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**ADOLESCENTS' ENCOUNTERS WITH PUBLIC SPACE
SAFETY AND MOBILITY IN RELATION TO INDIVIDUAL AND
CONTEXTUAL FACTORS IN SWEDEN**

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ABSTRACT

Background: Public space, areas to which everyone has access, is especially important for adolescents. Their mobility, e.g. when travelling to school, and perceived safety and security in that environment impacts on their health, safety, and development.

Aim: The aim is to increase knowledge on adolescents' perceived safety and mobility in public space, and, with the *ecological model* as a framework and from a gender perspective, examine how safety and mobility relate to individual and contextual factors. Research questions concern prevalence and correlates of walking and cycling to school and of fears in the neighbourhood; as well as patterns of interrelated factors and gendered ideas regarding safety and the perception of traffic as a threat.

Material: The questions are studied in four articles, using data from two quantitative surveys and a qualitative study. During 2005/06 a survey on Adolescents' Encounter with Traffic (AEwT) was conducted among 7th grade adolescents (n=1008) in Stockholm County, Sweden; and the WHO survey Health Behaviour in School-aged Children (HBSC) among a nationally representative sample of 5th, 7th and 9th graders in Sweden (n= 4144). The surveys included some identical or similar questions. In 2008/09, ten focus group discussions were conducted with 9th graders about their perception of safety in public space.

Results: Data from HBSC and AEwT showed active commuting to school – walking or cycling – to be high (62.9%) but decreasing with age (whereas public transport increased). It was associated with living in an apartment or row-house; in a medium-sized city (compared to metropolitan area); and, in urban areas, with manual worker households. Data from AEwT showed that fear, reported by 60% of girls and 40% of boys, was more common among girls, adolescents living in an apartment compared to a detached house and respondents who had or knew of scary experiences in their neighbourhood. For boys it was more common to report fear if they thought their parents were negative towards adolescent independent mobility in the evening, and for girls with one or more parents born outside Sweden. To explore interrelations between factors, patterns were sought in sociodemographic variables, and variables concerning fears, coping with fear, traffic and parent/child opinions on mobility. Five consistent and distinct clusters were identified. In clusters where girls were overrepresented, different fears and coping strategies were found with different contextual factors; in clusters more typical for boys, housing and neighbourhood factors were more determining. In the qualitative study, lone rapists, mainly a threat to girls, and gangs of adolescent boys, threatening boys with violence and girls mainly with (sexual) harassment, were described as the most prominent threats. These threats were used to construct shared ideas of gendered behaviour. Traffic, though sometimes admitted to be a major safety risk, was perceived as much more manageable.

Conclusion: A number of interacting factors influence adolescents' mobility and perceived safety in public space. Where adolescents live, and to some extent household socioeconomic status, determines the extent to which they actively commute. Boys' and girls' perception of safety in public space differs; and context seems to have different impact on boys' and girls' fears. Threats are understood through ideas of gendered behaviour. Though causality cannot be determined due to cross-sectional design, findings are based on large and diverse samples and can be assumed to be generalizable to adolescents in similar settings.

Sammanfattning på svenska

Bakgrund: Den offentliga miljön - de allmänna utrymmen som alla har tillgång till - är särskilt viktig för ungdomar. Deras rörelsefrihet, till exempel på väg till skolan, och upplevda säkerhet och trygghet i denna miljö påverkar deras hälsa, säkerhet, sociala och psykologiska utveckling och praktiska vardagsliv.

Syfte och frågeställningar: Avhandlingen syftar till att öka kunskapen om ungdomars upplevda säkerhet och rörelsefrihet i den offentliga miljön, och hur den relaterar till individuella och kontextuella faktorer. De specifika frågeställningarna rör hur många ungdomar som går eller cyklar till skolan och vilka faktorer som är relaterade till detta; vilka rädslor ungdomar upplever i sitt eget bostadsområde och vilka faktorer som är relaterade till rädsla; mönster av samverkande faktorer; samt könade idéer om säkerhet i den offentliga (ute-) miljön och synen på trafiken som ett hot.

Material: Forskningsfrågorna studeras i fyra artiklar, med hjälp av data från två kvantitativa enkäter och en kvalitativ studie. Under 2005/06 genomfördes en enkät om ungdomars rörelsefrihet, upplevda säkerhet och uppfattning om sin närmiljö. Enkäten, kallad Ungdomars möte med trafiken (UMT) besvarades av sjundeklassare (n = 1008) i Stockholms län. Samma år genomfördes WHO:s internationella undersökning "Skolbarns Hälsovanor" bland ett nationellt representativt urval av femte-, sjunde- och niondeklassare i Sverige (n = 4 144). Enkäterna inkluderade vissa identiska eller snarlika frågor gällande transport till skolan och sociodemografiska faktorer. Under 2008/09 gjordes tio fokusgrupper med niondeklassare om deras uppfattning om säkerhet i den offentliga miljön.

Resultat: Data från Skolbarns Hälsovanor och UMT visade att ungdomars aktiva transport till skolan – det vill säga hur många som går eller cyklar till eller från skolan – var vanligt (62,9%) men minskade med åldern - 76% vid 11 års ålder, 62% vid 13 års ålder och 50% vid 15 års ålder – medan användning av kollektivtrafik ökade (inräknat skolbuss). Att bo i en lägenhet eller radhus (jämfört med villa) och bo i en medelstor stad (jämfört med ett storstadsområde) var associerat med aktiv transport till skolan. I stadsområden var aktiv transport vanligare hos barn i arbetarhushåll jämfört med mellan till högre tjänstemän. Data från UMT visade att rädsla, rapporterat av 60% av flickorna och 40% av pojkarna, var signifikant vanligare bland flickor. Framför allt var rädsla för mörker vanligt bland flickor (ca 34%) men inte alls bland pojkar. Rädsla var också vanligare bland ungdomar som bodde i lägenhet jämfört med villa, och bland de som rapporterade att de eller deras vänner någon gång hade blivit jagade, slagna eller att någon hade tagit något från dem i deras bostadsområde. Pojkar rapporterade rädsla nästan tre gånger oftare om de sagt att de trodde deras föräldrar tyckte att ungdomar inte borde vara ute på egen hand på kvällen. För flickor var rädsla associerat med att ha en eller flera föräldrar födda utanför Sverige. För att undersöka mönster av interrelaterade faktorer analyserades data från UMT med klusteranalys på sociodemografiska variabler samt variabler som kan påverka unga ungdomars rörelsefrihet, såsom rädsla, trafik i närmiljön och samstämmigheten mellan föräldrars och ungdomars åsikter om ungdomars oberoende rörelsefrihet. Fem tydliga och separata kluster identifierades. I kluster där flickor var överrepresenterade, återfanns olika typer av rädslor och strategier för att inte vara rädd tillsammans med skilda kontexter. I kluster mer typiska för pojkar var bostadstyp och karaktären på trafikmiljön

mer avgörande. I den kvalitativa studien, analyserad med diskursanalys, beskrevs att de faror som upplevs som mest framträdande i den offentliga utemiljön var våldtäktsmän, som främst upplevs som ett hot mot flickor, eller gäng av unga killar, som för pojkar beskrivs som en fara för våld men för flickor huvudsakligen en fara för (sexuella) trakasserier. Dessa faror användes för att konstruera en gemensam förståelse av könsbundna beteenden och styrkeförhållande – som att gäng av killar inte slår tjejer, eftersom de är svagare och gäng vill visa sig starka genom att slåss med någon som är relativt jämnstark. Trafik, fast det ibland beskrevs som en stor säkerhetsrisk, uppfattades som betydligt mer hanterbart.

Slutsatser: En rad samverkande faktorer påverkar ungdomars rörelsefrihet och upplevda säkerhet i den offentliga miljön. Var ungdomar bor, och i viss mån socioekonomisk status, tycks vara avgörande för i vilken utsträckning de går eller cyklar till och från skolan. Säkerhet i den offentliga miljön uppfattas på olika sätt av pojkar och flickor. Det kontextuella sammanhanget har också olika betydelse för om flickor och pojkar upplever rädslor i närmiljön. Betydelsen av upplevda faror – framför allt gäng och våldtäktsmän - tolkas genom en gemensam förståelse av könade handlingar och styrkeförhållanden. Även om orsakssamband inte kan fastställas på grund av studierna är baserade på tvärsnittsdata, bygger resultaten på relativt stora urval ungdomar från olika typer av förhållanden och miljöer. De kan därmed antas vara generaliserbara till ungdomar i liknande sammanhang – det vill säga höginkomstländer med en internationellt sett god säkerhet och där intentionen i offentlig planering är att främja ungdomars rörelsefrihet och upplevda säkerhet.

Se slutet av Appendix för ett exempel, på svenska, av hur enkäten Ungdomars möte med trafiken såg ut i sin online-version.

LIST OF PUBLICATIONS

- I Johansson K, Laflamme L, Hasselberg M. Active commuting to and from school among Swedish children – a national and regional study. Submitted.
- II Johansson K, Hasselberg M, Laflamme L. (2009) Exploring the neighborhood: a web-based survey on the prevalence and determinants of fear among young adolescent girls and boys. *International Journal of Adolescent Medicine and Health*. 2009;21(3):347-59.
- III Johansson K, Hasselberg M, Laflamme L. (2010) Young adolescents' independent mobility, related factors and association with transport to school. A cross-sectional study. *BMC Public Health*. 2010 Oct 22;10:635.
- IV Johansson K, Laflamme L, Eliasson M. Adolescents' perceived safety and security in public space - A focus group study with a gender perspective. Submitted.

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LIST OF ABBREVIATIONS

AEwT	Adolescents' Encounter with Traffic (Survey)
CI	Confidence interval
FGD	Focus group discussion
FAC	Factorial Analysis of Correspondence
HAC	Hierarchical Ascendant Classification
HAC FAC	The combined use of Hierarchical Ascendant Classification with Factorial Analysis of Correspondence
HBSC	Health Behaviour in School-Aged Children (Survey)
OR	Odds ratio

INTRODUCTION

- About my own adolescent encounters with public space

I grew up in the countryside, having moved there from Stockholm when I was four, in 1981. My 'local public space' consisted of the small village, the forests and the fields. As is the case for many country children also today, school was several kilometres away and walking or cycling there was never an option. By contrast, my father and his siblings, growing up in the same house, had only had to cross a field to school during their first school years in the 1950s. From the age of six until I was fifteen, I took the school bus to school in the village of Fjärdhundra and then from age 15 to 18 to town.

When I was twelve, I joined a brass band and started going to the closest town, for band practice. Every Tuesday afternoon, my best friend and I took the bus directly after school to Enköping, 20 kilometres away. We'd buy some food, and if the weather permitted, we'd sit on a bench in our favourite park to eat before going to band practice. We'd always have to leave practice ten minutes early and run to catch the last bus home, often laughing the whole way. The bus would mostly be empty and we'd sit at the back, making silly jokes. It was a wonderful independence, with few problems except the risk of missing the bus.

When I was thirteen, we also joined a youth environmental organization. Meetings started in the early evening – every second Wednesday – so we'd spend the afternoons in town.

We discovered our favourite places, both indoors or outdoors, and the best ways to walk from one place to another. We saw the city as our playground; I don't remember ever feeling scared or threatened there. In fact, we probably felt safer there than in school; it was our carefree space, our leisure-time environment. My encounters with urban public space, as a young adolescent, were mostly unproblematic, lots of fun and explorative. They were also a practical necessity in order for me to be able to do the after-school activities I wanted. Now, as an adult woman, I seldom feel scared or insecure in public space in Sweden (even though I know I'm 'supposed to') and I generally go wherever I want to.

In 2005, I joined the ISAC research group and we did the survey with seventh graders in Stockholm, which is analysed in this thesis. I met many of these kids during the data

collection. They were fun to be with, smart, often very interested in the survey, sometimes bored, but they always had opinions. After reading their responses to the survey, I was amazed at how most of them had taken our questions so seriously, and dedicated themselves to giving honest and informative answers. They felt that this issue was important: several thanked us for making the study. I felt a responsibility to them to help their voices be heard; to show their perspective of public space. More recently, we had the privilege of doing focus group discussions with adolescents, who also were keen to share their opinions and experiences. Knowing how much my own childhood and adolescent experiences had affected me both then and now, this thesis is an attempt to paint a picture, from the perspectives of our study participants, of their encounters with public space.

BACKGROUND

Public space – i.e. the public areas to which everyone has access – is especially important for adolescents. They spend a lot of time in outdoor public space: when they travel to and from school, visit friends or do organized activities, ride their bicycles or skateboards, or just hang out by themselves or with peers. The nature of their time spent in public space impacts on their health, safety, social and psychological development and everyday practical life.

This study deals with adolescents' *perceived and self-reported* encounters with public space in Sweden, a high-income country where social policy and practice has long been concerned with the safety, accessibility and equality of public space. The study has a public health perspective and a focus on adolescents aged 11-16, in particular 13-year olds.

The importance of public space for adolescents

Adolescence is a period when individuals increasingly make their own decisions and choices, including ones about health behaviour such as physical activity and how to manage safety and risk (1,2). Aspects of the physical and social environment, as well as behavioural factors, are highly important for health outcomes (1). Injuries – in particular traffic injuries – are a leading cause of mortality and morbidity in this age-group (3). Mental health and psychosocial problems are also important, and are often seen as prominent by adolescents themselves (1,4). Health habits developed during adolescence may have a significant impact on the life-long health of individuals (1).

Adolescents struggle to become more independent from their parents, move in wider circles away from the home and orient themselves towards their peers – but they are too young for nightclubs or pubs, and might not be able to afford to hang out in cafés (5-8). Public space for many adolescents is an arena to meet peers, have other social encounters and explore the environment (5,6,9,10). They also need to move through public space to get to school and other activities, increasingly so as they grow older and are expected to manage more on their own.

As adolescents increasingly move around independently in more unfamiliar areas, in heavier traffic and at later hours than when they were younger, they also encounter the negative aspects of public space. For instance, when young adolescents start to

move more independently in traffic as cyclists or moped-riders, traffic injuries increase markedly, at least in Sweden (3). They also have to face an increased risk of violence, harassment, sexual assault and theft. These social threats may range from uncomfortable and frightening situations to serious crime. They may or may not come to experience crime firsthand but many adolescents will probably experience some degree of fear and harassment in public space (11,12). They will also be very likely to receive and share warnings, advice, stories and media reports about what threats lurk in the environments they move through on a daily basis, or in similar areas (11).

Safety and security are important dimensions of adolescents' encounter with public space. If public space is reasonably safe and navigable, it will be easier for all groups of adolescents to move around on their own more independently, which is beneficial from a health perspective in many different ways. One important public health aspect is that when adolescents can move freely, they often walk or cycle (13,14). For instance, those who walk or cycle to school – active commuting (13-25) - generally have higher levels of daily physical activity (15,26,27). In particular cycling to school is also associated with better cardiovascular fitness (28,29). Active commuting is believed not only to improve adolescents' health but also to lay the foundations for a physically active lifestyle during adulthood, and may thus have a far-reaching public health impact (13,30-32).

Being able to move independently in public space is important for the development of social and environmental skills (30). Experiences of the local environment early in life can affect the perception of public space later in life (33,34). Additional benefits from adolescents' independent mobility can be decreased emissions from cars, less traffic congestion around schools (26) and less pressure on parents to drive their children everywhere (35). Finally, adolescents' relationship to their local area is important for their construction of a personal identity and community connectedness (9,36). They want to see their own neighbourhood in a positive light because they feel it reflects back on them as individuals (9).

In sum, it is important to understand the nature of adolescents' diverse encounters with public space in order to promote safety, health, quality of life and development.

Various aspects of adolescents' encounter with public space

The concept of 'public space' is often used without a clear definition.¹ Generally it is taken to mean the interconnected network of areas that can be accessed by everyone (6,12,36-38). How to best define public space can depend on the target group and the question studied. For the study of young adolescents, it is relevant to focus on the environments that they can and do access: streets, parks, squares, and so on, but also ignored spaces such as parking lots or building sites; as well as the public transport system and green areas² (5,6,37). This is the delimitation of public space used in this thesis.

The human environment has often been dichotomized as being clearly divided between the 'public' and the 'private' (39). This dichotomy has been problematized however (40,39). Rather, there are different levels of public/private in all environments. For instance, for many adolescents, the local neighbourhood can be almost an extension of the home, while the city centre and other suburbs feel more alien (5,40).

Active commuting to school

One of the everyday occasions to interact with public space is during the trip to and from school. Active commuting to school by walking or cycling is relatively frequent in European countries, with rates ranging from 50% to 85% – e.g., Sweden (29); Estonia (29); Switzerland (16); UK (17,41,37,42); Denmark (28); Netherlands (43) and Spain (44). Most of these studies are based on a sub-national sample though, and not representative of the whole population. In Sweden, surveys show that between 45% and 68% of school children have actively commuted to and from school depending on the time of year and sample (29,45). In the US, active commuting in different studies ranges from under 5% to 50% (46-48,18,49,19), with rates being higher in western than in southern states (26,46). Other high-income countries like Canada and Australia show intra-country variations from 30% to 60% (50,20) and 15% to 60% (51,21,52) respectively. In middle-income settings, active commuting

¹ Koskela (1997, page 302) describes it as "...everyday publicly accessible spaces. This is not to deny that many of the so-called public spaces are increasingly privatised, and are not accessible for everyone but exclude some on the grounds of gender, age, race, sexuality, etc /.../ ...everyday spaces are not innocent, but are actively produced and bound into various and diverse dynamics of power and subjectivity..." (33).

² In Scandinavia, the public right – and responsibilities - of access to nature, including privately owned forests, has long tradition and is regulated in law.

could be assumed to be higher, like China, where it has been reported to be as high as 80-90% in some settings (53,54). One frequently cited study from 1990 showed that walking to school had decreased in Britain and Germany since the 1970s (41). A follow-up from 2000 suggests that this trend has continued for British *children* (10/11 year-olds) but not for adolescents (13/14 year-olds), where walking to school was on a similar level in 1990 and 2000 (37).

Active commuting is known to vary across sociodemographic groups and environments. Distance to school is one of the strongest predictors of active commuting in all contexts (15,16,18,42,43,55), and it is more common in urban than in rural areas (15,17,18,20). Studies of sex and age differences yield mixed results (26,15). However, active commuting generally seems higher around the ages 10-12 compared both to older adolescents (47,48,50,20) and to younger children (16). Sex differences are only sometimes observed. Mostly, boys are overrepresented among active commuters (18,20,49,56) but in other settings girls are more likely to actively commute (44). Above all, boys seem to be more likely to cycle compared to girls, while girls sometimes walk more than boys (16-18,20,44,47-49,52,57).

In some contexts, for instance in the US, UK, Australia and Spain, active commuting to school has been linked to lower household socioeconomic position (18,44,52,55). In a study of Spanish adolescents, it was especially connected to the mother's socioeconomic position (44). A Swedish/Estonian study, though, failed to find an association with parental level of education (29).

Among younger children, active commuting can be less common if parents report being worried about the child's safety (London) (42). This might not apply to adolescents, where studies in different countries show no association between parents' perception of traffic safety in the neighbourhood and active commuting to school, for the age groups 10-12 (Australia) (21), 6-14 (Switzerland) (16), or 5-18 (Canada) (58). The differences between these studies could also be due to setting rather than age.

Fears and perceived safety

Fear and insecurity is one factor that can affect children's and adolescents' experience of public space and limit everyday independent mobility (59,60). When younger children are asked to give their own reports on their relation to the local environment,

fear is often mentioned as an integral part of their everyday outdoor life, mainly fear of intimidating persons or of traffic (61-65). Adolescents' fears and perceived safety in public space have been less explored compared to children, adults and the elderly (66), though there are some studies including adolescents (8,11,40,67,68). Of course, a certain amount of fear, or at least apprehension, can protect from danger (61,69). Children can to some extent perceive risk as a positive aspect of public space. For instance Rasmussen (62) interviewed girls around the age of nine, talking about climbing a high tree as a fun challenge and necessary in order to learn something. Another girl in this study describes how the strange or slightly frightening people in her neighbourhood make the social environment more exciting and interesting (62,70). Sometimes, an environment that is 'too safe' can be perceived as boring (62,71).

However, studies focusing on women, children and the elderly have found links between perceived insecurity in public space and low levels of physical activity (60) (for a review). Improving the experience of safety in public space benefits in particular groups who perceive themselves as vulnerable, since they are the most likely to be limited by their fears (60). Anxiety (and fear of darkness) can also have a negative effect on adolescents' spatial skills such as the sense of direction (59). This has been shown to be one possible mechanism behind gender differences in knowledge of the physical environment – in that girls are overall more anxious³, and thus may need longer time to get to know an area or learn a route (59).

Many adolescents spend a lot of time in the local neighbourhood where they live (5,40). Children and adolescents often feel safer in a local and familiar area than in more distant and unfamiliar environments (40). Thus the local, well-known area can almost be defined as an intermediate sphere between private and public, between home and the outside world (40). How is this 'home ground' delimited? When adolescents are asked to draw a map of their local area, boys often make maps that encompass wider areas than girls, suggesting that they move in wider circles or feel at home in larger areas. (5,72). When you move around in an area it becomes familiar, which can make it feel more safe, at least as long as nothing frightening happens

³ The anxiety measured in the referred study (age group 10-17) was self-reported and included general anxiety, anxiety when doing a test, fear of dark and fear before/after the specific task performed in the study (walking through a maze). All types of anxiety were more often reported by girls. Anxiety was related to lower speed at walking through the maze at the first attempt, and to recalling fewer wayfinding elements (directions/landmarks) after performing the task. (59)

(9,33). Thus, fearlessness can reinforce itself – adolescents who are confident in public space reinforce their confidence by making themselves at home in the environments they frequent.

It is a common view of adults that adolescents (of either sex) think that they are ‘invulnerable’ to disease and injury, but this has not been shown in research (1 for a review). In all age groups, there is a tendency among most people to underestimate their own risk situation. But there are great variations between individuals and groups, and the perception of one’s own personal vulnerability or invulnerability is often founded in childhood or adolescence and can remain throughout life (1).

Much remains to be explored regarding which individual factors are associated with adolescents’ fears in public space. Girls are more likely than boys to report fear in public space (37,73). This difference between boys and girls seems to emerge or increase dramatically between the ages of 11 and 17 according to one study (73). Girls are generally more likely to report fears in other settings as well, not only related to the environment (74,75). This is similar to adults, where women report more fear than men both in public space (76) and in general (77). Adolescent girls can describe themselves as vulnerable in public space, but can also display a great deal of confidence and even a sense of ‘invulnerability’ depending on their personal background, living conditions and personalities (11).

Even less is known about the impact of contextual factors. Family climate and parents’ opinions about safety in public space can be assumed to be of relevance (12). The character of the local environment seems to be one important factor (37,78). In one Swedish study, living in a rented apartment was the variable that best predicted the feelings of insecurity in the local area, among 10-18 year-olds (67). Type of housing can be not only an indicator of family socioeconomic status, but can also act as a proxy for the type of environment (for instance apartments generally suggest greater urban density compared to detached houses). Busy traffic and many parked cars in the living area have been shown to be associated with adolescents’ perception of their neighbourhood as unsafe or not a good place to grow up in (78).

Other factors that affect the encounter with public space

For young adolescents, parents’ influence is still important (7) but with age, adolescents become increasingly less restricted by parents’ rules regarding their

access to public space (41,37) - also called mobility licenses (41,79). In Stockholm, young adolescents are allowed to move relatively freely, at least during the day (80). Parental licenses for adolescents' mobility vary by country, region and sex, with boys often being allowed to move more freely, (10,41,37). Qualitative studies from UK indicate that parents with immigrant (Asian) background were more restrictive, in particular for girls (10,37). How parents perceive the safety of the neighbourhood can also be relevant (12,37,58).

Traffic is a main feature of urban public space. Road traffic injuries are a major cause of mortality and morbidity among Swedish adolescents, and actually increase with age during adolescence (81). Though fear of traffic has been little explored among adolescents (or adults), as mentioned above high speed traffic is associated with a negative perception of the neighbourhood (78). Even when asked about fear of *crime* in public space, adolescents (aged 12-15, North-East England) may bring up speeding vehicles and traffic as a safety problem (8). Traffic and parked cars may also constitute a physical barrier in the environment - and an injury risk factor for pedestrians and cyclists. The perception of traffic as a threat has been studied among children (63,64,82), but not in this age group. Of particular interest is how traffic risk fits into the bigger picture of adolescents' perceived safety in public space, in 'competition' with other threats.

The association between factors

The different aspects of adolescents' relationship to public space seem interrelated in complex ways. As demonstrated above, perceived safety, independent mobility and environmental knowledge and confidence are often related to and affect each other. In addition, the different individual and contextual factors which are correlated with these outcomes can mediate, reinforce or counteract each other. For instance, it seems that the character of the local area has an impact on the association between sex and fear, in that when the area is perceived as relatively safe, the differences between boys and girls can be smaller (37).

Theoretical approaches

Adolescents' views and perceptions of public space are influenced by a variety of different things, which are sometimes in conflict with each other (9,83). A number of theoretical approaches have a bearing on what it means to be an adolescent out and

about in public space, and on the context and interrelations of these different sources of influence.

Adolescence is a life stage, but adolescents are also a social category. The sociocultural meaning of adolescence varies depending on the time period and cultural context (2). Early theory and research on children and adolescents mainly focused on the individual level, rather than on them as an important group in society (2,70,84). Furthermore, the focus was generally on socialization and psychosocial development, regarding children and adolescents as passive ‘receivers’ of guidance and tutoring (70,84). But since the 1980s, a new paradigm has emerged, emphasizing the agency of children and adolescents, and their interaction with adults, peers and the environment. Adolescents’ health and welfare are still often evaluated mainly in terms of what they mean for their development and future health. But several authors, writing in the paradigm of sociology of childhood, point out the importance of recognizing children’s and adolescents’ right to a good *current* health and wellbeing, whether or not this has developmental implications. (70,84,85)

Ecological model

The ecological model of human development, defined by Bronfenbrenner, places the individual in the context of a complex and multilayered environment. (2,86)

Following this model, adolescents’ encounters with public space affects and is affected by a number of interrelated relationships and settings. At the centre is the individual, where several characteristics are relevant for the interaction with public space, not only sex and age, but also for instance opinions, self-confidence, personal history and the expression of gender (5,9,11,68,87). The individual adolescent is embedded within several local settings (*microsystems*), like school, family, peer groups, neighbourhood, local organizations and sports clubs. Adolescents make their own experiences of the physical and social aspects of public space but they also formulate their world view in interaction with family members, peers and other people close to them (7,9,88).

The interrelations and interactions between these local settings form a network around the adolescent (*mesosystem*). In this network, influences from one setting can be mediated through another setting, Bronfenbrenner calls them *second-order* or *higher order influences* (86). For instance, the character of the local environment does not only affect the adolescent directly but can also affect parenting strategies

such as the advice or rules parents give to their children regarding being out on their own (37). Within a group of peers, a common ‘bank of stories’ can be built about experiences in public space, which contributes to formulating a shared image of public space as a friendly or hostile environment (71).

The next level is the larger context in which the local settings are embedded (*exosystem*), contexts where the individual is not a participant but which have an impact on his or her life. This includes formal institutions such as municipal services, for instance the structure of the local public transport system, which can facilitate or limit adolescents’ access. Another aspect is municipal urban planning strategy and the motivations and opinions of the individuals involved in this planning. But this larger context also includes informal social networks which are one step removed from the individual (like ‘friends of friends’). For instance, parents’ opinions regarding adolescents’ access to public space can be affected by other adults’ opinions on what are the ‘right’ parenting strategies – sometimes ‘forcing’ parents to be more protective than they want to be because they feel that other adults expect it of them, or the opposite, be more lenient than they would like to be (12). Media reports can also have a strong influence on adolescents (9,88).

The overarching sociocultural institutional framework of the society (*macrosystem*) provides the ‘blueprint’ for all the components of a setting, formal as well as informal. In this case, it can refer to dominating paradigms or trends in urban planning. Also important are the general norms for accepted gender behaviour and safety in public space, and ideas regarding adolescents’ interactions with peers, adults and the built environment (6,11,73). In the last case, adolescents are affected both by general norms, and by the ideas expressed in the different facets of global or local youth culture (9,88).

Doing gender

Taking a gender perspective helps to understand the differences between girls and boys which have been found in relation to fear in public space, environmental knowledge etc, as discussed earlier. There are variations within each sex and overlaps between the sexes, and other factors such as class and ethnicity are also important. But it is necessary to recognize that girls and boys have to position themselves in relation to divergent basic assumptions about males and females in public space. These gendered positionings have been explored regarding fear among adult women

and men (11,33,38,39,89-91) but less for adolescents - for exceptions see Goodey 1997 (73) and Cops & Pleysier 2010 (68). However, adolescence has been theorized as a period when these gendered positionings may be established or consolidated (73,68). For instance, it has been documented that working class boys in the 11-17 age-group cultivate 'fearlessness' in public space as a way of orienting themselves towards 'being a man' (73).

Males have traditionally been associated with the public domain and females with the family and home (39). Children and adolescents are another group which has often been excluded from public space (6,12,92). The attempts to exclude children (and women) from public space is often explained as being 'for their own protection' (6,11,12). Adolescents, on the other hand, in many contexts have been seen as problematic or even threatening in public space, and thus unwelcome (6,8,92). When it comes to *children*, they are often seen as vulnerable in public space regardless of sex (12,40). Sometimes parents describe girls as more sensible and better at managing risk than boys - but on the other hand both girls and boys learn early that girls are particularly vulnerable to sexual violence in public (12). How and to what extent safety in public space is constructed by young adolescents as gendered remains to be explored.

Gender is often discussed in terms of gender 'roles' but it has been pointed out that this concept is too rigid for the dynamics of constantly changing gendered behaviour (93). Rather, gender can be seen as behaviour, something done through everyday action and interaction. We 'do gender' continuously in our everyday lives, positioning ourselves in relation to existing ideas of socially acceptable behavior for males and females – and thus contribute to the ongoing construction of these ideas. (93) Among adults, it has been explored how risk of crime, mainly sexual violence, in public space is used as a way to 'do gender', to construct ideas of what is essentially male and female (38,89,90). For children, some gendered ideas of threats have been documented (10,12,40), though it sometimes seems more common for children or their parents to describe children as generally vulnerable in public space, irrespective of gender (12,40).

Both women and men 'do gender' through describing women as more fearful and vulnerable in public space (89,90,92). This is strongly tied to the fear of rape, which is reinforced through women's experiences of sexual harassment (90,91). The image

of women as vulnerable in public space contributes to the restriction of women's freedom and access to public space by affecting the way they behave and dress, the people they meet and places they visit (11,33,94). Seeing females as vulnerable is also instrumental when constructing the opposite image - masculine stereotypes of men as strong, fearless and possible protectors or potential perpetrators (89,91). Levels of reported fear of crime are associated with gender identity – persons who score high on 'masculinity' report lower fear and vice versa. This applies also to the age-group 14-18; and the effect seems stronger in females than in males. (68)

The image of children's vulnerability and lack of competence in public space has been described as a way to control children and limit their access, similar to how the perceived vulnerability of women has limited their access to the public arena (12,40). How adolescents position themselves in relation to these gendered and age-related ideas of vulnerability in public space remains to be explored.

Methodological approaches

In determining how the different factors come into play and interact, and in trying to understand adolescents' encounters with public space, it is necessary to turn to the adolescents themselves. Children and adolescents have a right to be heard in matters of importance to them, a right formulated in the United Nations Convention on the Rights of the Child (CRC) (95,96). This includes of course social policy and planning. Not only do they have the right to be heard, but they are also experts on their own life situation and the character of their environment (12,97). Concerning information related to health behaviour, quality of life and adolescents' experiences of public space, it is necessary to collect their own opinions and experiences, in order to obtain an accurate picture (8,12,74,95,97,98). For instance, parents are not always aware of where their adolescents go or what they do (99), if they have frightening experiences in public space (12) or what they are afraid of (74).

Generally, active commuting has been measured using self-reports from children (17,18,20,28,42,48,49,51) or proxy-reports from parents (16,21,46,47,50,52). The older the child, the more suitable it is to obtain children's self-reports. The reference period varies – current/previous week/day (18,20,42,50) or *usual* week or mode of

transport (16,17,28,46-49,51) – as does operationalization of active commuting in terms of times per week (18,46,48) or kilometres travelled (53).

In many studies fear of *crime* (i.e. a more narrow focus than here) is measured by asking if fear has made the respondents refrain from going out in their neighbourhood, in particular after dark, or from going to certain areas (66,68).

Among adolescents, this might be a less good measure, since many adolescents may use other safety strategies, such as going out in large groups of peers (8,92). This measure might also exclude those adolescents who sometimes have to go out even if they are scared (for instance to go to school).

Apart from active commuting to school, which is mostly measured using surveys (17,18,20,28,42,48,49,51), children's and adolescents' encounters with public space has often been studied with qualitative or mixed methods such as maps (9,97,100-102), drawings (97), walks (62,97), focus groups interviews (9,10,71,73) and activity diaries (9,35,62).

Rationale

From a public health perspective, one can posit that the use, safety and security of the public, outdoor environment impacts positively on adolescents' physical and mental health as well as their developmental prospects. This thesis investigates aspects of adolescents' encounters with the outdoor environment that are of relevance in that respect: their active mobility, their fears and perceived safety, and various individual and contextual factors likely to be associated with those.

Active commuting to school has been studied in many settings but not to any great extent in the Scandinavian context, where active transport is promoted and traffic safety has long been a priority. Neither do we know much about adolescents' fears in their local neighbourhood or about what individual or contextual factors are associated with such fears and how they interact with one another. How fear of and within the traffic environment fits into this is uncertain.

The studies are conducted among Swedish adolescents, above all from the Stockholm region, a part of the world where young people's mobility is high and supported in policy. How various determinants of adolescents' perception and use of public space relate to one another has seldom been studied in general and in such context in

particular. An ecological and a gender perspective are adopted and the studies rely entirely on self-reports from adolescents. Using a gender perspective to explore the ideas of threats in can, among other things, contribute insight and understanding of gender differences in fear and in related circumstances and consequences. The ecological model will serve as a frame of reference that sets the stage for the various sources of influence coming into play. In particular influences from the *microsystems* (family, neighbourhood etc) and *mesosystem* (interrelations between family, neighbourhood, peers etc) are studied, but also some influences from the *exosystem* (for instance newspaper reports and local incidents) and *macrosystem* (like gender norms) are considered in different studies.

Based on the model, the larger setting in which all the respondents live - Sweden, with a focus on Stockholm – provides an exosystem where adolescents' safety and mobility can be expected to be relatively high, and the ambition - though not always the reality - is to constantly improve the accessibility and inclusiveness of public space, with input from all stakeholder groups.

AIM AND RESEARCH QUESTIONS

This thesis aims to increase knowledge about adolescents' perceived safety and mobility in public space, and how it relates to individual and contextual factors.

The following research questions are addressed:

Active commuting

How common is active commuting to school among Swedish adolescents? Are there differences based on sociodemographic and socioeconomic factors? (Article 1)

Fears in the neighbourhood

What are boys and girls afraid of in their local environment? (Article 2, Article 4)

Which living conditions are related to reporting fears in the neighbourhood? (Article 2)

Patterns of mobility

What patterns exist between mobility-related factors and adolescents' sociodemographic characteristics? How do these patterns relate to active commuting? (Article 3)

Ideas and images of threats in public space

What are girls' and boys' ideas and images of the threats they face when moving in public space? How do they construct traffic as a threat in that context? (Article 4)

METHODS AND MATERIALS

Setting

The thesis has two settings. The major part of the thesis has a regional setting (the Swedish capital city, Stockholm, and surrounding areas); while one study has a national setting (Sweden). The regional study population includes adolescents in grade 7 (quantitative material) and grade 9 (qualitative material); the national study population includes children/adolescents in grade 5, grade 7 and grade 9.

Stockholm County, with a population of approximately two million and approximately 24 000 children in 7th grade, is the larger administrative unit of the Greater Stockholm region, consisting of 26 municipalities. It covers the whole metropolitan area including the suburbs, and some more rural areas. In Stockholm (as in Sweden generally) parents tend to allow children aged 13-14 years a high level of independent mobility, at least during daytime (80).

In Sweden, children's and adolescents' active transport and traffic safety are promoted (3,57,63,103-108). A majority of children have less than two kilometres to school, in particular in urban areas (45). Not only is active commuting to school facilitated by the school location but it is generally promoted in policy and practice when possible, and when not possible, a school bus service is provided (107,109). The vast majority of children go to public schools, 92% during the study period (110).

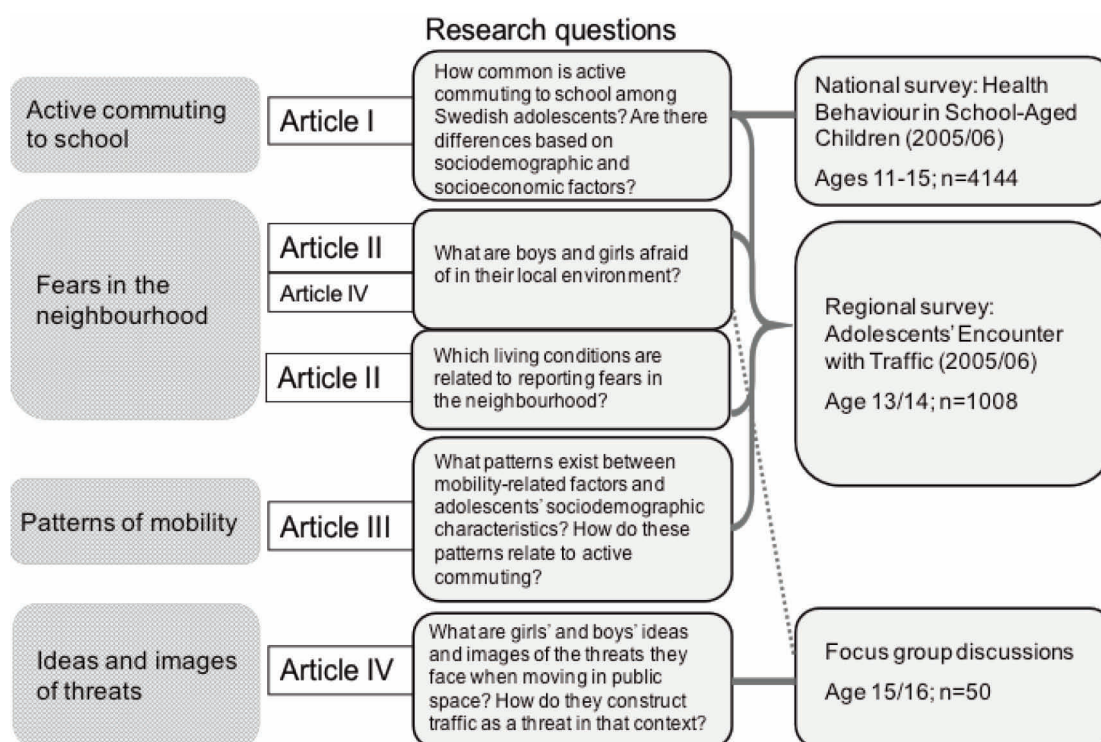
The right for children and young people to be heard is stated in national goals and guidelines for policies related to children, public health and transportation (111,112,108). Much of the policy and practice impacting on children's lives is determined in municipal boards and county councils, where the work related to the Convention on the Rights of the Child is moving slowly forward, though a lot still remains to be done (113). Several municipalities have formalised systems for the participation of children and young people, known as youth councils (113).

The welfare of children and adolescents in Sweden is generally very good in an international perspective. However, it has been noted that the prevalence of psychosocial and psychosomatic health complaints is high, in particular among the older girls (15 years old) (115,114).

Material

The thesis is based on material from three sources, as described below. They were analysed with different methods for the four articles included in the thesis. Article I used one national and one regional survey; Articles II and III use the regional survey and Article IV uses material produced by focus group discussions.

Figure 1. Summary of research questions and data sources



1. Regional survey: Adolescents' encounter with traffic (AEwT)

(Used in Articles 1,2,3)

During the academic year 2005/06 a survey on mobility was conducted among a sample of 7th grade adolescents (i.e. aged 13 years \pm 1) in Stockholm County, Sweden (n=1008). The aim of the survey was to explore social differences in mobility, exposure to traffic risk and perceived safety and security.

Questionnaire

A web-based questionnaire was completed on school computers, during class time and supervised by teachers or members of the research team. The survey was answered at some point between October 2005 and March 2006. Passwords to the online survey were randomly handed out to each participant on paper.

The questionnaire encompassed a broad range of questions related to mobility, commuting to school, fears and coping in the neighbourhood and the physical and social environment in the neighbourhood.

Transport to school was measured by asking respondents what type of transport(s) they had mainly used to get to and from school during the current week. They could select multiple options, and reported to school and from school separately.

Fears were measure by asking “Do you sometimes feel scared or unsafe in the area where you live as a result of one or more of the following things?” Ten options were available (see Appendix 1), including an open response (see box 1 for examples of open responses.) Open answers for *Other fear* were reviewed (12.3% had open answers) and matched with closed alternatives where relevant (9.8%, n = 99 cases).

Strategies to avoid fear. Adolescents’ strategies to cope with fear may limit their mobility - such as choosing to stay at home or take another route - or to some extent facilitate mobility, such asking for company (61). Strategies were measured with the question: “*What do you normally do to avoid feeling scared or insecure in your neighbourhood?*” (see Appendix 1 for response options, and box 3 for examples of open responses.) Respondents were given the opportunity to respond to this even if they had not reported fear.

Negative experiences in the neighbourhood. In order to explore respondents’ knowledge of safety and risk in their neighbourhood, one question was: “Have you or your friends ever been subjected to any of the following things in your neighbourhood?: Being hit; Having something stolen/taken from you; Being chased.” If they wanted to share more information, they could also give an open response. Some examples of the many open responses to this question can be found in box 2. Nine respondents who had reported a negative experience in the neighbourhood but with the clarification that “*It was just for fun*” or similar were coded as *no negative experiences*.

Where they live. The respondents were asked what type of house they lived in, how long they had been living in the area and whether they lived in one or two households. For children of divorced parents it is common in Sweden to live alternately with both parents, which was the reason for the last question. If they lived in two households, they were instructed to report the conditions only for the home

where they were staying at the time of the survey, regardless of how much/often they live there. Less than 1 % (n=9) reported living less often than half the time in the home for which they were reporting. They were also asked to report how long they had lived in the neighbourhood.

Family. Parents' country of birth was reported for both parents. Family composition was reported, including number of adults, older siblings and younger siblings in the home.

Car/bicycle ownership. Car ownership of the family was reported as "no car", "one car" or "two or more cars", as well as respondents owning or having access to a bicycle.

Traffic situation in the neighbourhood. Respondents were asked to grade the traffic speed and number of parked cars in their neighbourhood. A large number of parked cars and busy traffic have been shown to be associated with adolescents' perception of their neighbourhood as unsafe or not a good place to grow up in (78). A large number of parked cars may also constitute a physical barrier in the environment – and an injury risk factor for pedestrians and cyclists.

Parents' licensing for mobility. For different transportation situations, respondents answered the question "What do you think 7th grade students should be allowed to do?", and then what they thought their parents' opinion was. Separate categories for daytime and evening were given for each transport situation (e.g. "Riding a bike in the day"; "Taking the bus in the evening"). Another approach on parents' views on adolescent mobility was to ask respondents whether they believed their parents trusted them in traffic.

Sample

The study base consisted of 7th grade students at schools in Stockholm County during the period October 2005-April 2006 (n ≈ 24 000). 70 schools were randomly selected from all the schools in Stockholm County which were licensed to provide 7th grade school education in the autumn of 2005 (n=365), and had more than 15 students in 7th grade on 15 October 2004 (n=288). In October 2004 these 70 schools had in total 6 083 students in grade 7. The random selection was made by Statistics Sweden, the central government agency for official statistics.

A total of 44 schools chose to participate in the survey. With a few exceptions, only one class per school was selected for the study (n=36) but in some, either two classes or a group of students larger than a normal class size were included (n=8). At each school, the decision on which class would participate was made by the school principal or the responsible teacher.

In the participating schools, a total of 1 299 students were invited to take part in the study on a voluntary basis. Written consent was requested from parents. The overall response rate was 77.6% (79.7% among girls and 75.6% among boys) – resulting in a total of 1 009 respondents, of which one was removed due to both open and closed responses being inconsistent.

2. National survey: Health Behaviour in School-aged Children (HBSC)

(Used in Article 1)

The survey Health Behaviour in School-aged Children has been performed every fourth school year since 1985/86 both in Sweden and in an increasing number of countries throughout the world. The study reaches fifth-, seventh- and ninth-graders (ca 11, 13 and 15 years old). In Sweden, the survey is performed by the Swedish National Institute of Public Health, at the end of November/beginning of December. The questionnaire is completed on paper, during class time. Generally, the teacher is responsible for data collection in each class. Students complete the questionnaire anonymously and hand it in to the teacher in a sealed envelope (114).

Questionnaire

The survey is based on a set of basic questions which are the same each year and in every country. In addition, one or more in-depth themes are included each time the survey is performed. These are common for several countries. Each country can supplement the questionnaire with its own questions. In the survey 2005/06, which is used here, the common in-depth theme focused on mental health, physical activity and school environment.

Transport to school. In the Swedish survey 2005/06, a question on how children travel to school and home was included, formulated the same as in the “Adolescents’ encounter with traffic” questionnaire (see above) (114).

Sociodemographic variables were gender, school grade, Swedish origin, type of housing and level of urbanicity in the local area. Respondents' self-reported country of birth was classified as "Sweden" or "Other country". Birth country of parents (reported by child), was coded in three categories - both born in Sweden (or their only parent, if applicable); both (or their only parent) born outside Sweden; one of the two born in Sweden. Type of housing was reported as living in a detached house, row-house or apartment. Urbanicity - Respondents were asked what kind of area they lived in, with five options of different urbanicity, aggregated here to four categories.

Socioeconomic variables were household socioeconomic status and family car ownership. Respondents reported the work situation of each parent by first reporting if the parent has employment, then the place of work and finally what type of work (114). Based on these questions, the socioeconomic group of the mother and father of each respondent were classified. The family's weighted socioeconomic group was used based on the "dominance" principle developed by Erikson (116). This principle is built on the conception of a dominance relationship between different work categories and their influence on the ideology, attitudes and consumption patterns of the family, and the category most important for the child's life prospects. Accordingly, each participant was allocated to the socioeconomic group of the parent coming first in the following list of socioeconomic groups used in the current study, 1) Intermediate- to high-level salaried employees 2) Self-employed persons (including farmers) 3) Assistant non-manual employees 4) Manual workers 5) Others (such as students, housewives, persons on sickness and disability pensions and the long-term unemployed). Classification of household socioeconomic grouping could be assigned to 60% of fifth-graders, 68% of seventh-graders and 70% of ninth-graders.

Sample

The study base consists of students in grade 5, 7 and 9 in Swedish schools during November-December 2005. First, Statistics Sweden draws a random sample of schools per grade from all of Sweden. Then, one class per school and grade is randomly selected. The survey 2005/06 was answered by 4415 students (85%), of which 4144 responded to the question regarding commuting to school (114) and were thus used for this study.

3. Focus group interviews

(Used in Article 4)

A qualitative study – focus group discussions - was conducted among 9th grade students in and around Stockholm (117). The purpose was to learn more about adolescents' attitudes to bicycle helmets. Studies on adolescents' risk behaviour needs to take into account the conceptual world of the adolescents, and what risks they consider to be the most serious (118). Thus the first half (ca) of each focus group was dedicated to talking about what risks the adolescents themselves saw in public space and how they interpreted them.

Ten focus group discussions were conducted with a purposeful sample of 15-16 year old adolescents, between December 2008 and May 2009. By that age, most Swedish adolescents have gained a considerable degree of license from their parents to move around on their own.

Table 1. Summary of focus groups

School	Type of municipality	Interview no	No of students	Sex	Inter-viewer	Assistant
1	Quiet suburb, ca 9300 inh.*	1:1	4	F	ME	KJ
		1:2	6	M	ME	KJ
2	Stockholm city	2:1	7	M	ME	KJ
		2:2	3	F	ME	KJ
		2:3	3	F	ME	KJ
		2:4	5	F/M	ME	KJ
3	Town, ca 13500 inh.*	3:1	5	F/M	ME	KJ
		3:2	6	M	KJ	ME
4	Town, ca 6900 inh.*	4:1	5	F	ME	KJ
		4:2	6	F	ME	KJ

* Number of inhabitants is for the year 2005

Data collection

The focus group interviews were conducted in school, during school hours, in quiet group rooms or similar. Group formation was based either on the school schedule of the participants or on participant preferences, with the result that most groups consisted of classmates. The aim was to use gender separated groups, and eight of ten groups were gender separated. To get homogenous groups, studies indicate that with children and young adolescents, gender separated focus groups are preferable (119).

However, for scheduling reasons, it was not possible to keep all the groups gender separated.

One interviewer and one assistant was present for each interview, both female. A semi-structured interview guide (pre-tested with a pilot group) was used covering the themes of what types of transport participants used, which places they considered to be safe, potential threats when moving around outdoors, how to cope with potential threats, and attitudes to bicycle helmets. The interview guide was revised slightly after the first few interviews. The interview guide listed possible (but not exclusive) ‘probe questions’ to be asked if they were not brought up by respondents - including if there were potential threats from traffic or from dangerous persons; if there were differences between daytime or evening and if there were different threats for the opposite sex. To enable the adolescents to talk about perceived threats without using words such as “fear” or “scared”, which might not as easily be accepted by certain respondents, in particular boys, the question on potential threats was phrased “At your age, what do adolescents need to be wary of when moving around outdoors?”

Sample

Schools in different areas were approached, and four schools agreed to participate. Thus, students in these four schools, in total seven classes (grade 9) were approached. The schools belonged to different municipalities with different types of traffic environments, in Stockholm or Uppsala Counties. Unfortunately, schools in more resource-poor areas declined participation.

Students and teachers received written and oral information and gave written informed consent, and an information letter for parents was given to students to take home. 25 boys and 25 girls participated (see table 1). Participants came from mostly middle class areas, including students of other ethnical origin than Swedish.

Data treatment

Article I: Active commuting to and from school among Swedish children – a national and regional study

At the national level, using data from HBSC, the prevalence of various forms of transport (active commuting, public transport or car/moped either to or from school or both) was compared across age groups and presented with 95% confidence intervals.

For 7th graders at both national level (HBSC) and regional level (AeWT), we looked closer into prevalence of overall active commuting, by walking and cycling. Here, respondents from Stockholm were removed from the national sample (HBSC). Results are presented as proportions with 95% confidence intervals.

Thereafter, on national data (HBSC), all three age groups, logistic regression was used to analyse differences in active commuting respectively by each of the sociodemographic variables (gender, school grade, Swedish origin, type of housing, urbanicity in the area of residence). Adjustments were made for family car ownership and urbanicity in the area of residence.

Because initial analyses indicated that the importance of socioeconomic variables (household socioeconomic status, car ownership) for active commuting differed between urban and rural areas, analysis of the relationship with socioeconomic status was stratified into urban and rural areas. For this analysis, metropolitan areas and cities were aggregated to form “urban areas” and villages and rural areas aggregated to form “rural areas”.

To account for the clustered sampling (respondents were clustered within schools), the robust between-cluster variance estimator was used to calculate confidence intervals, using STATA’s cluster command (version 10) (120).

Article II: Exploring the neighborhood: a web-based survey on the prevalence and determinants of fear among young adolescent girls and boys

Data from the survey “Adolescents’ encounter with traffic” was analysed. Differences in reported fears between boys and girls were presented with 95% confidence intervals. The relationship that sex, housing, family characteristics, individual and peer negative experiences in the neighbourhood, parental licensing and length of stay in the neighbourhood have with fear disclosure was assessed through multivariate logistic regression. (STATA, version IC 10.0)

Gender-specific analyses were also conducted, with the results presented as OR with 95% CI. The sociodemographic variables showing a significant relation with fear, for boys and girls respectively, were analyzed with multivariate logistic regression analysis, controlling for socio-demographic variables and bad experiences in the neighbourhood. Gender stratified analysis of the impact of parental licenses were controlled for type of housing and Swedish-born parents.

Article III: Young adolescents' independent mobility - Related factors and association with transport to school

Data from the survey “Adolescents’ encounter with traffic” was analysed. Cluster analysis was performed on a series of sociodemographic variables and factors that can affect young adolescents’ mobility, such as fears, traffic situation and parent/child opinions on mobility (18 variables and 50 categories). The coded values of the variables were analyzed simultaneously, using a classification method called the Hierarchical Ascendant Classification (HAC) (121-123). The HAC (121) is a cluster analysis method suitable for the treatment of categorical data as is the case herein. In the statistical software used (SPAD version 6.5), it is suggested that the HAC is applied following a Factorial Analysis of Correspondence (FAC) (122,123) performed on the original categorical data. The combined use of the methods in injury studies has been described in greater detail elsewhere (124) and applications in safety studies can be found from road traffic settings (125,126), child home injury (127) and alcohol-related injury (128).

In this study, the HAC was performed on the first six factors of the FAC, i.e., using the coordinates of the variables analyzed on the first six factorial axes.

Then, the clusters resulting from the analysis were compared in terms of respondents’ active commuting to and from school (walking or cycling); and whether their family owned a car. For each question (walking, cycling and car ownership), the proportion by cluster was presented with 95% confidence intervals.

Article IV: Adolescents’ perceived safety and security in public space - A focus group study with a gender perspective

The material from the focus groups was analyzed with discourse analysis. Discourse analysis explores how people construct meaning and understanding of their reality. ‘Discourse’ is here used, as described by Johnston (129) ‘...ways of talking that both create and are created by /.../ ways of thinking’, or in other words, communicative practices through which people construct and communicate their understanding of reality and of their own position in reality (130). Discourses may be overlapping or contradictory and the analysis aims to map different discourses surrounding a particular issue.

Focus group discussions were audio recorded, and notes taken, and transcribed verbatim. Transcripts were read through and interviews listened to repeatedly.

Transcripts were coded with overarching codes to organize the material thematically, using a combination of preconceived codes and codes emerging from the data. Codes were overlapping, to facilitate exploration of different dimensions. Examples of codes are gangs, traffic, age, day/night, gender of other, gender of self, helmets etc. For this study, all coded material concerning potential threats and perceived safety was extracted to form the data set for analysis.

The material was examined for subject positions, patterns of meaning, contradictions and metaphors to identify discourses on threats to safety. Finding subject positions meant identifying the 'who' and the 'to whom/what' of each statement and analyzing how different words, phrases and meanings were attached to different positions of subjects.

Interview transcripts and recordings were constantly revisited during the analysis, and findings compared with other parts of the material, moving back and forth between analyzing the material as a whole and each interview separately. The names of participants have been changed.

Some ethical considerations

To respect the integrity of the research subjects is particularly important in research with children and young people, who are at a disadvantaged position in relation to the researcher.

Adolescents encounter with traffic Prior to the data collection, a letter was given to students with information regarding the study, including that participation was voluntary and that they could withdraw at any time. Written consent was requested from parents, and oral consent from students. Passwords were randomly handed out to participants, which means there was no connection between individuals' identity information and their responses in the data material. All results are presented at an aggregate level, avoiding anything that could be used to identify individuals.

Health Behaviour in School-aged Children. Students filled in the survey during class time and turned in a sealed envelope.

Focus group discussions: Students and teachers received written and oral information and an information letter for parents, and gave written informed consent. An ethical

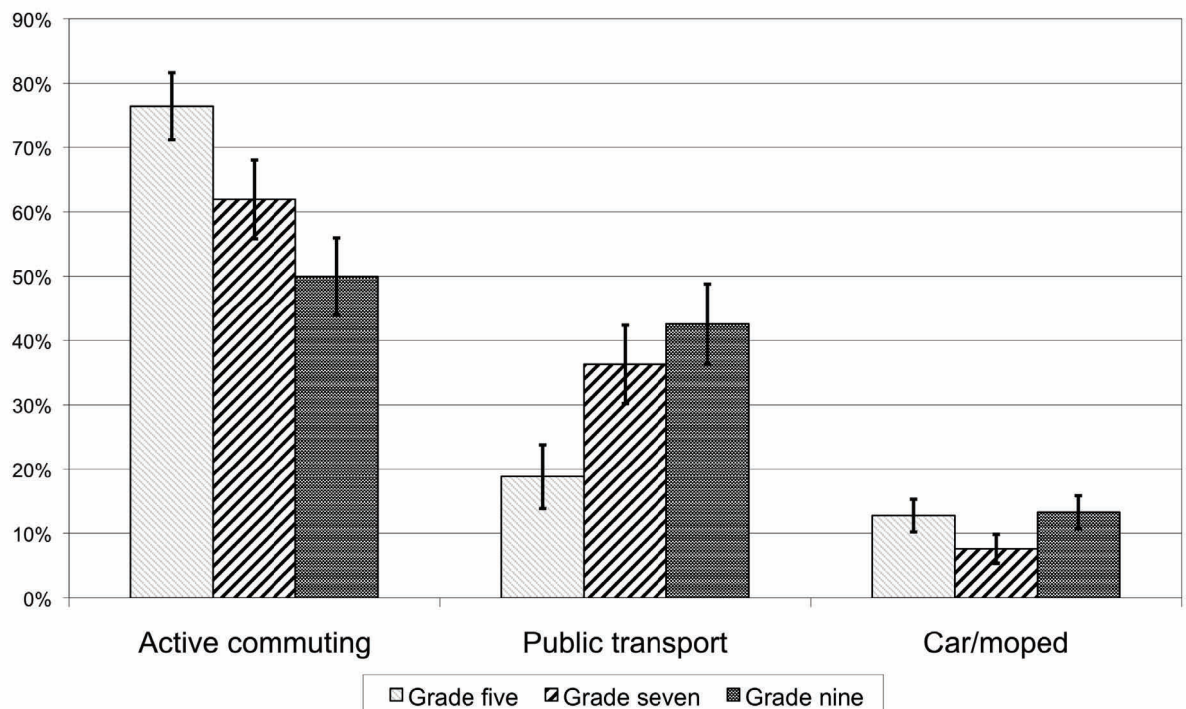
consideration of focus groups is that confessions shared are heard by all participants, thus complete confidentiality cannot be promised (119). Though the topic of this study might touch on sensitive issues, the questions concerned general opinions rather than personal experiences. In the beginning of discussions, the participants were informed that they were free to leave the interview at any time, or keep silent on topics they did not want to talk about, and they were asked to not afterwards divulge information given by other participants. The researchers also handed out their contact information, in case participants later wanted to get in touch.

RESULTS

Article I: Active commuting to and from school among Swedish children – a national and regional study

Active commuting was reported by 62.9% of the national sample (37.8% walking and 25.6% cycling at least one way). However, it decreased significantly with age: 76.4% among fifth graders (approx. 11 years old), 61.9% among seventh graders (approx. 13 years old) and 50.0% of ninth graders (approx. 15 years old). Public transport on the other hand increased with age: 18.8% of fifth graders, 36.3% of seventh graders and 42.6% of ninth graders. Only around 10% in any age group travelled to and/or from school by car or moped, though significantly fewer in the 7th grade compared to both grade five and nine.

Figure 2: Active commuting, public transport and car/moped use to or from school in grades five, seven and nine, in Sweden, with robust 95% confidence intervals. Data from HBSC 2005/06, n=4144



Standard error adjusted for 216 schools.

Each mode of transport is presented as used either to or from school or both, thus the columns can add up to more than 100%.

For 7th graders, prevalence of active commuting was quite similar in Stockholm (64.5%) and the rest of Sweden (58.5%) (95% CI 55-74 and 51-66; p-value 0.005) but the mode of active commuting differed: in Stockholm, more than half of the seventh graders walked, but in other parts of Sweden barely one in four did

(difference: 0.32, p-value <0.0001). Instead, a third of children in the rest of Sweden cycled (difference compared to Stockholm: 0.17 p-value <0.0001). Boys and girls did not differ significantly from each other in their mode of transportation, except as regards cycling to school in Stockholm, where 20.4 of boys but only 8.1% of girls cycled to school (difference 0.12, p-value <0.0001).

For all age groups and the whole country, active commuting was significantly more prevalent among children living in a row-house (OR 1.7; 95% CI 1.3-2.3) or apartment (OR 1.9; 95% CI 1.4-2.7) compared to a detached house. Differences according to Swedish origin were not significant after adjusting for car ownership or urbanicity. Children in medium-sized cities reported active commuting significantly more compared to metropolitan areas (OR 2.2; 95% CI 1.6-3.1), while children in rural areas reported less active commuting (OR 0.1; 95% CI 0.0-0.1).

In *urban areas* children of manual workers were more likely to use active commuting compared to intermediate- and high-level salaried employees (OR 1.6; 95% CI 1.2-2.2), while in *rural areas* the children of self-employed persons (including farmers) were less likely to use active commuting compared to those of intermediate- and high-level salaried employees (OR 0.5; 95% CI 0.3-0.8). In rural areas, children in two-car families used active commuting significantly less than children in no-car families (OR 0.2; 95% CI 0.1-0.5); and significantly less compared to children in one-car families in both urban and rural areas (OR urban areas 0.7; 95% CI 0.5-0.9; OR rural areas 0.4; 95% CI 0.4-0.6).

Article II: Exploring the neighborhood: a web-based survey on the prevalence and determinants of fear among young adolescent girls and boys

A total of 60% of the girls and 40% of the boys reported experiencing fears in their neighbourhood. For girls, the most commonly reported fear was darkness, followed by unpleasant adults, adolescents, traffic and dogs or other animals. For boys, the most commonly reported fear was adults and adolescents, followed by traffic, darkness and dogs or other animals. Gender differences were significant for all of the most common fears, in particular fear of darkness.

**Box 1. Examples of open responses,
Adolescents Encounter with Traffic, 7th grade.**

Do you sometimes feel scared or unsafe in the area where you live...?

I don't like walking in the park on my own when it's dark. It's a bit creepy and I don't want to bump into other people when it's dark outside. It can feel a bit afraid that I might get raped or assaulted. I'm not scared if I'm with someone though. (Girl)

people who walk around looking like drug addicts..... can be a bit scary sometimes..... (Boy)

I live quite close to a school so there are quite a lot of kids going around smoking in my area.. So as they don't get caught by the teachers.. Its not very nice.. And it's also the cool kids that smoke and I'm a bit scared of them.. Imagine if they forced me to start smoking when I walk past.. /.../ I don't want them to hang around our neighbourhood!!! Just think if there was a fire because they forgot to put their fags out. Sometimes they hang around near our garage as well.. I hate it!! I want to move if things go on like this.. :((Girl)

Me, my parents and other people in this area are all scared of paedophiles and child-abductors. (Girl)

It's scary having to walk in the middle of the road when the snow-plough has piled up the snow on both pavements (Girl)

People high on drugs and booze drive around the area and it sounds like World War Three sometimes. There are also 18-year-olds driving around like maniacs. (Boy)

Dogs that have been let off the lead. And owners who don't care about their dog and what it does and that's really bad (Boy)

I'm not scared of anything in my town because it's very quiet there because many old people live there and you have to be a calm person to live there (Girl)

Gangs that are drunk and are looking for a fight (Boy)

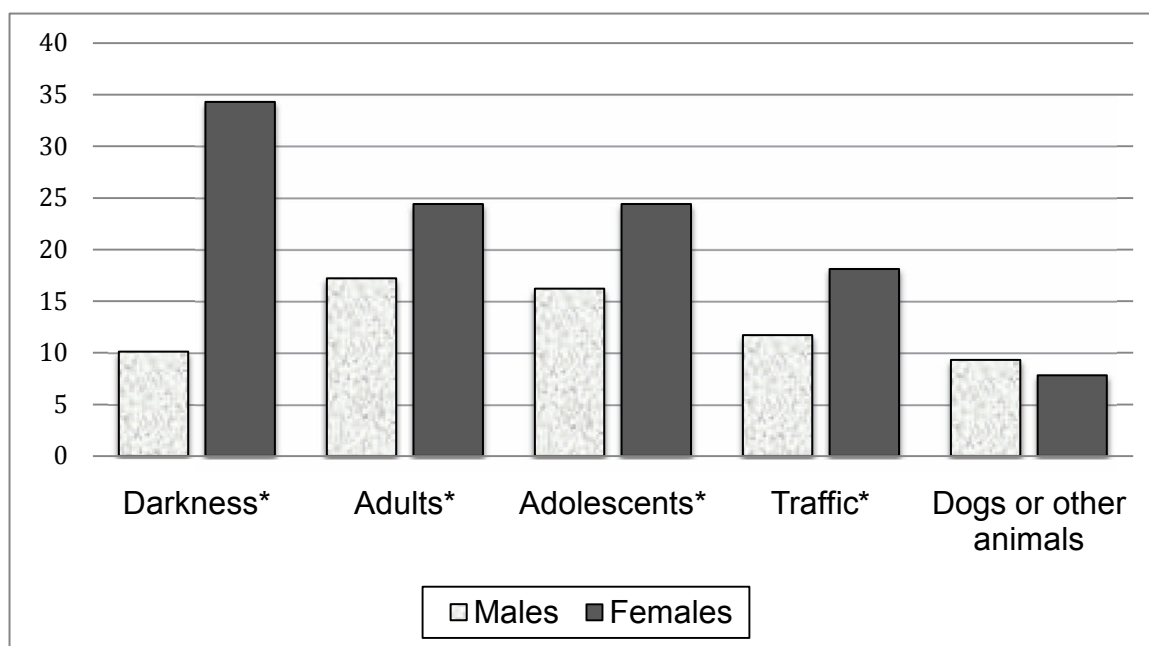
I'm afraid of the dark, there are hardly any streetlamps lit on the streets, it's not so much fun. You can't be seen in the dark when you're walking along. You could easily get knocked down [by a car]. It wouldn't surprise me if someone got knocked down soon. (Girl)

Those horrible drunks who ask you if you want to go home with them. (Girl)

Streetlamps that go out when I walk under them. (Boy)

I've messed with some guys and now I avoid them --- they're not nasty people, but it's well awkward bumping into them in the street! :O (Girl)

Figure 3. Prevalence of different fears reported by boys and girls.



* Significant difference between boys and girls.

Reporting any fear was significantly more common among girls (OR 2.4; 95% CI 1.8-3.1) and living in an apartment compared to a detached house (OR 1.4; 95% CI 1.1-1.9). When respondents or their friends had been chased, hit or had something taken from them in their neighbourhood, they were more likely to report fear (OR girls 2.3; 95% CI 1.6-4.5; boys 2.8; 95% CI 1.9-4.2). For girls, having one or more parents born outside Sweden was associated with fear (OR one of the parents 1.9; 95% CI 1.1-3.3; both parents 1.7; 95% CI 1.1-2.7). Boys nearly three times more often reported fear if they thought their parents were negative towards adolescent independent mobility in the evening, and if they had lived longer than a year in their area.

Box 2. Examples of open responses, Adolescents Encounter with Traffic (7th grade).

"Have your or your friends ever been subjected to any of the following things in your neighbourhood? Being hit; Having something stolen/taken from you; Being chased."

My sister got chased by a drunk one afternoon in our neighbourhood. So I usually get pretty scared of that kind of thing. (Girl)

Some bloke was stalking me for ages. He kept pointing his finger at me and seemed to be everywhere. /.../ He goes around in the shopping centre rooting in litter bins. I hardly see him any more, thank God, maybe once a month, if I'm lucky. (Girl)

Yeah, once me and my mate got chased by some older kids when we were walking home from a disco. (Boy)

I was walking with a mate of mine in the courtyard where I live and there was this old guy there who opened his coat and he had a few things inside. A few dirty, disgusting things. (Girl)

it's obvious someone's got beaten up!!!!!! (Boy)

my best mate got chased by some weirdo who wanted her mobile phone number... she was well scared and I got scared too later on.... (Girl)

I was chased by an alcoholic. Me and my friend also got chased by a car. (Boy)

I've been chased by some youths with knives and once I got pushed over in a pile of snow by someone I didn't know. I ran away and he ran after me for a bit. (Boy)

I got chased by a few girls on mopeds when I was younger and out on my bike with my mate. It was scary, since then I've been really scared of mopeds and older people when it's dark. (Girl)

No it's never happened and maybe won't happen cos I've got a brother who's got loads of mates so they know me and maybe don't dare to hit me and stuff (Boy)

I cycle away from anyone who chases me. (Boy)

the girls who got hit got hit by their dads. (Girl)

Me and my 3 friends got followed by a guy who'd been watching us get changed after going for a swim on the beach. He had a car and we had bikes, but we got away by turning down a narrow alley. (Girl)

there was this bloke who used to chase small children but we're not afraid of him any more (Boy)

A mate of mine got chased twice by two men in a van, two friends got locked in under a skateboard ramp for 2 hours by older kids and someone got chased and had to run away. (Girl)

Article III: Young adolescents' independent mobility - Related factors and association with transport to school

Five consistent and distinct clusters were identified. Among the most discriminating factors were fears experienced in the neighbourhood, strategies to cope with fear, type of housing and traffic environment. Girls were over-represented in the two clusters most typical of respondents experiencing fears (either several of these or darkness in particular) and boys in two others where housing (house vs. apartment) and neighbourhood conditions played a more determinant role.

In Cluster 1 (38.5% of the respondents), more respondents than could be expected by chance were living in a house and did not request company as a means to feel safe. In Cluster 2 (22.1% of respondents) respondents living in an apartment, and in an area with many parked cars were overrepresented. In Cluster 3 (18.5% of the respondents) asking for company to feel safe, being a girl, reporting fear of darkness, asking for a lift and trying to convince themselves there is no danger were overrepresented.

Cluster 4 had an overrepresentation of respondents reporting fear of other adolescents, adults and traffic, using strategies such as staying at home and taking a different route. In Cluster 5, respondents who didn't know either the traffic speed or the number of parked cars in their neighbourhood were overrepresented.

It appears that in clusters where girls are over-represented (3 and 4), mobility is more a reflection of how the respondents feel when moving in their neighbourhood, whereas in clusters where boys are over-represented (1 and 2), housing conditions and the traffic environment play a primary role. Of course, several other parameters come into play to differentiate the clusters from one another. Yet, some labels could be proposed to summarize and distinguish them: Cluster 1, “suburban house residents and independent”; Cluster 2, “residents of apartment in areas with high traffic density”; Cluster 3 “girls afraid of darkness”; Cluster 4, “fearful with hindered independent mobility”; and Cluster 5, “no opinion on the traffic environment”.

Whereas 60.6% of all respondents walked to and/or from school only 14.2% cycled. Only children from Cluster 4, “fearful with hindered independent mobility”, walked in a significantly higher proportion (75.4%).

By contrast, not having a car in the family (12.3% in total) varies a lot across the clusters, with higher – and similar – frequencies in Clusters 2 and 4 and lower in Clusters 1 and 3.

Box 3. Examples of open responses, Adolescents Encounter with Traffic, 7th grade.

“What do you normally do to avoid feeling scared or insecure in your neighbourhood?”

just avoid fear and walk straight past scary things..... once you’ve gone past you almost feel a bit proud of having done it :-> (Boy)

Normally listen to music on my mp3 or talk to my parents on my mobile (Boy)

I tend to imagine loads of things, so I prefer to get a lift. (Girl)

there’s nothing in our neighbourhood that’s scary (Girl)

Nobody’s ever been attacked, but you’re always scared of such things anyway. Doesn’t matter where you are. (Girl)

Have a key in your hand or a studded necklace on your knuckles (Girl)

Have your mobile ready to call 112 [911 (US) 999 (GB)] then if something happens you just need to press “call”. (Girl)

I usually hold my fists. (if someone tries to make trouble.)(I’m not scared.) (Boy)

Me and my mum got some kind of alarm from her boyfriend. I normally have it with me when I go out. (Girl)

I run through the darkest places or take another route. (Boy)

I imagine it’s me who’s strongest and other people are afraid of. (Boy)

I usually run, pretend to talk on my mobile or just look down and walk on (Girl)

I normally have a knife (Boy)

I usually walk with my parents when it’s dark. (Girl)

ask a friend whether he/she can go with me (Girl)

I tend to call someone if I’m out on my own and it’s dark, and I talk to them until I’ve got home. (Girl)

I normally put my mp3 on and listen to music instead of being scared. (Girl)

I sometimes take my mobile out and pretend to talk to someone if I feel a bit worried. (Girl)

I’m not scared (Girl)

Table 2. Description of the clusters. The categories of variables contributing significantly ($p<0.05$) to the formation of each cluster are listed in decreasing order of importance.

	Significant categories, in order of importance	Proportion in class (%)	Proportion in sample (%)
Cluster 1 n= 361 “suburban house residents and independent”	House	91.1	57.9
	Don't ask for company to feel safe	98.6	77.2
	No fear of darkness	92.5	77.6
	Male	67.6	49.1
	No parked cars in neighbourhood	34.9	19.9
	Don't try to convince oneself it is not dangerous	91.4	76.8
	Don't ask for a lift to feel safe	97.5	86.5
	No fear of adolescents	93.1	79.7
	Traffic in neighbourhood is slow	62.1	29
	Parent(s) born in Sweden	79.5	64
	No fear of adults	91.7	79.2
	No fear of traffic	95.3	85
	Few parked cars in the neighbourhood	37.4	24.3
	Don't take different route to feel safe	95.8	87.5
	One home	84.5	76.8
	No fear of animals	97.0	91.5
	Don't stay at home to feel safe	98.1	93.2
	“My parents always trust me in traffic”	72.3	68.3
Cluster 2 n=223 “residents of apartment in areas with high traffic density”	Apartment	89.2	41
	Many parked cars in the neighbourhood	46.6	16.3
	Don't ask for a lift to feel safe	99.1	86.5
	No fear of darkness	92.8	77.6
	Don't ask for company to feel safe	92.4	77.2
	Don't take a different route to feel safe	97.8	87.5
	Two homes	36.8	23.2
	At least one parent not born in Sweden	50.2	35.8
	Don't stay at home to feel safe	98.7	93.2
	No fear of traffic	92.8	85
	No fear of adolescents	88.3	79.7
	Don't try to convince oneself it is not dangerous	85.7	76.8
	Parents always trust in traffic	77.6	68.3
	Male	59.2	49.1
	Traffic in neighbourhood neither rapid nor slow	36.8	29
	Parent and respondent both say yes to adolescent walking in the city in the evening	14.8	9.6
	Child yes, parent no to adolescent walking in the city in the evening	13	8.4
	Rapid traffic in the neighbourhood	23.8	18
	Fairly many parked cars in the neighbourhood	17.5	13.1

	Significant categories, in order of importance	Proportion in class (%)	Proportion in sample (%)
Cluster 3 n=186 “girls afraid of darkness”	Ask for company to feel safe	69.4	22.8
	Female	95.2	50.9
	Fear of darkness	54.8	22.4
	Ask for a lift to feel safe	38.7	13.5
	Try to convince oneself it is not dangerous	52.2	23.2
	House	72.6	57.9
	Parent(s) born in Sweden	77.4	64
	Parent and respondent both say no to adolescent walking in the city in the evening	36	24.9
	Take a different route to feel safe	20.4	12.5
	No fear of animals	97.3	91.5
	“My parents always trust me in traffic”	76.3	68.3
	Traffic neither rapid nor slow in the neighbourhood	37.1	29
	Don't stay at home to feel safe	97.3	93.2
	Few parked cars in the neighbourhood	30.6	24.3
Cluster 4 n=127 “fearful with hindered independent mobility”	Fear of adolescents	78	20.3
	Stay at home to feel safe	39.4	6.8
	Fear of traffic	56.7	15
	Fear of adults	63	20.8
	Take a different route to feel safe	48	12.5
	Fear of animals	33.9	8.5
	Fear of darkness	50.4	22.4
	At least one parent not born in Sweden	66.1	35.8
	“My parents don't always trust me in traffic”	31.5	10.5
	Try to convince oneself it is not dangerous	49.6	23.2
	Ask for a lift to feel safe	33.9	13.5
	Ask for company to feel safe	46.5	22.8
	Apartment	60.6	41
	Rapid traffic in the neighbourhood	33.1	18
	Parent and respondent both say no to adolescent walking in the city in the evening	36.2	24.9
	Female	61.4	50.9
	Fairly many cars parked in the neighbourhood	20.5	13.1
	Many parked cars	22.8	16.3
Cluster 5 n=111 “no opinion on the traffic environment”	No report on traffic speed	66.7	7.8
	No report on parked cars	58.6	8.3
	“My parents don't always trust me in traffic”	22.5	10.5
	Don't try to convince oneself it is not dangerous	90.1	76.8
	Child more careful than parent regarding adolescent walking in the city in the evening	12.6	5.4
	No fear of adolescents	89.2	79.7
	Apartment	53.2	41
	No fear of adults	88.3	79.2
	No fear of traffic	91.9	85
	Don't take a different route to feel safe	93.7	87.5

Article IV: Adolescents' perceived safety and security in public space - A focus group study with a gender perspective

The threats which emerged as most prominent were lone rapists - mainly threatening girls - or gangs of adolescent boys - threatening boys with violence and girls mainly with (sexual) harassment. Both girls and boys in the focus groups say dark, lonely places should be avoided, and when probed further as to why, mainly mentioned 'rapists'. Other social threats such as 'winos' (alcoholic men) and drunk adults/adolescents⁴ were also mentioned but described as less dangerous, or no longer dangerous. Robbery and theft were only briefly mentioned. Traffic, though sometimes admitted to be a major safety risk, was perceived as much more manageable.

In all the focus groups, 'gangs' of adolescent boys were presented as a major potential threat. Their ideas regarding gangs' behaviour is that gangs wanted to start a fight with someone relatively equal in strength - for the fun of it. Boys, because they belong to the same approximate age group and sex, can get involved in a fight without wanting to.

Filip: They can pret- they, well. And they say maybe: 'say 'sorry' to my friend because you bumped into him'. I say 'but why, I didn't even do it', and then...

Ludvig: ...they think that's a reason to hit you, kind of.

Gangs are assumed not to have any motivation to start a fight with girls. An understanding of girls as weaker than boys is continuously constructed - and thus girls would not be a challenge. But gangs might (sexually) harass a girl - or just feel like a threat, even when they don't do or say anything.⁵ Nicole (2.3) describes this in the following way: "they start to talk to me, and just: 'hey, come along with us'.. /.../ They can, like, go on and throw, like kisses, and go on and poke you. /.../ That's when I get most scared, my heart starts beating faster." (2.3)

Rape as a threat in public space was discussed mainly by girls – but boys did mention rape/paedophiles as a potential threat. This is an interesting contrast to research with

⁴ 'Winos' (in Swedish "fyllisar") and 'drunk persons' were generally considered completely different threats. 'Winos' are older men with alcohol problems, and were described as making one feel discomfort but being basically harmless, often because they were perceived as physically weak and with balance problems. Drunk persons were mentioned as "people who have been drinking", thus who are in the condition of being inebriated when one meets them, usually on a weekend night, and were described as potentially aggressive and dangerous.

⁵ One exception is gangs of aggressive adolescent girls, which some girls describe as a potential threat towards themselves. Such a gangs of girls are seen as being able to attack a girl without any particular reason.

adults, where rape is constructed as a threat to women only (90). There are indications that the boys in our study are repositioning themselves within the discourses on sexual violence – from being children, when they were possible victims of paedophiles, to being adolescent boys, which is a very different position. The girls on the other hand, can be seen as moving from a position of being a possible victim of a paedophile, a threat they shared with the boys, to a position of being a possible victim of (adult) rape, which is seen as a threat mainly to girls. Girls describe a ‘rapist’ as the classic, lone, abnormal man who is unpredictable and is looking actively for a victim. Several girls, though they see the consequences of this threat as serious, say that the likelihood of it happening feels very low.

While the social threats provided a rich source of ‘doing gender’, and the girls and boys often used discourses on gender difference to frame these discussions, the threat of traffic was not extensively used in this way.

In the context of overall perceived safety and security in public space, traffic as a threat did not play any dominant role. Once brought into the discussion, some participants stated that traffic could actually be a serious threat, maybe even the most serious, while others saw traffic as something they had learned to manage. The adolescents’ own risk management was understood as a determining factor of the ‘dangerousness’ of traffic. Though traffic was described as potentially unpredictable and fast, it was mostly described as something they could handle.

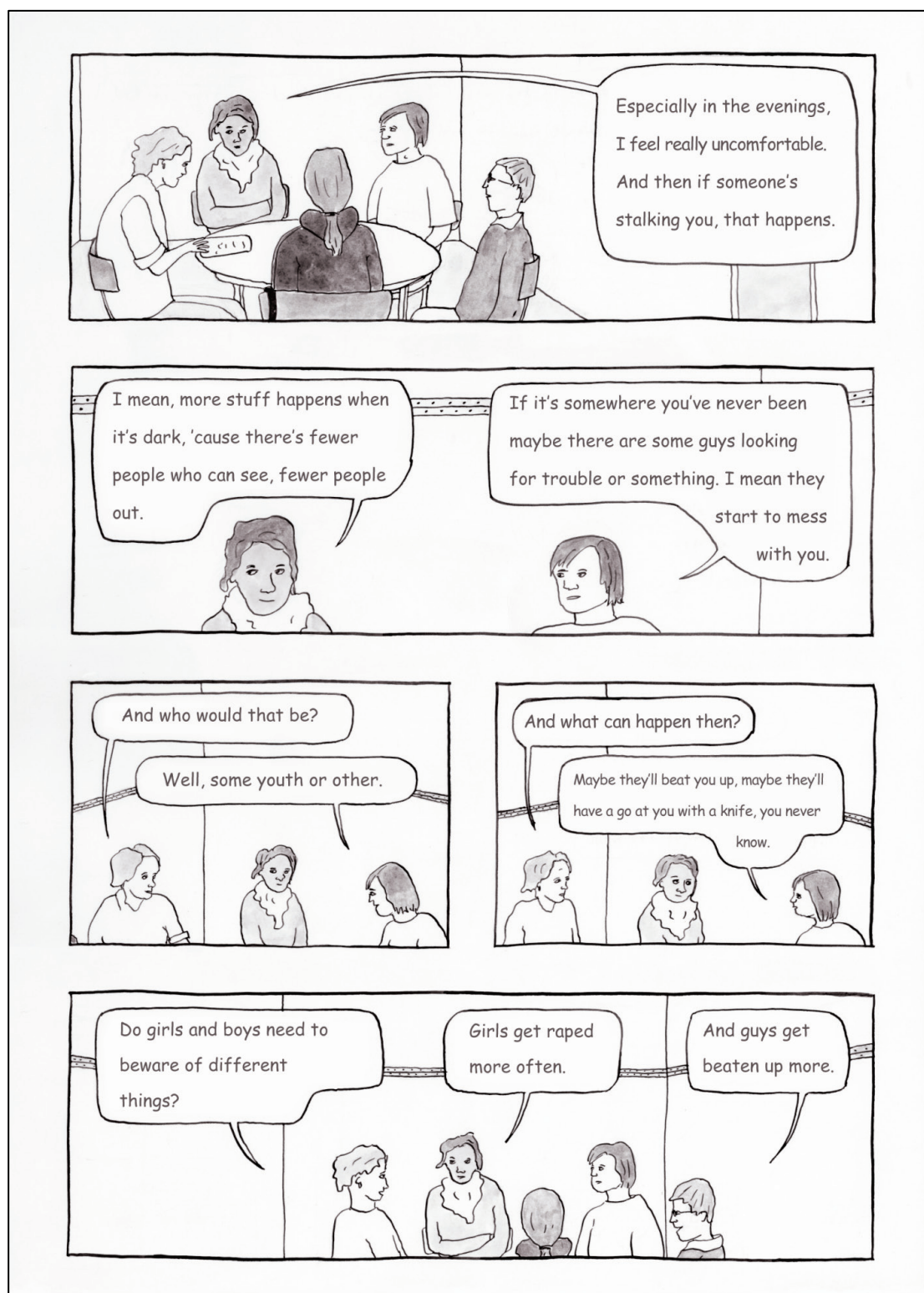
Anna: But in traffic, I feel that you can do more yourself. Like making sure not to just walk straight out into traffic /.../, cycle with a helmet, you can actually affect things, walk instead of cycling and so on. But if it's like a paedophile who plans to rape you, there's not much you can do about it. (4,2)

Traffic risk is constructed as well known and controllable, two factors that generally lead to it being perceived as less serious (131). One possible explanation can be that they perceive traffic to be the same kind of threat that they faced when younger – while rape/gangs are ‘newer’ threats to them, partly because they now move independently in the evenings and during the night at weekends.

In contrast, traffic as a serious threat was generally described in two different ways: in terms of the risk assessment and of the emotional/experience. The risk assessment acknowledges that there are factors which one cannot control oneself – like slippery roads, a protruding root on the bicycle path, the behaviour of other traffic users – and

which can have serious consequences. This sometimes resulted in a heightened management of risk; sometimes in a fatalistic attitude, 'if it happens, it happens'. The emotional expression of traffic as dangerous was often based on experiences, and described the fear and panic that can arise in situations when the risk becomes uncontrollable, as Amanda (2.2) describes: "we got into a panic and there was a traffic jam, and then we walked between the cars, and then they started moving, so we ran out, and then more traffic came in the next lane."

Boys and girls suggest coping with social risks by behaving in an opposite manner to the gendered idea of a 'victim' – boys by being non-aggressive, girls by acting confidently. Boys portray themselves - both in relation to gangs, paedophiles and traffic - as level-headed, skilled and making rational risk assessments. Girls sometimes described themselves as behaving in an unsafe way in traffic - for instance by losing focus at a pedestrian crossing or by refusing to use a bicycle helmet - but not in relation to social/sexual threats.



Artist: Anders Annikas

The comic is based on discussions in one of the focus groups, but the characters do not look like the study participants.

DISCUSSION

This thesis explores different aspects of adolescents' encounters with public space, deepening our knowledge of their perceived mobility and safety. It confirms previous research that both individual and contextual factors are important to understand adolescents' encounters with public space. Sex/gender makes a big difference for the perception of safety in public space, but almost no difference for choice of transport to school. As expected, the immediate surroundings, or *microsystems* (family, neighbourhood, peers) influence perceived safety and active commuting. The influences of the microsystems interact with the adolescents' individual characteristics, for instance parental licenses are associated with fear only for boys. Also, the microsystems seem to influence each other, as Bronfenbrenner theorized when conceptualizing the *mesosystem*, the interconnected network of microsystems (86). One example is that the character of the neighbourhood presumably influences the experiences of peers, whose stories in their turn affect the individual adolescent's perception of his/her environment. Some influences from the *exosystem* are described in the focus groups, such as news reports of local incidents of assault. But it is difficult to distinguish the influence of other aspects of the exosystem such as municipal planning, policies on school bus service or influences on parents from *their* peer group, since information about those characteristics is not available in the study. Furthermore, 'blueprints' from the *macrosystem* - overarching norms of how boys and girls are and what they are threatened by, are used and reformulated by adolescents to negotiate and 'do gender', to construct their own ideas and images of safety in public space for boys and girls.

Active commuting

How common is active commuting to school among Swedish adolescents? Are there differences based on sociodemographic and socioeconomic factors? (Article 1)

On average over 60% of Swedish children aged 11-15 walked or cycled to school, with the highest prevalence in the youngest group (approx. 11 years old) and decreasing with age (replaced by public transport). Boys and girls did not differ in total prevalence of active commuting, but where cycling was less frequent for all (Stockholm metropolitan area), girls cycled significantly less than boys. Active commuting differed by type of housing and urbanicity, but differences by Swedish

background were not significant after controlling for car ownership or urbanicity. In urban areas, children of manual worker families were more likely to use active commuting, and in rural areas, children of self-employed persons were less likely to actively commute.

The prevalence of active commuting was similar to other Swedish data from 1999, reporting 68% (29), and from 2006, reporting that 62% of 4-6 graders and 55% of 7-9 graders actively commute in wintertime (45). It would have been interesting to compare the studies over time, however they represent somewhat different geographical areas, which makes comparisons problematic. The active commuting reported in the current study is high compared to most high-income countries (17,43,47,50) - though low compared to the Odense region in Denmark, where 86% of 15-year olds walk or cycle (28).

The use of public transport (including school bus) also seems high in an international perspective (28,16,41,49). The increasing use of public transport with age could reflect the change of school after fifth or sixth grade which some students make, often having to travel longer. With public transport, adolescents can still be relatively independent, and may walk for at least a couple of minutes per trip (51), in particular the approximately 12% of school pupils in Sweden who have 500 metres or more to the bus stop (45).

It is interesting that girls cycle significantly less than boys in Stockholm. Cycling is generally less common in Stockholm compared with the rest of the country, which could partly be due to heavy traffic. Adolescents in Stockholm say that they don't like to cycle in traffic if it can be avoided (117). The gender difference in Stockholm could reflect both the fact that boys are generally more encouraged to take risks (132) and have higher traffic injury rates (3,81). If so, it is an indication that an environment which is safer and more conducive to cycling benefits both genders but in different ways.

That children not living in detached houses were more likely to actively commute compared to apartments and row-houses seems to suggest an association with socioeconomic status. This is difficult to interpret however, since in particular 'apartment' can signify anything from high to low socioeconomic status. Type of

housing is a rather, in this study, an indicator of urban density and the character of the local environment.

As shown in previous studies, there is an association between lower socioeconomic position (here defined as manual worker household) and more active commuting (18,52,55) – but in this research this only applied in urban areas. This is an interesting finding and could be because school bus services in rural areas contribute to levelling socioeconomic differences. A family car, previously shown to have a negative association with active commuting, is particularly relevant when the family has more than one car, and in particular in rural areas.

Fears in the neighbourhood

What are boys and girls afraid of in their local environment? (Article 2, Article 4)

Among 7th grade adolescents (aged 13/14), six of ten girls and four of ten boys reported fears in their neighbourhoods. Most common was fear of darkness – reported by one third of girls but only one tenth of boys. Fear of adolescents and adults were equally common, followed by traffic and fear of animals such as dogs. More girls than boys reported fear; this difference was largest regarding fear of darkness. The data at hand does not tell whether the fears mentioned are experienced strictly in the local area or also in other environments. Yet, children and adolescents generally feel safer in their local area than in less familiar ones (40). If this holds true for the participants of this survey, then it is possible that the prevalence observed is a conservative reflection of their fears in public space.

The qualitative study, though conducted in an older age group (9th grade, aged 15/16), provided a deeper understanding regarding the meaning of threats in public space to the adolescents in their everyday lives and how they interpret them. Their images and ideas regarding threats in public space were discussed, both in their own neighbourhood and in public space in general. The findings from the quantitative study (7th grade) and the qualitative study (9th grade) both support the notion that other adolescents/gangs and adults/rapists were the most mentioned fears, that darkness was important as to whether a situation felt threatening or not and that traffic was less prominent but was seen as a serious threat by some. The fear of adults reported in the survey can also be paralleled with the (less common) threats described in focus groups of ‘winos’, robbery and drunk adults/adolescents. The 9th

grade boys described mainly adolescents/gangs as the threat towards themselves, while the 7th grade boys were equally likely to fear adults or adolescents – however, due to the different data collection methodologies, it is not possible to draw conclusions about age differences from this.

Which living conditions are related to reporting fears in the neighbourhood? (Article 2)

Both individual and contextual factors were related to reporting fear in the neighbourhood. That girls were more likely to report fear was expected (39,37,59,60,74,77,92), though another Swedish study (ages 10-18) reports somewhat lower gender differences than the current one (67). That living in an apartment was associated with fear is also consistent with previous research (67).

The findings of this study support the theoretical assumption, based on the ecological model, of the interaction between ‘microsystems’. The negative experiences had by themselves *or by friends* in the neighbourhood (reported by almost 40% of the respondents) were associated with reporting fear, indicating that fearful adolescents can have good reasons. The reasons for including friends’ experiences was because the question was intended to explore what information respondents had regarding safety and security in neighbourhood; rather than individual experiences. An additional benefit was that this presumably made the question less emotionally sensitive for respondents.

Another potential interaction is that of the perceived safety of the area and parental licensing. The perceived un-/safety in the neighbourhood could impact both on parental licensing and the fears of the adolescent. But it is also possible that parenting strategies could affect – or be affected by – the level of fear shown by the adolescent. However, this would not explain why the association between restrictive parental licensing and fear, demonstrated in the study, applies only to boys but not to girls. In line with the theories on ‘doing gender’, boys who have cautious parents are possibly able to be more open with their fears—toward others and toward themselves. This could explain the difference between boys and girls in this regard, assuming that fear more acceptable for females than for males (73,77,89,38).

Another mechanism through which gendered behaviour could reinforce boys’ confidence and make them less fearful than girls is ‘desensitization’ (77), meaning

that boys are more encouraged to actively confront and defeat their fears compared with girls. This mechanism could be stronger in families where boys are allowed to go out on their own in the evening. But interestingly, boys reported more fear the longer they had lived in their area. This result suggests not that they become ‘desensitized’ to fear but rather the opposite—that they have acquired more fears the longer they have spent in their neighbourhood. When controlling for bad experiences in the neighborhood, the relation between length of stay in the area and fear was no longer significant. A possible interpretation of this is that boys in neighbourhoods with a higher frequency of bad experiences, such as being hit, chased, or having something stolen, would learn that there are things to fear in the neighbourhood. Whereas, on the other hand, boys in areas with a low likelihood of these things occurring would experience that there is not much to be afraid of. That girls lack this association between time in area and fear is partly consistent with research on fear acquisition, indicating that boys’ fears are somewhat more associated with ‘direct conditioning’, i.e. personal experience of the feared incident (133). Having reported negative experiences was associated with fear for both boys and girls, but since this is a cross-sectional study, it is not possible to know if the negative experiences preceded fears.

The variable *Swedish-born parents* was included in this analysis with the assumption that parents who were born and grew up in Sweden may transmit to their children a sense of belonging and an understanding of the social codes and context, which may lead to more confidence and less fear. That this variable was associated with fear only for girls is somewhat consistent with earlier research (37), though it is difficult to say what this result stands for (see discussion of Strengths and limitations, page 53).

Patterns of mobility

What patterns exist between mobility-related factors and adolescents’ sociodemographic characteristics? How do these patterns relate to active commuting? (Article 3)

Five patterns were highlighted, out of which four were gender-related. For girls (clusters 3 and 4), fears and strategies to cope with fears were determining factors, but different types of fears and strategies clustered with different contextual factors (such as housing and traffic characteristics). In the patterns more typical for boys (clusters 1 and 2), household and traffic characteristics in the neighbourhood were determining

factors, but the patterns typical of boys also displayed far fewer fears and greater mobility than the clusters typical of girls. There are no major indications that, in these clusters more representative of boys, the differences regarding contextual factors (housing, traffic conditions) were reflected in differing experiences of mobility between these two clusters.

Many and diverse fears (fear of adolescents, adults and traffic), and the strategies of staying at home or modifying one's route to feel safe, were found together with an overrepresentation of respondents with parent(s) born outside Sweden, living in an apartment, being a girl and reporting many parked cars and high traffic speed in the neighbourhood (Cluster 4). In prior studies these are all factors that have been associated with fear and restricted mobility (37,41,67,78). Fear of darkness, and social/cognitive coping strategies (asking for company, asking for a ride, convincing oneself there is no danger) were found together with a strong overrepresentation of girls, and also overrepresentation of living in a house, Swedish-born parents and few parked cars in the neighbourhood (Cluster 3). This does not come as a surprise as girls usually express more fear of darkness (59,74), and use more social coping strategies (134), but it is interesting that different fears and manners of coping with fear were found with different contextual factors. This indicates that gendered behaviour can be modified by factors in the *mesosystem* surrounding the adolescent, in particular for girls.

In the case of patterns more representative of boys, living in a house or in an apartment were highly determining factors. In Sweden, a majority of those living in a house own their home, implying good socioeconomic conditions (67), and in Stockholm, it generally implies living outside the city centre. As indicated in earlier studies, male sex and, to some extent, living in a house and having Swedish-born parent(s) are related to reports of fewer fears and enhanced mobility (41,37,67), which applies well to the respondents labelled 'suburban house residents and independent' (Cluster 1). Although from a different environment, respondents labelled 'residents of apartment in areas with high traffic density' (Cluster 2), were also below average on most fears and all coping strategies. Their living areas seem to be of higher urban density - apartment, more parked cars and high traffic speed. In Stockholm, areas of this kind can be found both in the city centre and in different types of suburbs, and these areas can reflect a wide range in social status. Both these clusters were underrepresented on reports of (most) fears and coping strategies, which

seems to indicate that context is less important for boys' fears and strategies compared to girls. Further research would be needed to understand if girls' fears and strategies are indeed more related to context than those of boys.

The association between patterns of mobility-related factors and active commuting is not self-evident. The 'fearful with hindered independent mobility' (Cluster 4) reported the highest prevalence of walking to school. Possibly, respondents from that group may generally live in areas with high urban density and short distances to school, as indicated by their reports on their area and household conditions. Both of these factors are related to more active commuting (15-18,20,42,43,55). Another interpretation is that the 'fearful with hindered independent mobility' may have formed a group that reported fears and other mobility limitations precisely because walking to school made them and their parents aware of the risks and barriers in their environment.

Ideas and images of threats in public space

What are girls' and boys' ideas and images of the threats they face when moving in public space? How do they construct traffic as a threat in that context? (Article 4)

The threats of 'gangs' and 'rapists' were used as a way to *do gender difference*, that is, to reinforce the idea that (adolescent) boys and girls are essentially different. However, 'childhood threats' - threats the adolescents described as dangerous when they were at a younger age - were less gendered. This includes paedophiles, traffic and 'winos'. This can be interpreted as a way of differentiating themselves from children by emphasizing children's general vulnerability, which then overrides gender differences. But as adolescents leave childhood behind, 'gangs' and 'rapists' are threats particularly well suited to constructing gender difference, due to the discordant power relations that emerge when the boys gradually enter into the same overarching position as the potential perpetrators, that is, adult/adolescent males. Thus, while girls are positioned at a disadvantage in relation to these threats, boys are less so. This separates the social threats from the threat of traffic.

The results are in line with other studies which indicate that adolescence is a period when girls consolidate an understanding of women/themselves as vulnerable to sexual violence and harassment in public space (11,12,33,92). However, some girls challenge this idea and say that in fact the likelihood of rape in public space is

probably low. Boys, on the other hand, shift to a position where the perceived threat towards them involves more equal power relations, and where rules and norms to some extent apply. 'Gangs' and 'rapists/paedophiles' are portrayed as completely different types of threats. Gangs' behaviour is seen as rational within their own codes of conduct, conforming to the principle of not attacking persons far below them in the strength/power hierarchy. But rapists, not complying with this norm, are constructed in terms of 'otherness', so that unlike a normal person they cannot easily be predicted or understood. This is a common portrayal of perpetrators of sexual violence against women (135). Girls describe experiences of sexual harassment from gangs in public space, but their main fear of rape is connected to the classical image of a lone 'rapist'. It is well known that women generally fear rape from a stranger in public space, more than in private from someone they know (11,92). This study focuses on public space, and does not comment on the perceived threat of rape in *private* settings. However, it indicates that the reluctance to see 'regular guys' as potential rapists, demonstrated elsewhere (94), to some extent applies even if the 'regular guys' in question are both unfamiliar and acting provocatively, such as the male gang members.

The girls' and boys' different positions in relation to potential perpetrators means that boys' suggested strategies to avoid violence are to assume non-provocative behaviour, while some girls instead suggest acting confidently to avoid being victimized. This can be interpreted as reflecting their gendered ideas of what a 'victim' is – indicating that they perceive a female victim as vulnerable and scared, and a male victim as provocative or aggressive. Thus, boys and girls cope with social risks by behaving differently from their gendered idea of a 'victim'. Similar strategies of acting confidently to avoid victimization are suggested both by adult and teenage women in previous studies (11,33,136). Koskela (33) describes it as a way to 'take possession of space', to claim women's rights to go wherever whenever. However, it can also reinforce traditional gender stereotypes, by confirming the image of a female victim described above. Madriz describes the 'ideal' victim of crime in general as innocent, female, vulnerable, scared, defenceless, 'average' and generally white middle class – an image repeatedly imprinted in public awareness because it sells newspapers (11). But public awareness also includes the image of the 'culpable' female victim, who through her own behaviour 'invites' the perpetrator (11,94). This image is interestingly absent in the focus group discussions. Boys almost never mention threats towards girls, and then only speak of girls as innocent victims. Girls describe a

complex safety situation which they are sometimes unsure how to handle, but they don't describe females as potentially complicit to their own victimization.

The adolescents often perceive their own traffic risk management as being so good that it almost neutralizes traffic risk, a result mirrored in other studies (71,137). One consequence is that if they are involved in a traffic incident, it is implicitly their own fault. An interesting question is to what extent this idea stems from traffic education in schools and moped courses. That rape and gangs are seen as worse threats, though traffic is a more common cause of injury and death, does not mean that the adolescents have 'misunderstood' the risk situation. In the context of their reality and available discourses, the social threats may feel closer – for instance if they constantly encounter harassment or frightening situations when moving outdoors. Even if most participants had also experience of traffic incidents or injuries, these were often described as single occurrences. More importantly, the consequences of violence, in particular sexual violence, can be perceived as worse than the consequences of unintentional injury, in part because it includes elements of shame and powerlessness (11,94). A consequence is that some adolescents might prioritize being safe from rape or violence - for instance, by walking close to heavy traffic rather than on dark footpaths or side streets.

Though traffic was generally described by the adolescents as a gender neutral threat, discourses on traffic were sometimes used as a way to do gender – in particular for boys to describe themselves as essentially rational. When gender differences were explicitly mentioned, mostly by girls, it was in relation to men's/boys' risky behaviour on/in vehicles (cars, bicycles, mopeds). It is possible that the gendered discourses on traffic will increase as the respondents become car drivers (or potential car drivers) in a few years, since gender stereotypes for car driving are documented (138-140).

The male stereotype of aggressiveness, risk-taking and competing for respect is attributed to *others* (mainly males), by both boys and girls. The boys in these focus groups rather position themselves (with some exceptions) within a male role based on rationality, skill and level-headedness. They say they have the skill and understanding to be safe in traffic (and avoid paedophiles). Both in traffic and in relation to gangs, they portray themselves as not taking unnecessary risks, but also not being too careful. This can be interpreted as an intent to approach an adult maleness.

Girls sometimes describe themselves as not behaving as safely as they think they should in relation to traffic, for instance by losing focus at a street crossing or by refusing to use a helmet though they think they should. This is in contrast to boys – but it is also in contrast to girls’ own ideas on social/sexual threats.

Strengths and limitations

The studies were based on several different data sources and used a combination of methods, both quantitative and qualitative. Because of the cross-sectional design of the studies it is not possible to assess causal relationships. However, the intention of this thesis is not to establish causality, but to explore interrelations between a number of factors.

Study population and samples

Both surveys have a large sample spread across different types of environments. The AEwT survey used a convenience sample based on a regionally representative selection of schools. We have no reason to believe that the schools that declined participation differed from those who participated in ways critical for the research questions. The HBSC survey is nationally representative, and thus gives the opportunity to assess prevalence and correlates of active commuting for a nationally representative sample, which has not been done to any great extent for European countries. As for any school-based studies, adolescents who are non-participants due to absence for sickness or social problems at the time of data collection may represent a special group. In some schools, students who were absent were given the opportunity to respond at a later time. The response rate being relatively high, any bias thus introduced will probably be low.

In both surveys, respondents were clustered within schools, which could result in some groups of adolescents being oversampled and produce Type I errors if observations within clusters are correlated (120). For instance, if some schools in the sample had an overrepresentation of certain contextual factors, and also happened to have a support program for active commuting, the association between those contextual factors and active commuting could be overestimated. However, the number of schools is relatively high (44 schools in AEwT; 216 schools in HBSC), which decreases the effect of clustering. For the part of the study concerned with active commuting, confidence intervals were adjusted for clustering.

The focus groups were based on a convenience sample of adolescents from different types of traffic environments. Unfortunately, schools in socioeconomically disadvantaged areas declined participation. Additional focus groups from areas with low socioeconomic status could have presented other experiences and discourses. However, it can be argued that the results are transferable to adolescents in similar, mainly middle-class contexts. The sampling method was likely to exclude adolescents who were outsiders or bullied in class, since those might not volunteer to participate in a group with their classmates. Though bullied children might have particular safety concerns in public space, such as fear of meeting schoolmates, this would have been somewhat outside the aim, and would have been better explored in individual interviews.

Reliability and validity of measures

Self-reports from children can at this age be more reliable than proxy reports from parents. For some questions, parents would have given more accurate responses, mainly regarding socioeconomic status of the family. However, a Swedish study shows that we can be fairly confident regarding the accuracy of children's reports of their parents' socioeconomic group, though reliability tends to be slightly better as regards intermediate and high level salaried employees (141). Respondents also reported their own belief as to what parents thought children in their age should be allowed to do, but in this case the focus was on how respondents *perceived* their parents' licensing to be, rather than actual parental licensing.

Transport is reported for the current week, minimizing recall bias. The two surveys differed in that the regional survey allowed for multiple choice in the commuting question. We checked the frequency of reporting more than one mode of transport, and deem the bias introduced by this to be low, though it could be one reason that total active commuting is slightly higher (not significant) in the regional survey. In the AEWT study, some responded to the survey during winter conditions, others during fall or spring (October to April). This would mainly affect the data on commuting to school during the current week. For instance, during snow-free conditions it is likely that more respondents would report cycling to school. However, for active commuting the HBSC survey, performed in November/December, was the main source. In this way, using two independent surveys for the same year and with basically the same measure of active commuting is a strength.

Regarding the variables *Swedish-born* and *Swedish-born parents* it is important to understand that these variables are not very precise. Children who are themselves born outside Sweden, or whose parents are, form a heterogeneous group, both in terms of their countries of background and other characteristics (142).⁶ These variables are used here with the assumption that they can be an indication of familiarity with the Swedish context and language (142), which can be relevant for the interaction with the public environment. This would, however, most likely depend on many other things as well, such as how long the family had lived in Sweden, where they live and the extent and character of their social networks.

Fear and coping related questions were explorative. They covered several potential sources of fears and types of strategies but did not explore levels of fear or frequencies of fear and coping strategies. Questions were inspired by a literature review and pre-tests. Open answers, as well as results from the focus groups, suggest that the categories of fear listed in the questionnaire covered the full spectrum of fears experienced by the respondents, but that strategies for coping with fear also involve talking on a mobile phone or listening to music. Including these as fixed options could have provided an opportunity to analyze the importance of the mobile phone or music player for adolescents' coping with fear. This can be an area for further research.

There might be some desirability bias due to gender stereotypes, e.g. boys might be less willing to disclose for instance strategies like 'asking for company' or 'asking for a ride', even though they might feel more secure in the company of friends or adults. It is difficult to tell whether—and to what extent—boys underreport their fears. Males may underreport in particular fears considered stereotypically 'feminine' (77). Because the differences between girls and boys are substantial, they would probably remain significant despite the possibility of boys having under-reported their fears. That darkness was predominantly feared by girls is consistent with research on children's fear in general (59,74,75). In the present study, boys might have under-reported in particular fear of darkness, which can be considered more 'feminine'. It might be argued that including darkness as an option could have resulted in an

⁶ Among immigrants in Sweden, a majority come from either Scandinavia (in particular Finland) or other European countries (143). But among children under 18 with two parents born abroad, it is slightly more common that the parents are born outside Europe than in Europe (142).

overestimation of gender differences. However, excluding this option would have underestimated girls' fears.

The methodology of web surveys (used for the AEwT survey) entails both strengths and weaknesses. Modern adolescents are used to communicating via computer and might be more interested in completing an electronic questionnaire, and also more likely to give extensive open answers. Earlier studies have shown that adolescents tend to prefer a web-based over a paper-based questionnaire (144). One potential problem is the possibility of a biased drop out of schools lacking adequate computer resources. In order to counteract this potential bias, before deciding on methodology, the research team ascertained that schools in the study base generally have access to computers and internet. For one school which lacked this requirement, other computers were used. Therefore, there is no reason to believe there was drop out due to lack of computer resources.

The focus group methodology is favourable to respond to the questions about shared ideas and images of threats in public space. In a focus group, the discussions between the participants can be observed as a process of ongoing re-/construction of discourses (119,145). The adolescents knew each other, and discussed common experiences and environments, finished each others' sentences, collaborated to build a common understanding on an issue, or contradicted each other. Even if there are experiences and feelings that adolescents would be less likely to share in a group, compared to individual interviews (146), the aim of the study was to explore shared understandings rather than individual experiences. A focus group discussion should ideally resemble an informal conversation among peers. Compared to individual interviews, the power balance between interviewer and child/adolescent is in favour of the respondents, since the adult moderator(s) are outnumbered (119).

Respondent validation was used during the interviews to improve trustworthiness. At the end of most of the focus groups, the assistant gave a short summary of what had been said and asked participants if this had been correctly understood. During the discussions, the interviewer continually asked follow-up questions for clarification, such as "How do you mean?" or "Do you mean that...?". However, in the heat of discussions, participants sometimes made interesting statements which were not followed up and which could have multiple interpretations. Such statements have been treated with caution in the analysis, in order to not misinterpret.

In the artificial situation of a focus group, and in the presence of the researchers, the discussions might not be the same as in more “naturalistic” discussions (145). But it can be an advantage that the focus groups took place in school (but not in classrooms), rather than an unfamiliar place (145). For the purpose of this study, what was relevant for the analysis was how the adolescents talked about the issues. Even if their reporting was not representative of how they ‘really’ act or feel when they are in public space, the intent was to explore the ways they discuss it together.

The plan was to have only gender-separated focus groups. During the data collection, two groups became mixed due to practical circumstances. However, these groups generated interesting interactions between boys and girls, for instance recognizing ‘the man in the car’ as a shared childhood threat, a result which would not have surfaced otherwise.

When testing associations between factors (the logistic regressions performed in Articles I and II), the complexity of interrelations and mediating effects between settings and factors poses a challenge for understanding what each tested association stands for (and identifying potential confounders). An example is that the safety of the neighbourhood could affect both the fears of adolescents and the licenses of their parents, thus affecting the studied relationship between licenses and fear. Also, fearful or anxious adolescents might be more likely to remember frightening experiences or stories told by friends or siblings, and might be more conservative when estimating their parents’ opinions regarding adolescent mobility. Thus the association found between negative experiences and fear and between parental licenses and fear could represent influences in both directions.

Distance to school could be a potential confounder regarding active commuting to school. Since this information was not available, it was not possible to control for this. For instance regarding the effect of urbanicity, it was not possible to determine how much this was due to the level of urbanicity in the living area, and how much due to distance to school.

Ethical consideration regarding research on adolescents

Some previous research on children and adolescents shows that one way they acquire fear is by ‘learning’ it from peers and adults (133). One ethical consideration with these studies, in particular the qualitative one, is whether participants might ‘learn’

new fears that they did not yet have. In the focus groups they hear peers talk about threats, fears and sometimes negative experiences. Questions raised in the questionnaire or by the moderator in the focus group could make them aware of ‘new’ risks that they notice that adults seem to think there is reason for them to fear.

However, it can also be a positive experience to take part in a research study, both because it causes you to reflect upon your situation, and because there might be a satisfaction of discussing your opinions and have them listened to – and in the case of FGD’s maybe also confirmed by your peers in the group. And for minors, it can also be rewarding to have adults take you seriously and ask for your thoughts on a subject, treating you as the expert. Children and young people all too often have the experience that their opinions are being ignored or not given much importance.

Implications

The issue of mobility and safety in public space is important to adolescents, as evidenced by their willingness and interest in participating in this research - giving extensive answers to surveys and participating with enthusiasm in the discussions. It is an issue which has implications for their current well-being and practical life but which also has an impact on their development and future relationship with and access to the public environment.

To facilitate active transport to school is an important public health concern. Conceptual models have been developed which illustrate the complex interrelations between policy, actual physical and social environment, perceived environment, resources in the family, other family/individual factors and active commuting to school (26,147,148). Several authors point out that locating schools close to residential areas is one of the strongest options for increasing active commuting to school (26,18,149). In Sweden, a majority of children already live within walking distance of school (45), and thus, other factors also need to be addressed, such as perceived and actual safety of cycling and walking paths. If cycling to school is made safer and easier, this can also level gender differences in cycling, since the results indicate that in a context where cycling is less common, very few girls cycle to school, while in other contexts there is no difference between boys and girls. Walking and cycling both have positive impact on health and other aspects of adolescents’ life, but only cycling has been proven to be associated with better cardiovascular fitness

(28,29). Cycling, being faster, also enables a wider geographical range, facilitating adolescents' independence. On the other hand, cycling poses a higher injury risk than walking (3), and also needs to be considered from a safety perspective.

Moving about independently and becoming familiar with public space can increase confidence and decrease fear – at least as long as nothing negative happens. Of course, moving independently also means exposure to the risk of traffic injury as well as physical or sexual violence or harassment. Adolescent girls' and boys' relation to public space is a balance between safety/security and independent mobility. It is a matter of gender equity, and needs to take into account both girls' higher levels of fear and boys' higher risk of injury. Measures to improve adolescent safety and security need to address the risks they face when they move through public space, but should do so in a way that does not increase their fears and limit their independent mobility.

CONCLUSIONS

To date, few studies on adolescents' encounters with the outdoor environment have looked at a diversity of various relevant aspects on one study population. Also, few studies of this type have been conducted in the Nordic countries, where public policy is generally supportive of children's and adolescents' access to public space, adolescents are allowed a great deal of freedom and the traffic system is relatively well adapted to cycling, walking and public transport.

The results obtained indicate first that active commuting to school among Swedish adolescents 11-15 years old is quite common but decreases among the older age groups – being then replaced by public modes of transport rather than private ones (e.g., car or moped). Living circumstances like the urbanicity of the area and type of housing are important determinants for active commuting. Urbanicity also affects the association of socioeconomic factors with active commuting, most notably that in urban areas, children of manual workers are more likely to actively commute to school. Differences between boys and girls in modes of transport to school arise only in settings where cycling is less prevalent (Stockholm), where girls are less likely than boys to cycle to school.

About one in two seventh graders disclose experiencing fear in their neighbourhoods. Many also report scary or uncomfortable incidents that have happened to them or their friends in the neighbourhood, and there is a clear association between such negative experiences and reporting of fear. However, few report that they refrain from going out due to fear (less than 7%). Other strategies, such as asking for company or a lift, are more common.

As expected, more girls than boys report fear. Most strikingly, fear of darkness is the most common fear among girls, but is among the least common fears for boys. Regarding the importance of the context for fear, to some extent this differs between boys and girls. For boys, restrictive parental licenses are associated with reporting fear. For girls, context is important for what they fear and what strategies they use to feel safe. For instance, girls in living circumstances which are usually associated with a feeling of security mainly fear darkness and ask for company - while girls (and some boys) in other contexts mainly report more specific fears, and strategies that don't involve social support.

When interviewed in groups, ninth graders describe the most prominent threats as being lone rapists - mainly a threat to girls - or gangs of adolescent boys - threatening boys with violence and girls mainly with (sexual) harassment. These are used by adolescent boys and girls as a way to 'do gender', to construct an understanding of what it is to be a boy or a girl. Interesting to note is how 'gangs' are described as looking for a challenge, and thus wanting to fight *boys* in this age group because they are perceived as more or less an equal opponent.

In group discussions, traffic is generally perceived as a manageable threat, and as gender neutral. Girls may admit to sometimes behaving in an unsafe manner in traffic, but boys generally describe themselves as rational and not taking unnecessary risks, but also not being 'too cautious'.

Because of the cross-sectional design of the studies, it is not possible to determine causal relationships, in particular in relation to fear and determinants of fears. As the survey samples are large and a variety of living environments are included, the findings are likely to represent well the adolescents' encounters with the outdoor environment in the Swedish - or similar - context.

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APPENDIX

Survey questionnaire: Adolescents' encounter with traffic – English translation
This is an English translation of the survey questionnaire "Ungdomars möte med trafiken" (Adolescents' encounter with traffic) that was done among 7th grade students in Stockholm County, 2005/06.

The survey was in Swedish and has not been used in English.

The survey was web-based and students responded on school computers, during class time.

Please note that this is only the text of the questionnaire, and does not reflect the lay-out, which was designed to facilitate understanding.

Thank you for answering this questionnaire,
Please do not write your name - your answers are to be anonymous.
No one at school will see your questionnaire once it's completed.
Read the questions in order and try to answer as honestly as possible.

Q1 In which year were you born?

- I. 1990
- II. 1991
- III. 1992
- IV. 1993
- V. 1994

Q2 Are you...

- Girl
- Boy

Q3 In which country were you born?

- I Sweden
- II Other. Which?

Q4 In which country were your parents born?

Fill this in about the persons you think of as your real parents. If you only have one parent, just fill in for that one.

Parent 1

Parent 2

Q5 Do you live in one or two places?

(Sometimes children and teenagers live in more than one place, for example if they've got divorced parents.)

- I live in one place
- I live in two places

(Based on which alternative respondents choose, those who live in one place were automatically sent to answer Q6-Q12 and those who live in two places, to Q13-Q21 and Q33).

Here are a few questions about how you live.

Q6 What is your post code?

Example: 120 47 Enskede gård

(If you've forgotten one or several numbers write X instead)

Q7 What kind of house do you live in?

An apartment

A row-house

A detached house

Other, what: _____

Q8 Do you have your own room?

No

Yes

Q9 Does your family have a computer at home?

No

Yes. How many

Q10 Does your family own a car?

Pick-ups, minivans and other similar vehicles also count.

No

Yes, one vehicle.

Yes, two or more.

Q11 How long have you lived in this area?

I moved here this year.

I have lived here for 1-5 years.

I have lived here for more than 5 years.

Q12 How many adults and children live at your house, in your family? (do NOT include yourself)

Number of parents or other adults _____ (18 years old or more)

Number of older siblings or other children that are the same age as you, or older _____ that usually live here.

Number of younger siblings or children younger than you _____ that usually live here.

You answered that you live in two places. We will first ask you how it is where you live this week.

Q13 What is your postcode where you live at the moment?

Q14 How often do you live here?

Most of the time

Half the time

Regularly, but less than half of the time

Rarely

Q15 What kind of house is the house you're living in this week?

An apartment

A row-house

A detached house

Other. What?

Q16 Do you have your own room?

No

Yes

Q17 Does your family have a computer at home?

No

Yes. How many?

Q18 Does your family own a car?

Pick-ups, minivans and other similar vehicles also count.

1. No
2. Yes, one vehicle.
3. Yes, two or more.

Q19 How long have you lived in this area?

1. I moved here this year
2. I have lived here for 1-5 years
3. I have lived here for more than 5 years

Q20 How many adults and children live at your house, in your family? (do NOT include yourself)

1. Number of parents or other adults_____ (18 years old or more)
2. Number of older siblings or other children that are the same age as you, or older_____ that usually live here.
3. Number of younger siblings or children younger than you_____ that usually live here.

We will now ask you about your second home.

Q21 What postcode does your other home have?

Now, more questions about the home where you live now.

On a scale from 1-5, how would you describe the traffic in your neighbourhood?

Think about what it looks like outside your house and on the streets all around and mark the number you think suits your neighbourhood the best.

Q22 The traffic:

Heavy traffic					Light traffic	I don't know
1	2	3	4	5		

Q23 The traffic:

Very fast					Very slow	I don't know
1	2	3	4	5		

Q24 The car drivers:

No cars stop at zebra crossings when I want to cross					All cars stop at zebra crossings when I want to cross	I don't know
1	2	3	4	5		

Q25 Parked cars:

A lot of cars are parked on the streets					No cars are parked on the streets	I don't know
1	2	3	4	5		

Q26 Do you think your parents trust you when you're by yourself in traffic?

No, never					Yes, always	I don't know
1	2	3	4	5		

If you want to add something, you may write this in the box below.

Q27 How do you like your neighbourhood?

Not at all					Very much	I don't know
1	2	3	4	5		

Q28 Do you sometimes feel scared or unsafe in the area where you live as a result of one or more of the following things?

(Here you can choose more than one alternative and if none of them feels right, don't choose any)

1. Car traffic
2. Mopeds and motorcycles
3. Cyclists
4. Same-age adolescents
5. Older adolescents
6. Scary adults
7. Dogs or other animals
8. Darkness
9. I don't know
10. Something else, feel free to tell us what:

Q29 What do you usually do to not feel scared or unsafe where you live?

(You can choose more than one alternative)

1. I don't usually feel so scared or unsafe.
2. I usually stay at home
3. I usually ask someone to drive me
4. I usually ask someone to come with me or meet me on the way
5. I usually tell myself that there's nothing to be scared of
6. I usually take a different route
7. I can't remember
8. I don't often come up with anything to do
9. There is nothing to do
10. Something else. What?

Q30 Have you or your friends ever been subjected to any of the following things in your neighbourhood?

1. To be hit
2. Someone had taken something from you
3. To be chased
4. If you want to tell us something about this, you can write in the box:

Q31 How would you describe your neighbourhood with three words?

Q32 Tell us something about...

1. Fun things there are to do in your neighbourhood or:
2. Fun things you would like to be able to do in your neighbourhood.

Q33 Is there anything that is different in the other area where you live?

(Tell us if you want)

Q34 How are you mostly getting to school and going home from school this week?
(Choose one answer for "to school" and one for "home from school")

1. I'm walking to school
2. I'm walking home from school
3. I'm cycling to school
4. I'm cycling home from school
5. I'm going by car to school
6. I'm going by car from school
7. I'm going by bus, train, commuter train, subway or tram to school
8. I'm going by bus, train, commuter train, subway or tram home from school
9. Some other or several other ways to school:
10. Some other or several other ways to school:

Q35 How long does it take you to get to school?

1. Less than 5 minutes
2. 5-15 minutes
3. 15-30 minutes
4. 30 minutes-an hour
5. Longer than an hour
6. I don't know

Q36 If you could choose, how would you prefer to get to school?

1. My usual way
2. In another way:

Q37 How would you describe your journey to school with three words?

Q38 Do any of the options below bother you on your way to school?

(Again you can choose more than one option, and if none of them bother you don't need to choose any)

1. Car traffic
2. Mopeds and motor-cycles
3. Cyclists
4. Same-age adolescents
5. Older adolescents
6. Scary adults
7. Dogs or other animals
8. Darkness
9. I don't know
10. Something else, feel free tell us what:

Q39 What do you enjoy doing most in your free time?

Q40 Think about yesterday. Did you do any of the things below, and if you did - how long did it take?

	Yes, less than 20 minutes	Yes, more than 20 minutes	No	I don't know
Travel by car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cycle in traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk in traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use in-lines, roller skates, skateboard or a scooter in traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Travel by bus, subway, commuter train or tram	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q41 If you think about last Saturday, did you do anything of the things below? If you did, how long time did it take?

	Yes, less than 20 minutes	Yes, more than 20 minutes	No	I don't know
Travel by car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cycle in traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk in traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use in-lines, roller skates, skateboard or a scooter in traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Travel by bus, subway, commuter train or tram	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q42 Are there any things you would like to do in your free time but that you can't do or you're not allowed to do?

1. Yes
2. No
3. I don't know

[Question 43 was only asked to those who responded "Yes" to Q42.]

Q43 You have said there's something you can't or are not allowed to do. Why?

Q44 Do you have a bike?

1. Yes
2. No

3. I share a bike with someone else

Q45 Do you have a bus/subway pass for use on Stockholm public transport?

1. Yes
2. I share it with my family
3. No

Q46 Approximately how much money of your own do you have every month, which you can decide how to spend?

Q47 What should the money cover?

You may fill in more than one alternative.

1. Clothes
2. Trips in Stockholm
3. Toiletries (such as make-up and hair products)
4. Books and/or computer games
5. Cinema, concerts, football games etc.
6. Candy, coffees etc.
7. Other. Give examples.

Q48 Do you think you have more or less money than your schoolmates?

1. I have more money
2. I have the same amount as most others
3. I have less money
4. I don't know

Q49 Have you ever been in a traffic accident?

(As a pedestrian, cyclist, in a car or another vehicle.)

1. Yes
2. No
3. I can't remember

If yes, you can share something about that, if you want to:

Q50 Have you ever witnessed a traffic accident?

1. Yes (if you want, tell us about it)
2. No
3. I can't remember

If yes, you can share something about that, if you want to:

1. When you walk

1

2

3

4

5

I don't know

1

2

3

4

5

I don't know

1. When walking

2.

1

2

3

4

5

I don't know

1

2

3

4

5

I don't know

1

2

3

4

5

I don't know

You may fill in more than one alternative.

	In daytime	In the evening
Cars	<input type="checkbox"/>	<input type="checkbox"/>
Mopeds, motorcycles	<input type="checkbox"/>	<input type="checkbox"/>
Cyclists	<input type="checkbox"/>	<input type="checkbox"/>
Same-age adolescents	<input type="checkbox"/>	<input type="checkbox"/>
Older adolescents	<input type="checkbox"/>	<input type="checkbox"/>
Unpleasant adults	<input type="checkbox"/>	<input type="checkbox"/>
Dogs or other animals	<input type="checkbox"/>	<input type="checkbox"/>
Lack of street lamps	<input type="checkbox"/>	<input type="checkbox"/>
Lack of buses, trains etc	<input type="checkbox"/>	<input type="checkbox"/>
Too expensive	<input type="checkbox"/>	<input type="checkbox"/>
Something else, give an example if you want	<input type="checkbox"/>	<input type="checkbox"/>

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Q55 What do you think is appropriate for a 7th grader to do on their own?

Fill in one or more examples.

	Yes	No	Maybe
1. Use the subway in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Use the subway in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Travel by bus in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Travel by bus in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Cycle in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Cycle in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Walk around in town in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Walk around in town in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q56 What do your parents think is appropriate to do on your own as a 7th grader?

	Yes	No	Maybe
9. Use the subway in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Use the subway in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Travel by bus in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Travel by bus in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Cycle in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Cycle in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Walk around in town in daytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Walk around in town in the evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

LAST PAGE

Q57 If there is anything else you want to tell us about your neighbourhood, please share it with us.

Q58 What do you think about answering this questionnaire?

1. Very fun or interesting
2. Quite fun or interesting
3. Not much
4. Quite boring or hard
5. Very boring or hard

Q59 On a scale from 1-5, how easy or difficult was it to answer...

1. ...the questions about the traffic yesterday?
2. ...the questions about the traffic in your neighbourhood?
3. ...the questions about whether your parents trust you in traffic?
4. ...the questions about whether there are things you would like to do but can't?
5. ...the questions about whether you're bothered about anything on the way to school?

If you have a comment, write it in the box:

1. Bad
- 2.
- 3.
- 4.
5. Good

Q60 We'd like you to write a comment about the whole questionnaire.

Thanks for your help!

You've now completed the questionnaire. If you're satisfied with your answers, press "done".

Your answers have been saved, thanks for your participation.

Examples of what the questionnaire looked like online, in Swedish.

Frågorna handlar om:

Dig själv

Området där du bor

Skolväg

Att röra
sig i trafiken
på fritiden

Trafikolyckor

Hinder
&
Möjligheter

Ungdomars möte med trafiken

Skolväg

Hur tar du dig oftast till och från skolan den här skolveckan?

(Välj ett svar för "Till skolan" och ett svar för "Från skolan".)

	Till skolan	Från skolan
Jag går	<input type="checkbox"/>	<input type="checkbox"/>
Jag cyklar	<input type="checkbox"/>	<input type="checkbox"/>
Jag åker buss, tåg, pendeltåg, tunnelbana eller spårvagn	<input type="checkbox"/>	<input type="checkbox"/>
Jag åker bil	<input type="checkbox"/>	<input type="checkbox"/>
På något annat sätt eller flera andra sätt, nämligen:	<input type="checkbox"/>	<input type="checkbox"/>

Hur lång tid brukar det ta för dig att komma till skolan?

- ☐ Mindre än 5 minuter
- ☐ 5-15 minuter
- ☐ 15-30 minuter
- ☐ 30 minuter - en timme
- ☐ Mer än en timme
- ☐ Jag vet inte

På vilket sätt skulle du helst vilja ta dig till skolan?

- ☐ Som jag brukar
- ☐ På något annat sätt, nämligen

Hur skulle du vilja beskriva din skolväg med tre ord?

1

2

3

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Nästa >>

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Frågorna handlar om:

Dig själv

Området där du bor

Skolväg

Att röra
sig i trafiken
på fritiden

Trafikolyckor

Hinder
&
Möjligheter

Ungdomars möte med trafiken

Hinder
&
Möjligheter

Vad tycker du att man bör få göra på egen hand när man går i skolan?



Sätt ett kryss i den ruta som bäst passar med din uppfattning.

	Ja	Nej	Kanske
Åka tunnelbana på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Åka tunnelbana på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Åka buss på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Åka buss på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cykla på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cykla på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gå på stan på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gå på stan på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Vad tror du att dina föräldrar tycker att man bör få göra på egen hand när man går i skolan?

Sätt kryss i den ruta som passar bäst med vad du tror att dina föräldrar tycker.

	Ja	Nej	Kanske
Åka tunnelbana på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Åka tunnelbana på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Åka buss på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Åka buss på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cykla på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cykla på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gå på stan på <i>dagtid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gå på stan på <i>kvällstid</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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