour in School-aged Children (HBSC), results from Sweden of the 2013/14 WHO study. https://www.folkhalsomyndigheten.se/publicerat-material/publikation-sarkiv/s/skolbarns-halsovanor-i-sverige-201314/
Public Health Agency. (2018a). Health Behaviour in School-aged Children (HBSC), results from Sweden of the 2017/18 WHO study. https://www.folkhalsomyndigheten.se/publicerat-material/publikation-sarkiv/s/skolbarns-halsovanor-i-sverige-201718---grundrapport/
Public Health Agency. (2018b). *Varför har den psykiska ohälsan ökat bland barn och unga i Sverige? Utvecklingen under perioden 1985-2014*. https://www.folkhalsomyndigheten.se/publicerat-material/publikationsarkiv/v/varfor-har-den-psykiska-ohalsan-okat-bland-barn-och-unga-i-sverige/
Putnam, D. R. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy* (January), 65-78.
Quon, E. C., McGrath, J. J. (2014). Subjective socioeconomic status and adolescent health: a meta-analysis. *Health Psychology*, *33*(5), 433-447.
Ravens-Sieberer, U., Torsheim, T., Hetland, J., Vollenbergh, W., Cavallo, F., Jeriek, H., Alikasifoglu, M., Välimaa, R., Ottova, V., Erhart, M. & the HBSC Positive Health Focus Group. (2009). Subjective health, symptom load and quality of life of children and adolescents in Europe. *International Journal of Public Health*, *54*(-), 151-159.
Raymond-Flesch, M., Auerswald, C., McGlone, L., Comfort, M., & Minnis, A. (2017). Building social capital to promote adolescent wellbeing: a qualitative study with teens in a Latino agricultural community. *BMC Public Health*, *17*(1), 177. https://doi.org/10.1186/s12889-017-4110-5
Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Social Science and Medicine*, *Aug*(90), 24-31.
Richardson, J. B. (2012). Beyond the playing field: Coaches as social capital for inner-city adolescent African-American males. *Journal of African American Studies*, *16*(2), 171-194.

Romeo, R. D. (2013). The Teenage Brain: The Stress Response and the Adolescent Brain. *Current Directions in Psychological Science*, *22*(2), 140-145. https://doi.org/10.1177/0963721413475445

Rose, T., Joe, S., Williams, A., Harris, R., Betz, G., & Stewart-Brown, S. (2017). Measuring mental wellbeing among adolescents: A systematic review of instruments. *Journal of Child and Family Studies*, *26*(9), 2349-2362.

Ross, D. A., Hinton, R., Melles-Brewer, M., Engel, D., Zeck, W., Fagan, L., ... & Mohan, A. (2020). Adolescent well-being: A definition and conceptual framework. *Journal of Adolescent Health*, *67*(4), 472-476.

Rothon, C., Goodwin, L., & Stansfeld, S. (2012). Family social support, community "social capital" and adolescents' mental health and educational outcomes: a longitudinal study in England. *Social Psychiatry and Psychiatric Epidemiology*, *47*(5), 697-709. https://doi.org/10.1007/s00127-011-0391-7

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin*, *142*(10), 1017.

Sandercock, G. R., Ogunleye, A., & Voss, C. (2012). Screen time and physical activity in youth: thief of time or lifestyle choice?. *Journal of Physical Activity and Health*, *9*(7), 977-984.

Salkind, N. J. (2010). *Encyclopedia of Research Design*. https://doi.org/https://dx.doi.org/10.4135/9781412961288

Schaefer-McDaniel, N. J. (2004). Conceptualizing Social Capital among Young People: Towards a New Theory. *Children, Youth and Environments*, *14*(1), 153-172.

Schelbe, L., Chanmugam, A., Moses, T., Saltzburg, S., Williams, L. R., & Letendre, J. (2015). Youth participation in qualitative research: Challenges and possibilities. *Qualitative Social Work*, *14*(4), 504-521.

Schønning, V., Hjetland, G. J., Aarø, L. E., & Skogen, J. C. (2020). Social media use and mental health and well-being among adolescents–a scoping review. *Frontiers in psychology*, *11*, 1949.

Sela, Y., Zach, M., Amichay-Hamburger, Y., Mishali, M., & Omer, H. (2020). Family environment and problematic internet use among adolescents: the mediating roles of depression and fear of missing out. *Computers in Human Behavior*, *106*, 106226.

Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. *Journal of mixed methods research*, *10*(4), 319-334.

Short, S. E., & Mollborn, S. (2015). Social determinants and health behaviors: conceptual frames and empirical advances. *Current opinion in psychology*, *5*, 78-84.

Siisiäinen, M. (2003). Two Concepts of Social Capital: Bourdieu vs. Putnam. *International Journal of Contemporary Sociology*, *40*(2), 183-204.
Singh-Manoux, A., Adler, N. E., Marmot, M. G. (2003). Subjective social status: its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science and Medicine*, *56*, 1321-1333.
Snape, D., & Manclossi, S. (2018). Children's and young people's experiences of loneliness: Office for National Statistics, UK.
Solar, O., Irwin A. (2010) A conceptual framework for action on the social determinants of health. Social Determinants of Health Discussion Paper 2 (Policy and Practice)
Sousa, Z. A. A., Silva, J. G., Ferreira, M. A. (2014). Knowledge and practices of teenagers about health: implications for the lifestyle and self care. *Escola Anna Nery - Revista de Enferagem*, *18*. https://doi.org/10.5935/1414-8145.20140057
Spottswood, E., & Wohn, D. Y. (2020). Online social capital: recent trends in research. *Current Opinion in Psychology*.
Stanton-Salazar, R. D. (2011). A Social Capital Framework for the Study of Institutional Agents and Their Role in the Empowerment of Low-Status Students and Youth. *Youth & Society*, *43*(3), 1066-1109. https://doi.org/https://doi.org/10.1177/0044118X10382877
Stierlin, A. S., De Lepeleere, S., Cardon, G., Dargent-Molina, P., Hoffmann, B., Murphy, M. H., ... & De Craemer, M. (2015). A systematic review of determinants of sedentary behaviour in youth: a DEDIPAC-study. *International Journal of Behavioral Nutrition and Physical Activity*, *12*(1), 1-19.
Streiner, D. L., Norman, G. R. (2008). *Health Measurement Scales: A practical guide to their development and use*. https://doi.org/10.1093/acprof:oso/9780199231881.001.0001
Sturgiss, E. A., Clark, A. M. (2020) Using critical realism in primary care research: an overview of methods, *Family Practice*, Volume 37, Issue 1, February, Pages 143–145, https://doi.org/10.1093/fampra/cmz084
Suri H. (2020) Ethical Considerations of Conducting Systematic Reviews in Educational Research.In: Zawacki-Richter O., Kerres M., Bedenlier S., Bond M., Buntins K. (eds) Systematic Reviews in Educational Research. Springer VS, Wiesbaden.
Svedberg, P., Nygren, J. M., Staland-Nyman, C., & Nyholm, M. (2016). The validity of socioeconomic status measures among adolescents based on self-reported information about parents occupations, FAS and perceived SES; implication for health related quality of life studies. *BMC medical research methodology*, *16*(1), 1-9.

Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *International journal of epidemiology*, *33*(4), 650-667.
Takakura, M., Hamabata, Y., Ueji, M., & Kurihara, A. (2014). Measurement of Social Capital at School and Neighborhood
Tannenbaum, C., Lexchin, J., Tamblyn, R., & Romans, S. (2009). Indicators for measuring mental health: towards better surveillance. *Healthcare Policy*, *5*(2), e177.
Teipel, K. (2013) Early Adolescence (Ages 10 – 14 years). Understanding Adolescence – Seeing through A Developmental Lens. SAHRC. University of Minnesota.
Tein, J. Y., Coxe, S., & Cham, H. (2013). Statistical Power to Detect the Correct Number of Classes in Latent Profile Analysis. *Struct Equ Modeling*, *20*(4), 640-657. https://doi.org/10.1080/10705511.2013.824781
Tengland, P. A. (2007). A two-dimensional theory of health. *Theoretical Medicine and Bioethics*, *28*(4), 257-284. https://doi.org/10.1007/s11017-007-9043-z
The National Board of Health and Welfare. (2017). *Utvecklingen av psykisk ohälsa bland barn och unga vuxna - till och med 2016 (Swedish)*.
The National Board of Health and Welfare. (2020) About the Swedish healthcare system. https://www.socialstyrelsen.se/en/about-us/healthcare-for-visitors-to-sweden/about-the-swedish-healthcare-system/
Tian, X. (2016). Network domains in social networking sites: expectations, meanings, and social capital. *Information, Communication & Society*, *19*(2), 188-202.
Torsheim, T., Cavallo, F., Levin, K. A., Schnohr, C., Mazur, J., Niclasen, B., Currie, C., & Group, F. A. S. D. S. (2016). Psychometric Validation of the Revised Family Affluence Scale: a Latent Variable Approach. *Child Indic Res*, *9*, 771-784. https://doi.org/10.1007/s12187-015-9339-x
Tzanakis, M. (2013). Social capital in Bourdieu's, Coleman's and Putnam's theory: empirical evidence and emergent measurement issues. *Educate Journal*, *13*(2), 2-23.
Uphoff, E. P., Pickett, K. E., Cabieses, B., Small, N., & Wright, J. (2013). A systematic review of the relationships between social capital and socioeconomic inequalities in health: a contribution to understanding the psychosocial pathway of health inequalities. *Int J Equity Health*, *12*, 54. https://doi.org/10.1186/1475-9276-12-54
Ursin, H. (1997). Sensitization, somatization, and subjective health complaints. *International Journal of Behavioral Medicine*, *4*(2), 105-116. https://doi.org/10.1207/s15327558ijbm0402_1
Van Beuningen, J., Van der Houven, K., & Moonen, L. (2014). *Measuring well-being: An analysis of different response scales*. Statistics Netherlands.

Van der Aar, L. P. E., Peters, S., & Crone, E. A. (2018). The development of self-views across adolescence: Investigating self-descriptions with and without social comparison using a novel experimental paradigm. *Cognitive Development*, *48*, 256-270.

Van Exel, N. J. A., De Graaf, G., & Brouwer, W. B. (2006). "Everyone dies, so you might as well have fun!" Attitudes of Dutch youths about their health lifestyle. *Social science & medicine*, *63*(10), 2628-2639.

Villalonga-Olives, E., & Kawachi, I. (2017). The dark side of social capital: A systematic review of the negative health effects of social capital. *Social Science and Medicine*, *194*, 105-127. https://doi.org/10.1016/j.socscimed.2017.10.020

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet*, *379*(9826), 1641-1652. https://doi.org/10.1016/S0140-6736(12)60149-4

Vyncke, V., De Clercq, B., Stevens, V., Costongs, C., Barbareschi, G., Jonsson, S. H., Curvo, S. D., Kebza, V., Currie, C., & Maes, L. (2013). Does neighbourhood social capital aid in levelling the social gradient in the health and well-being of children and adolescents? A literature review. *BMC Public Health*, *13*, 65. https://doi.org/10.1186/1471-2458-13-65

Wagnsson, S., Lindwall, M., & Gustafsson, H. (2014). Participation in organized sport and self-esteem across adolescence: the mediating role of perceived sport competence. *Journal of sport and exercise psychology*, *36*(6), 584-594.

Westerhof, G. J., & Keyes, C. L. (2010). Mental illness and mental health: The two continua model across the lifespan. *Journal of adult development*, *17*(2), 110-119.

Wickström, A., & Lindholm, S. K. (2020). Young people's perspectives on the symptoms asked for in the Health Behavior in School-Aged Children survey. *Childhood*, *27*(4), 450-467.

Winkvist A, Hultén B, Kim JL, Johansson I, Torén K, Brisman J, Bertéus Forslund H. Dietary intake, leisure time activities and obesity among adolescents in Western Sweden: a cross-sectional study. Nutr J. 2016 Apr 21;15:41. doi: 10.1186/s12937-016-0160-2. PMID: 27103118; PMCID: PMC4840851.

Wirback, T., Moller, J., Larsson, J. O., Galanti, M. R., & Engstrom, K. (2014). Social factors in childhood and risk of depressive symptoms among adolescents--a longitudinal study in Stockholm, Sweden. *Int J Equity Health*, *13*, 96. https://doi.org/10.1186/s12939-014-0096-0

World Bank. (2021) Gini index (World Bank estimate) – Sweden. https://data.worldbank.org/indicator/SI.POV.GINI?locations=SE

World Health Organization. (2006). *Constitution of the World Health organization - Basic Documents, Forty fifth edition*.

World Health Organization. (2010). Stages of Adolescent Development. *Participants manual: IMAI one-day or orientation on adolescents living ith HIV.*
World Health Organization. (2014). *Mental health: a state of wellbeing*. World Health Organization. https://www.who.int/features/factfiles/mental_health/en/
World Health Organization. (2018a) *Adolescents: health risks and solutions*. https://www.who.int/en/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions
World Health Organization. (2018b) Global nutrition policy review 2016-2017: country progress in creating enabling policy environments for promoting healthy diets and nutrition. Geneva: Licence: CC BY-NC-SA 3.0 IGO. https://www.who.int/publications/i/item/9789241514873
World Health Organization. (2020) WHO guidelines on physical activity and sedentary behaviour. Geneva:
World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO. https://apps.who.int/iris/bitstream/handle/10665/336656/9789240015128-eng.pdf
World Health Organization. (2021a) Adolescent Health, Overview. https://www.who.int/health-topics/adolescent-health#tab=tab_1
World Health Organization. (2021b) Gender and Health, Overview. https://www.who.int/health-topics/gender#tab=tab_1
WMA Declaration of Helsinki. Ethical Principles for Medical Research Involving Human Subjects, adopted by the 18th WMA General Assembly, Helsinki, Finland, 1964, latest revision by the WMA General Assembly, Seoul, (2013). https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/
Yamaguchi, A. (2013). Impact of social capital on the psychological well-being of adolescents. *International Journal of Psychological Studies*, *5*(2), 100.
Yang, S. Y., Lin, C. Y.., Huang, Y. C., Chang, J. H. . (2018). Gender differences in the association of smartphone use with the vitality and mental health of adolescent students. *Journal of American College Health*, *66*(7), 693-701.
Ye, Z., Wen, M., Wang, W., & Lin, D. (2020). Subjective family socio-economic status, school social capital, and positive youth development among young adolescents in China: A multiple mediation model. *International Journal of Psychology*, *55*(2), 173-181.

Appendix 1.

Table 1 (Study IV). Study Characteristics

Authors	Year	Journal of publication	Country	Aim/Research question	Study Design
Almgren, Magarati & Mogford	2009	Journal of Adolescence	USA	Whether there is an explanatory contribution of social capital to the self-reported health of adolescents that adds to the variance explained by demographic and developmental covariates.	Cross-sectional
Antheunis, Schouten & Krahmer	2016	Journal of Early Adolescence	Netherlands	To examine the role of social networking sites (SNSs) in early adolescents' social lives	Cross-sectional
Buys & Miller	2009	International Journal of Education & Arts	Australia	To better understand how and if participating in CCD initiatives lead by an independent youth arts organization impacts the development of social capital in school children residing in a socio-economically disadvantaged area of South-East Queensland, Australia	Cross-sectional
Carrillo-Álvarez, Villalonga-Olives, Riera-Romaní & Kawachi	2019	SSM - Population Health	Spain	To develop a Questionnaire on Family Social Capital (FSCQ) for use in an adolescent population and to test its reliability and validity.	exploratory, sequential mixed-methods
Cordova, Coleman-Minahan, Bull & Borrayo	2019	Youth & Society	USA	To develop and examine the factor structure of the Brief Social Capital for Youth Sexual and Reproductive Health Scale	Cross-sectional
Curran	2007	Journal of Alcohol and drug Education	USA	To examine the relationship between social capital and substance use by high school students	Cross-sectional
Ergün, Uzunboylu & Altinay	2018	Quality & Quantity	Turkish Republic of Northern Cyprus	To investigate the connection between school climate and students' social capital development	Mixed-method

Geraee, Eslami & Soltani	2019	Health Promotion Perspectives	Iran	To investigate the direct and indirect relationships between family social capital and life satisfaction, and the possible mediating role of social media use between the variables among Iranian adolescents	Cross-sectional
Hall, Tol, Jordans, Bass & de Jong	2014	Social Science & Medicine	Burundi	To examine the longitudinal association between cognitive social capital and mental health (depression and posttraumatic stress disorder (PTSD) symptoms), functioning, and received social support of children in Burundi	Longitudinal mixed-methods
Harpham, Snoxell, Grant & Rodriguez	2005	British Journal of Psychiatry	Colombia	To measure the prevalence of common mental disorders among low-income young people in the city of Cali, Colombia and to examine associations with violence and social capital	Mixed-methods
Khawaja, Abdulrahim, Soweid & Karam	2006	Social Science & Medicine	Lebanon	To examine the association between place and components of social capital among adolescents living in three impoverished communities outside of Beirut, the capital city of Lebanon	Cross-sectional
Krasny, Kalbacker, Stedman & Russ	2015	Environmental Education Research	USA	To develop and test for reliability a survey to measure cognitive and structural attributes of social capital among youth	Quasi-experimental
Lau & Wanxin	2011	Children and Youth Services Review	China	To examine the extent to which variations in family and school social capital can be explained by child's differing socioeconomic and demographic background and school characteristics; and second, the extent to which family and school social capital in combination might be associated with variations in child subjective well-being in Shenzhen, China	Cross-sectional

Magson, Craven & Bodkin-Andrews	2014	Australian Journal of Educational & Development Psychology	Australia	To 1) develop a new multidimensional measure of social capital that accurately quantifies the extent of bonding, bridging, and linking capital an individual possesses; 2) test the psychometric properties of the new measure based on confirmatory factors analyses, tests of reliability, and invariance, and 3) establish the convergent validity of the new measure by examining the associations between the Social Capital and Cohesion Scale factors and mental health constructs	Cross-sectional
Onyx, Wood, Bullen & Osburn	2005	Youth Studies Australia	Australia	To report on a project in which young people were actively involved in identifying relevant items for a social capital scale, administering a questionnaire concerning social capital and other social issues, and collating the results	Experience-driven Mixed-method
Paiva, de Paiva, de Oliveira Filho, Lamounier, Ferreira, Ferreira, et al.	2014	PLoS One	Brazil	To develop and validate a quick, simple assessment tool to measure social capital among adolescent students.	Cross-sectional
Pourramazani, Sharifi & Iranpour	2019	Addict Health	Iran	To determine the prevalence and the relationship between SC and substance use in Southeast Iranian adolescents	Cross-sectional
Ryan & Junker	2019	Youth & Society	USA	To measure the multidimensional concept of social capital among youth in the domain of postsecondary transitions	Cross-sectional
Takakura, Hamabata, Ueji & Kurihara	2014	School Health	Japan	To develop self-rating scales of social capital at school and neighborhood among young people and to evaluate psychometric properties of the scales.	Cross-sectional
Wang & Gu	2019	Asia Pacific Journal of Education	China	1. What is the status of social media use of Chinese adolescents in terms of frequency, place, type and aim? 2. Whether and to what degree does online social capital influence academic identity? 3. How do demographic variables influence the relationship between online social capital and academic identity?	Cross-sectional, retrospective