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1 Introduction to the Study

Adolescence, in contrast to childhood and adulthood, is characterised by relative equality in health. The common prevalent view, however, is still that socioeconomic health differences are an invariant feature of the life-course. An example of this view is also reported in the 'classic' Black Report: "Most recent data show marked differences in mortality rates between the occupational classes, for both sexes and all ages" (Townsend & Davidson 1982, p 206). The notion that the link between socioeconomic status and health might be age-specific has only recently been remarked upon. House et al (1994) paid attention to the decreasing pattern of socioeconomic health differences in the elderly. Other researchers, for example West et al (1990), concluded that adolescence seems to be something of an exception to the overall picture of socioeconomic patterning in health. It is, however, not known in the Netherlands whether this exception for adolescents is the case.

This thesis deals with the question of whether or not socioeconomic health differences (SEHD) exist in Dutch adolescents. In addition, we examine possible explanations for the re-emergence of socioeconomic health differences in adulthood. The examination considers a variety of determinants of health in adolescence. We question whether differences in health-related behaviours can be seen as the key to the transition of a situation of no SEHD in adolescence into a situation of existing SEHD in adulthood.

This first chapter, as a conceptual framework, makes out a good case for a study of Health in Adolescence, focuses on social inequality in health and emphasises its age-specificity, and gives a brief overview of the current explanatory models of socioeconomic health differences. The main purpose of this framework is to provide background information that places this thesis into a broader context. This leads to the general research question under study. In addition, in each of the chapters which follow, an introduction to a number of specific research questions is given. These research questions will be roughly specified in the last section of this chapter.

On the need for a study of social inequality and Health in Adolescence

There are several good reasons for conducting a study of social inequality and Health in Adolescence. Firstly, the age-specificity of socioeconomic health differences may provide new theoretical viewpoints about the onset of these differences. Secondly, the health of adolescence is a subject which has tended to be ignored, based on the assumption that adolescence and health are synonymous. Besides the theoretical interest of our study, it benefits also societal relevance. The third reason for conducting the study is that in 1984 the Netherlands adopted, as other Western European countries, ambitious policy targets, which aim at the reduction of socioeconomic health differences. The differences in health have tended to increase rather than decrease (Smith & Morris 1994, Joosten 1995). Several interventions are therefore currently ongoing aiming to reduce SEHD. The fourth reason for the study is that it contributes in the planning, design and content of interventions to reduce health differences in a very interesting target group: adolescents. All four reasons will be elaborated below.

The age-specificity of socioeconomic health differences

West (1988) was one of the first authors to question the prevailing assumption that socioeconomic health differences were persistent for all ages. He showed with existing data that using finer age bands than usual, revealed a different pattern of relationships with social class in youth. He concluded that the situation in youth was "characterised more by the absence than the presence of class variation" (1988, p 291). To test this new perspective, the Scottish Medical Sociology Unit of the Medical Research Council, to which West belongs, started the 'West of Scotland Twenty-07 study' (Macintyre et al 1989). One of the aims of this challenging study was to test the hypothesis of relative equality in a cohort of 15-year-olds in the West of Scotland. The findings of the Twenty-07 study supported their hypothesis. On a range of indicators, from subjective assessments to 'objective' physical measures, very little evidence of class variation in health was found (West et al 1990, Macintyre & West 1991).

Following the Scottish results, other studies analysed the idea of relative equality for a cohort of young people. Most of the evidence is consistent with the original conclusion drawn by West (1988) that youth is characterised by relative equality in health.

In Finland, for example, similar findings were observed for the age group 15-19 years concerning self-reported longstanding illness, limiting longstanding illness and self-rated health as 'excellent' (Rahkonen 1992, Rahkonen et al 1995). Other British studies also confirmed the pattern of few differences, for example, in the study of Glendinning et al (1992), no difference was found in rates of psychosocial problems (GHQ caseness) by social class of background at age 15-16 years.

Further evidence of a lack of relationship between socioeconomic status (SES) and indices of well-being, psychiatric symptoms and depression was observed in the 'Youth in Transition' study in the US (Sewell & Burton 1990). The authors described their findings as 'surprising' given the known relationship between SES and health in adulthood.

Despite these empirical studies supporting the findings of the Twenty-07 study, the issue of relative equality in health in youth has not been widely acknowledged. West (1997) formulated in a recent overview paper four possible reasons for the fact that the findings had not been incorporated in the mainstream literature. First, it takes much time for research findings to become known and incorporated in the broader literature. Second, there is often lack of clarity about what period in the life-course 'youth' refers to. It is necessary to distinguish youth from infancy, childhood and adulthood. Third, the research findings are known, but for various reasons are regarded as unresolved or imperfect. Finally, it could be that the difficulty in accepting the findings resides not so much in specific methodological problems, but in identifying plausible mechanisms by which changes in class patterning in health occur over the early years.

Another reason, not mentioned by West, is the inconsistency of some observed findings. For some extreme health measurements, such as mortality and severe chronic conditions, socioeconomic health differences in adolescence have been found. Elmen and Sundh (1994), for example, examined mortality in childhood, youth and early adulthood in the Swedish city Göteborg. In respect of mortality they concluded that youth (age 15-25) deaths from accidents and injuries increased with lower income area. Also for more severe chronic conditions, some class gradients were found in adolescence. However, these findings appeared to be very inconsistent (West 1997). For all these reasons, it is important to examine the hypothesis of absence of class variation in health in youth in the Netherlands. Until now it has never been examined in Dutch adolescents.

Little attention to adolescence and health

Another important reason to focus on the health, and the social patterning of health in adolescents, is that young people are a relatively ignored group in terms of their health compared with young children or the elderly. There is a contradiction between the prevalent image of the healthy adolescent on the one hand and research showing that a high proportion have health problems and worries on the other. The first assumption is clearly stated by Spruijt-Metz (1996): "Adolescence is generally a time of radiant health and well-being, and the approaching years bear the promise of the greatest physical strength to be achieved during the life span". The consequence of this first assumption is that the attention focuses on health-related behaviour, as a far more important characteristic of adolescence than their healthiness.

A contrasting viewpoint is found in the empirical studies which emphasize that the traditional view of healthy adolescents is denied by their findings (e.g. Starfield et al 1993, Palentien & Hurrelman 1995, West & Sweeting 1996).

The present study contributes to the ongoing discussion of whether or not adolescence is synonymous with health. A representative study of adolescent health, and health problems, will give answers to the question how (un)healthy adolescents are.

An ambitious health policy target on reducing socioeconomic health differences

The societal relevance of this study is obvious, considering the ambitious target of the health policy in many western European countries. This target was formulated formally in 1984, when all member states confirmed unanimously the first of the 38 European regional targets for 'Health for All by the Year 2000': "By the year 2000 the actual differences in health status between countries and between groups within countries should be reduced by at least 25% by improving the health of disadvantaged nations and groups" (WHO, 1985). The Netherlands adopted this target and with that, socioeconomic health differences returned on the Dutch political agenda.

The reappearance of socioeconomic health differences on the political agenda can be directly traced back as resulting from the publication of the Black Report (Townsend & Davidson 1982). Despite the hostile reception from the British government at the time, the Black Report has had a big impact on thought, if not on policy, inside and outside

Britain. Most academic writing in health inequalities has subsequently tended to adopt its agenda, questions, concepts, and definitions, and to debate its conclusions. It has been influential not only in the way it responds to the problems but more important, in the way it poses the questions (Vågerö & Illsley 1995).

The central question posed by the Black Report was "Why does social class continue to exercise so significant an influence on health?" (Townsend & Davidson 1982, p 112). This question was delicate for the policy, because the common idea in the '60s and '70s was that the Western welfare states would be able to eliminate socioeconomic patterning in health. A major merit of the welfare states was after all, accessibility for the total population to the health services.

In response to the Black Report (which related the UK), the World Health Organisation (European Region) investigated inequalities in health in other European countries. Illsley and Svensson (1984), therefore, edited a document 'The health burden of social inequalities', based on a meeting where SEHD in 20 European countries was discussed. The conclusion of this meeting was that health inequalities were manifest in nearly all European countries.

Dutch public health policy still stresses the undesirability of socioeconomic health differences, and formulates their reduction and prevention as one of its health policy priorities ('Prevention for public health' (1992) and 'Report on Health and Well-being' (1995)). The policy component of adopting the WHO target has thus been pursued simultaneously with a research component. In 1989, in the Netherlands, a national research programme on SEHD was installed and funded by the government. During the first five years (1989-1994), the research programme concentrated on the description of these differences in the Netherlands and on the elaboration of explanatory models (Mackenbach et al 1994). In continuation of the first five years' programme, a second Dutch research programme started in 1995, concentrating on studies to evaluate the impact of interventions to reduce SEHD (Programmacommissie SEGV II 1995a).

Although it has the unanimous support of all member states of the WHO European Region, the ambitious target of reducing SEHD by 25% seems unrealisable as in current society a reverse tendency can be observed. Differences in health have actually increased rather than decreased (Smith et al 1990, Smith & Morris 1994, Joosten 1995). This impression of increasing socioeconomic health differences has been recently corroborated for the Netherlands in an authoritative report on the future orientation of public health (Ruwaard & Kramers 1997). One

of the main conclusions of that report was that socioeconomic health differences have increased and are expected to increase more the coming years in the Netherlands.

Information for interventions

The final reason for the relevance of our study is that it can provide starting-points for difference-reducing interventions. Adolescence may offer, for many reasons, possibilities for a reduction in future health differences. In the first place, understanding how apparently absent differences become increasingly present may provide useful information about the onset of socioeconomic health differences. Moreover, the absence of socioeconomic health differences in adolescence raises the challenge of maintaining the same pattern as much as possible in adulthood. In addition, adolescence is a period of experimentation with health-related behaviours. Health-related behaviours appeared to be important explanations of socioeconomic health differences in adulthood (Ranchor et al 1990, Stronks et al 1996). Detailed information about social patterns in specific behaviours in adolescence, i.c. smoking, alcohol consumption, soft drugs use and exercise, guides health promotion workers.

Gepkens and Gunning-Schepers (1996) showed in a review of international literature about interventions to reduce SEHD, that many of the already ongoing interventions often involve health promotion and education. This appeared to be successful only if giving information was combined with personal support or structural measures. Despite many remarks on the evaluation of interventions, the authors agree with Holland (1997) that one need not wait for a controlled experiment in order to continue a longstanding public health tradition to support policies aimed at combatting the consequences of poverty (Gunning-Schepers & Gepkens 1997). However, the effectiveness of the intervention will probably increase when it concerns a specific 'risk-group'. In this respect having a low SES is much too rough an indicator. We need to consider not only the distribution of a number of health-related behaviours, but also of other possible intermediate factors, such as coping styles and decision making styles.

In all, the age-specific approach of our study plus our focus on health-related behaviours will provide useful information for the planning and the design of interventions which aim limit the re-emergence of health differences.

Scientific explanatory models of socioeconomic health differences, the Black Report and beyond

As stated before, the Black Report is an important document in the field of socioeconomic health differences. Not only for returning this topic on the political agenda, but also by providing four explanatory models of SEHD. The impact of these four explanatory models is still high on the research agenda, and therefore worthwhile to mention at this place. Aside the impact of the Black Report, new theoretical themes have been developed and study designs have been improved. We refer to the broad outline of these developments, but we begin by giving a short overview of the explanations of the Black Report.

Explanations within the Black Report

The four explanations given by the Black Report can be divided into two main processes which explain socioeconomic health differences: 'causation' and 'selection'. Causation suggests that socioeconomic position influences health through the differential distribution of several risk factors. So, for example, having a low job status is bad for your health. Selection acts in the opposite way. Health influences socioeconomic position through health-related social mobility, for example, unhealthy people do poorly at school and in the labour market.

Besides these two main processes, an artefact explanation and genetic predisposition are mentioned as possible explanations of SEHD.

However, the plausibility of both is questioned in several studies (e.g. Stronks et al 1993). The artefact explanation (measurement problems) in particular has received a lot of criticism (Fox et al 1986, Marmot 1986), and it is almost universally agreed in the academic literature that social class differences in health are real. Measurement problems may affect the size and pattern of differences, but do not cast doubt on their existence (Vågerö & Illsley 1995). For genetic predisposition exists no clear evidence of a differential distribution across the socioeconomic groups (Stronks 1997). Although the influence of genetic predisposition cannot be excluded, the explanation is supposed to be less important than the causation and selection processes. Therefore, only the causation and selection processes are considered here.

Causation

The causation explanation assumes that a person's socioeconomic position affects his or her health (Marmot et al 1987, Feinstein 1993, Davey Smith et al 1994). This is not a direct effect. Socioeconomic status in-

fluences health through several determinants of health and illness. Because these determinants can be placed between socioeconomic status and health, they are called intermediate factors. According to this explanation, socioeconomic health differences exist because lower socioeconomic groups perform health-damaging behaviours more, and health-promoting behaviours less frequently, and live and work under less favourable circumstances. Traditionally, the intermediate factors are divided into behavioural factors (lifestyle factors, e.g. smoking, drinking and physical exercise) and material factors (e.g. circumstances of living and working).

Selection

The selection explanation assumes that a person's health status affects his or her socioeconomic position (West 1991). Processes of selection are commonly divided into two elements, *intergenerational* or *intragenerational* social mobility, depending on the period of life-stage in which the selection occurs. In the first case, social mobility occurs during childhood or adolescence. Illness during childhood or adolescence may influence a person's future socioeconomic status. Such intergenerational social mobility is defined by comparing the socioeconomic status of a person with that of his or her parents (West 1991, Lucht van der & Groothoff 1995). In the second case, health may influence social mobility in adulthood. Such intragenerational social mobility is defined by comparing the socioeconomic status of a person him- or herself earlier in adult life.

The selection explanation is, in the Black Report, also dismissed as soon as it is introduced. However, there is a body of evidence for the importance of childhood circumstances both for social mobility and health (Lucht van der 1992, Stronks 1997). Vågerö and Illsley conclude that "the passionate dismissal of social selection was motivated, not by the strong evidence against it, but by a failure to distinguish it from genetic selection" (1995, p 224). Nowadays, many researchers acknowledge the importance of selection processes, direct and indirect, but add immediately the notion that SES should be viewed as the main causal factor in health (Wilkinson 1986, Mackenbach et al 1994, Marmot et al 1997).

Some major theoretical themes since the Black Report

Psychosocial factors

One important development in the study of socioeconomic health differences is the introduction of psychosocial factors as intermediate

explanatory factors between SES and health. Several authors have stressed the importance of integrating these factors into theories which explain SEHD (Heuvel van den 1988, Ranchor et al 1990, Adler et al 1994, Stronks 1997). Such factors include social support, life events, coping and personality (Macintyre 1986). In addition, in the Netherlands two empirical studies have been conducted in which the influence of psychosocial factors as a group of relevant determinants has been shown (Ranchor et al 1990, Ranchor et al 1996a, Stronks 1997). Both studies examined whether a greater prevalence of health problems in the low SES could be explained either by a greater vulnerability to the impact of stressful life events or by a greater exposure to these events. Ranchor et al (1996a) found support for the differential vulnerability hypothesis, Stronks (1997), however, concluded the opposite, finding support for greater exposure to stressful life events. Other authors advocate that both perspectives should be integrated: "...elaborating on what is known about the psychological aspects of vulnerability an effort should be made to broaden the view to social risk groups" (Heijmans & Ridder de 1995).

Another important development is that new starting points for the examination of SEHD have been postulated. We elaborate two of them, 'biological programming' and a 'salutogenic approach'.

Biological programming

Barker and his colleagues (1990) postulated biological programming. They suggested that (chronic) illness in adulthood is the result of biological programming occurring in utero and early infancy. Poverty, malnutrition and other adverse circumstances before and during pregnancy affect growth and development, and eventually health in adulthood. Low birth weight, for example, will therefore indicate an elevated risk for many important causes of death, such as respiratory disease, diabetes and ischaemic heart disease (Barker 1991). Barker argued that contemporary patterns of social class inequalities in Britain can be explained by biological programming.

Vågerö and Illsley (1995) criticised Barkers biological programming and suggested social programming, hypothesising that the social circumstances in early life influence health in adulthood. Their idea is that the accumulation of social influences in early life directly or indirectly determines adult health.

Salutogenic approach

Antonovsky (1979, 1987) advocated a salutogenic orientation. This aims to identify and understand, first, protective factors, and, second, health-promoting factors. Instead of focusing on the question of why lower classes are sicker, Antonovsky emphasised the question of why higher classes are healthier. He suggested that it is not only because they are low on risk factors, but because they are also higher on protective or salutary factors (1989).

Antonovsky constructed the concept of sense of coherence (SOC). The three components, 'comprehensibility' (cognitive), 'manageability' (instrumental), and 'meaningfulness' (motivational) are more strongly represented in people with a strong SOC. He warns, however, against a too explicit psychologising of studies into stress, coping and health. In his view the SOC is a social concept verified by years of research in the field of poverty, social class and health. SOC develops more positively and more strongly in individuals who grow up in favourable socio-economic surroundings. "The SOC is explicitly not a substantive coping strategy, as is a mastery orientation... The person with a strong SOC is not tied to one type of resource" (Antonovsky 1993). Favourable social circumstances promote the development of a strong SOC and a strong SOC functions as an all-encompassing buffer, not in terms of an unpassable wall, but in terms of canalisation and manageability (Sagy & Antonovsky 1990, Lundberg & Nyström Peck 1994).

Some major methodological improvements since the Black Report

Longitudinal designs

The Black Report was mainly based on descriptive data. Since the publication of the Black Report, many studies have concentrated on explanations for social patterns in health. The introduction of longitudinal study designs in this field of research was an important methodological improvement. One example in the Netherlands is the still ongoing Longitudinal Study on SocioEconomic Health Differences (LS-SEHD) (Mackenbach et al 1994). The LS-SEHD aims to assess the relative importance of selection and causation mechanisms. A longitudinal design is required in order to determine the chronology of events. Do people with a low socioeconomic position become unhealthy or does being less healthy lead to a low socioeconomic position?

The LS-SEHD has both differences and similarities with other -mainly British- longitudinal studies. One of the differences is that the LS-SEHD restricts its focus to the adult population for the explanations of SEHD. In contrast, the UK 'National Survey of Health and Development', for

example, is a birth cohort study, which also allows a consideration of the effects of health in childhood (Blaxter 1986). Another difference is that the LS-SEHD examines the interplay of different types of explanation, with the understanding that these can contribute simultaneously to the explanation of observed health inequalities (Mackenbach et al 1994). Other studies are more exclusive, where one type of explanation is searched for at a time, while others are excluded (Macintyre 1997). The objectives of the LS-SEHD are closely similar to those of the 'West of Scotland Twenty-07 Study' (Macintyre et al 1989). In both studies the emphasis lies on the effects of social factors on health. The main question of both studies is the contribution of the different mechanisms and factors which link socioeconomic status and health. The Twenty-07 study intends to document health effects of social factors in three distinct age-cohorts: 15, 35 and 55 years at the baseline respectively. The LS-SEHD does not focus on specific age groups.

Evaluations of interventions to reduce inequalities in health

Another methodological improvement, following naturally from the longitudinal designs, is the evaluation of intervention studies.

Interventions can be directed at four main levels: strengthening individuals, strengthening communities, improving access to essential facilities and services, and encouraging macroeconomic change (Whitehead 1995).

Gepkens and Gunning-Schepers (1996) showed in a review of international literature about interventions to reduce SEHD, that most interventions are directed at the individual level by health promotion and education. This appeared to be successful only if giving information was combined with personal support or structural measures.

Many interventions have not been evaluated in respect of their effectiveness. Therefore, in 1995 a national research programme was introduced by the Dutch Ministry of Public Health, Welfare and Sports, the primary goal of which is to evaluate interventions on reducing SEHD, both ongoing and new (Programmacommissie SEGV II 1995a). In order to obtain high quality results and conclusions from the evaluated interventions, the programme committee formulated criteria for the study designs (Programmacommissie SEGV II 1995b).

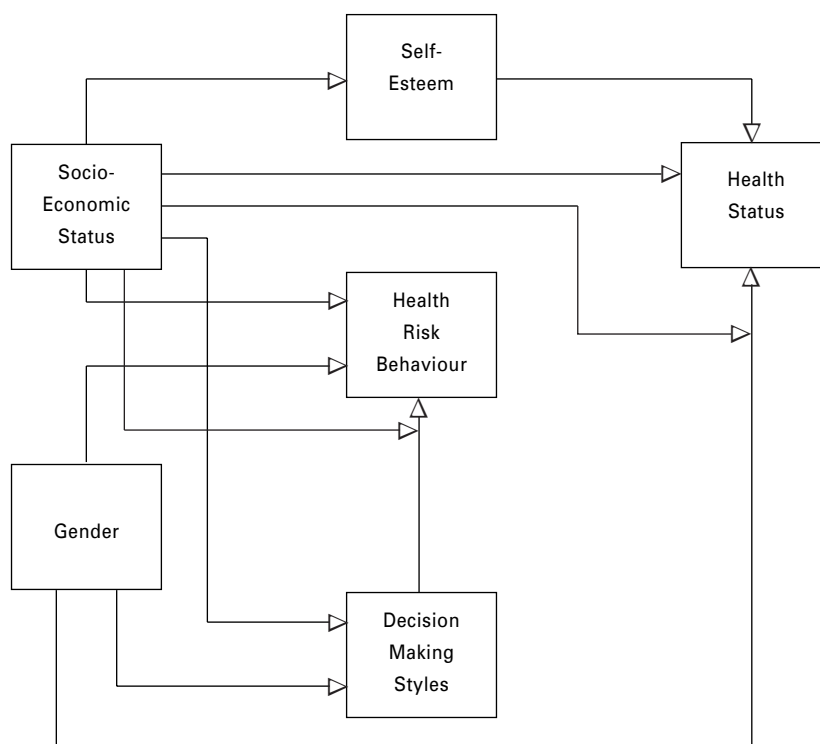
There are several comments which might be made on the effectiveness of evaluation studies. One difficulty is the long time span which is often necessary to prove any reduction in health inequalities. Another difficulty is the paradox that interventions designed to improve the public health in general have tended to confer greatest benefit on better off groups (Blaxter 1990).

Objectives, general research questions, and structure of this thesis

Evidence on socioeconomic health inequalities in the Dutch population has accumulated only recently. It is beyond doubt that socioeconomic health differences exist in the Netherlands. Dutch newspapers have enumerated the size of these inequalities in their headlines, reporting recently in respect of public health in the Netherlands that: "The less educated live 3.5 years less and for 12 years in poorer health than the better educated" (Ruwaard & Kramers 1997).

Despite the large body of literature documenting the consistent differences in health between adults in different socioeconomic groups in the Netherlands, little is known about this pattern for Dutch adolescents. As elaborated before, there is valid empirical evidence to expect relatively few or no socioeconomic health differences in adolescence. This thesis addresses adolescents specifically. We investigate the findings of the researchers who conclude that adolescence is a period of relatively equality. We examine whether this is also the case for the Netherlands. The implications of these findings for possible explanations of the re-emergences of socioeconomic health differences in adulthood will also be explored. General objectives of this thesis are thus both the description and the explanation of the presence, c.q. absence of socioeconomic health differences in adolescence. In order of the explanation, several intermediate factors will be examined, which are well-documented as playing an important role in the link between SES and health in children and adulthood (Lucht van der 1992, Ranchor et al 1990, Stronks et al 1993, Stronks et al 1996). In this respect, not only health risk behaviours are included in the theoretical model of examined relationships, but also intermediate factors such as self-esteem and coping styles, c.q. decision making styles. These psychosocial-oriented intermediate factors receive increasing attention for being promising factors in the explanation of SEHD (Macintyre 1986, Heijmans & Ridder de 1995, Stronks 1997). In addition, gender receives special attention in our theoretical model, since many empirical studies emphasise the differences between male and female adolescents both in health and in determinants of health (Sweeting 1995, Spruijt-Metz 1996). Figure 1 depicts the concepts and relationships examined within this thesis in a simplified model.

Figure 1 Simplified model of the relationships examined within this thesis



Summarising, the objectives of the thesis can be formulated in the following three general research questions:

- 1 What is the prevalence of health problems in adolescence, in terms of physical health, psychosocial health and chronic illnesses?
- 2 Is the situation for Dutch male and female adolescents similar as for adolescents in other western European countries, concerning very little or no socioeconomic health differences?
- 3 What socioeconomic patternings of intermediate factors, being well-documented in the link between SES and health in children and adulthood, do exist in adolescence, for being a possible key to the re-emergence or increase of SEHD in their adulthood?

This thesis includes after this first chapter another eight chapters. The next, Chapter 2, describes the method and material of the study, followed by six chapters on empirical analysis, and one final chapter in

which conclusions will be given and the study discussed. Chapter 3 starts with an introduction on adolescence and health. We examine the health status, c.q. the prevalence of ill health in our study cohort and compare the findings in respect of males and females. Several health problems are assessed: self-reported health, experienced health complaints, psychological health, and chronic illnesses. Having an impression of the prevalence of health problems in Dutch adolescents, Chapter 4 continues by testing the hypothesis of relative equality in adolescence. The relationship between socioeconomic status and health is thus the central topic of Chapter 4. Then, in Chapter 5 we consider health status as an independent variable. The central question in Chapter 5 is whether having a chronic illness is related to the self-esteem of adolescents, and in addition whether if this relationship is influenced by SES. In Chapter 6 we elaborate the hypothesis that while there may be few health differences, health-related behaviours are class differentiated. Socioeconomic behaviour differences may be seen as a prelude of the re-emergence of socioeconomic health differences in adult life. Therefore, this idea can be seen as relating to the hypothesis of latent differences. In the hypothesis of latent differences we include four health-related behaviours and their cumulation, smoking, alcohol consumption, soft drug use, and physical exercise. Another intermediate factor in the link between socioeconomic status and both health, and health-related behaviour is decision making style. We therefore evaluate in Chapter 7 an instrument which measures decision making styles in adolescence, the Adolescent Decision Making Questionnaire (ADMQ, Mann et al 1989). Both the structure, the validity and the reliability of this instrument will be examined in this chapter. Subsequently, we use the improved and adapted version of the ADMQ in Chapter 8 by testing the differential vulnerability hypothesis. This hypothesis assumes that a lower SES not only directly affects unhealthy behaviour, but is in addition, a condition under which adolescents are more vulnerable (i.e. more likely) to decide to start unhealthy behaviours. The impact of maladaptive decision making styles is elaborated in respect of their differential outcomes on health-related behaviours depending on the SES where the adolescent grows up. Finally, the last chapter of this thesis, Chapter 9, summarises the findings of the empirical analyses and discusses the results and implications for further research and for health policy.