

Child maltreatment among young adolescents

Effects on mental health, academic functioning
and substance use

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Doctoral Dissertation in Psychology
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The question is not if what happened had a meaning

the question is

can we give it a meaning

Abstract

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The main aim of this doctoral thesis was to investigate how experiences of childhood maltreatment affected three developmentally salient areas of functioning in adolescent development. Participants were recruited through the Swedish multidisciplinary program Longitudinal Research on Development in Adolescence (LoRDIA). **Study I** explored the relationship between self-reported emotional maltreatment (i.e., emotional neglect and emotional abuse), mental health, and mental well-being among 1134 girls and boys (mean age 12.7 years, *SD* 0.6). Emotional maltreatment had significant negative effects on mental health and mental well-being in both girls and boys. There were also significant effects of the interaction between gender and level of emotional maltreatment on mental health: girls reported decreased mental health and mental well-being at lower levels of emotional maltreatment than did boys; furthermore, girls reported more mental health problems in response to emotional maltreatment than did boys. The aim of **Study II** was to examine the relationship between child maltreatment and school absenteeism among adolescents ($n = 1316$; mean age 14.3 years, *SD* 0.6), focusing on the prevalence of self-reported child maltreatment among non-absentees and absentees. Furthermore, differences between maltreated and non-maltreated absentees in mental health, perceived school environment, and peer victimization in school were analyzed. About 25% of absentees reported one subtype of maltreatment (16% of the total sample) and a mean of 22% of absentees reported two or more subtypes of maltreatment (11% of the total sample). Maltreated absentees reported more mental health problems, personal harassment, and negative relationships with their teachers than did non-maltreated absentees. **Study III** investigated the longitudinal relationship (at three time points) between being subjected to no maltreatment, one type of maltreatment, and multiple types of maltreatment, and experiencing substance-use-related negative consequences (SURNCs) in adolescence ($n = 406$; mean ages at the three time points were 13.5, 14.4, and 14.9 years). SURNCs are the proximal consequences of substance use consumption, consequences such as getting into fights with friends or family, stealing, neglecting responsibilities, and being unable to cut down on substance use. Estimates from zero-inflated Poisson growth curve models revealed that experiencing multiple types of maltreatment before the age of 12 years was associated with increased frequency of SURNCs during the transition from early to mid-adolescence. This association was partly mediated by alcohol and illicit substance use

frequency. Results of the three studies included in this thesis indicate that child maltreatment is associated with negative outcomes concerning three developmentally salient domains of functioning in adolescence: mental health, academic functioning (i.e., school absenteeism), and substance use. Further research should address gender differences in the consequences of maltreatment and factors that mediate and moderate the relationship between child maltreatment and mental health, school absenteeism, and substance use. In addition, it is important to evaluate trauma-informed preventive interventions that can be implemented within regular mental healthcare, schools, and substance use treatment centers.

Keywords: academic functioning, substance use, child maltreatment, early adolescence, emotional maltreatment, gender, mental health, mental well-being, school absenteeism,

Swedish summary (Svensk sammanfattning)

Den tidiga adolescensen, perioden 11–14 års ålder, är en tid av omvälvande biologiska, psykologiska och social omställningar som alla innebär stora möjligheter och utmaningar. Den unge ska börja separera från sina föräldrar för att hitta sin egen identitet och den jämnåriga umgängeskretsen blir allt mera viktig. Samtidigt ställs allt högre krav på att själv kunna ta ansvar för exempelvis sin skolgång och de flesta har sina första romantiska relationer. Det är därför inte konstigt att det är under denna tid som många unga människor för första gången kan känna av psykisk ohälsa och beteendeproblem.

Tidigare forskning har visat att de tonåringar som har upplevt fysisk eller psykisk misshandel eller sexuella övergrepp som barn, har svårare att klara av alla de utmaningar som den tidiga adolescensen kräver jämfört med jämnåriga utan sådana erfarenheter. Detta medför att de löper större risk än sina jämnåriga kamrater att drabbas av psykisk ohälsa och att uppleva lägre grad av psykiskt välbefinnande. De ungdomar som har erfarenheter av våld och övergrepp har också oftare svårt att klara skolan och skapa goda relationer till kompisar och flick-/pojkvänner än vad sina jämnåriga kamrater har. De löper också ökad risk för problematiskt alkohol- och/eller drogbruk.

I dagsläget finns det inte mycket forskning som gjorts på hur utsatta ungdomar har det i den tidiga adolescensen eftersom den mesta forskningen är gjord på äldre ungdomar (16–18 år). Vidare finns det inte mycket forskning där olika *sorter* samt *allvarlighetsgraden* av barnmisshandel (psykisk, fysisk och sexuell) undersöks i relation till *flera olika* typer av konsekvenser. I de flesta fall undersöks endast psykisk ohälsa som konsekvens för de som utsatts för försummelse, övergrepp eller misshandel.

Föreliggande avhandlings består av tre studier vars huvudsyfte var att undersöka hur ungdomar, med erfarenheter av utsatthet i barndomen har det i den tidiga adolescensen gällande tre viktiga utvecklingsområden. De tre utvecklingsområdena som undersöktes var: psykisk hälsa, skolgång samt användning av alkohol och andra droger. Data för studierna hämtades in från projektet Longitudinal Research on Development in Adolescence (LoRDIA). LoRDIA är ett forskningsprogram där forskare från flera olika discipliner studerar ungdomars utveckling under tonåren med speciellt fokus på missbruk och psykisk hälsa. Gruppen som undersöktes var icke-klinisk och omfattade ca 1200 ungdomar. Uppgifter från ungdomarna samlades in via frågeformulär som ungdomarna själva besvarade i sina klassrum. I **Studie I** var syftet att undersöka förhållandet mellan självrapporterad känslomässig misshandel samt psykisk hälsa och psykiskt välbefinnande hos flickor och pojkar ($n = 1134$; medelålder = 12,7). Det visade sig att det fanns ett negativt samband mellan känslomässig misshandel och psykisk hälsa och psykiskt välbefinnande för

både flickor och pojkar. Dessutom fanns det skillnader i flickor och pojkars svarsmönster. Flickor rapporterade minskad psykisk hälsa och psykiskt välbefinnande vid lägre grader av känslomässig misshandel jämfört med pojkar.

Syftet med **Studie II** var att undersöka förhållandet mellan erfarenheter av övergrepp samt försummelse och skolfrånvaro hos flickor och pojkar ($n = 1316$; medelålder = 14,3). Mer specifikt undersöktes skillnader i förekomst av misshandel och övergrepp mellan tre olika grupper: de utan ogiltig frånvaro, med lite ogiltig frånvaro samt de ungdomar som hade omfattande ogiltig frånvaro. Resultaten visade att ju mer ogiltig frånvaro ungdomen rapporterade desto fler typer av övergrepp hade ungdomen blivit utsatt för. Ungefär 25% av de ungdomar som rapporterade ogiltig frånvaro rapporterade också *en* typ av misshandel (jfr med 16% av samtliga deltagande ungdomar) och 22% av ungdomar med ogiltig frånvaro rapporterade *två eller flera* typer av misshandel/övergrepp (jfr 11% av samtliga deltagande ungdomar). I **Studie II** undersöktes också om det fanns skillnader mellan de ungdomar som rapporterade både utsatthet för misshandel och/eller övergrepp och ogiltig frånvaro jämfört med de ungdomar som endast rapporterat ogiltig frånvaro men som inte någon erfarenhet av misshandel och/eller övergrepp. Ungdomar som rapporterade både misshandel och/eller övergrepp samt ogiltig frånvaro svarade att de upplevde en sämre psykisk hälsa, hade mer negativa relationer till sina lärare samt upplevde mer trakasserier från jämnåriga jämfört med gruppen som endast rapporterade ogiltig frånvaro. I **Studie III** undersöktes det longitudinella sambandet (vid tre mätpunkter) mellan att utsättas för ingen misshandel, en typ av misshandel eller flera typer av misshandel och substansrelaterade negativa konsekvenser (t.ex. hamna i bråk med familj och vänner, stjäla saker, försumma skola). I studien deltog 406 elever med en medelålder på cirka 13,14 och 15 år vid respektive mättillfälle. Resultat från **Studie III** visar att upplevelser av flera typer av misshandel före tolv års ålder var förknippad med ökad frekvens av substans relaterade negativa konsekvenser under de tidiga tonåren. Resultaten förklarades delvis av det faktum att de utsatta barnen också drack mer alkohol och konsumerade mer av andra droger jämfört med de barn som ej rapporterade utsatthet i barndomen.

Sammanfattningsvis indikerar resultaten från de tre studierna i avhandlingen att ungdomar med erfarenheter av misshandel, försummelse och övergrepp löper ökad risk för flera olika typer av negativa konsekvenser i den tidiga adolescensen jämfört med jämnåriga utan dessa erfarenheter. Dessa konsekvenser innefattar såväl psykisk ohälsa som att ha mer ogiltig frånvaro samt ökad risk för problematisk alkohol/drog-konsumtion. Resultaten i den här doktorsavhandlingen ger svar på några frågor, men fortsatt forskning är nödvändig. Framtida forskning bör exempelvis fokusera på att fördjupa studier

om hur pojkar respektive flickor påverkas av erfarenheter av försummelse och övergrepp. Forskning bör också studera möjliga variabler som kan förklara *på vilket sätt* (dvs. medierande och modererande variabler) försummelse och övergrepp i barndomen ökar risk för svårigheter med psykisk ohälsa, skola och missbruk senare i livet. Det är också angeläget med forskning som fokuserar på att utvärdera insatser som kan implementeras inom skola, och inom vård och omsorg.

Den kunskap som genereras från forskningen om utsatthet i barndomen och konsekvenser därav, inklusive resultaten från den här doktorsavhandlingen, bör tillämpas i praktiken, till exempel inom skola, hälso- och sjukvård och socialtjänst. Olika yrkesgrupper bör, i mötet med barn och ungdomar, ha kunskap om hur erfarenheter av försummelse och övergrepp kan ta sig i uttryck inom just den arena där de möter barn och ungdomar. Det är också angeläget att ha kunskap kring konsekvenser av försummelse och övergrepp för att kunna identifiera dessa barn och ungdomar och mobilisera den hjälp och stöd som de har rätt till. Vidare bör vårdinsatser för ungdomar med alkohol- och/eller drogproblem eller annan psykisk ohälsa alltid inkludera utredning av eventuell erfarenhet av utsatthet i barndomen. Detta för att kunna integrera behandling för missbruk med traumabehandling då båda bör adresseras samtidigt

List of publications

This doctoral thesis is based on a summary of the following three papers, referred to in the text by their Roman numerals.

- I. Hagborg, J., Tidefors, I., & Fahlke, C. (2017). Gender differences in the association between emotional maltreatment with mental, emotional, and behavioral problems in Swedish adolescents. *Child Abuse and Neglect*, *67*, 249–259. DOI 10.1016/j.chiabu.2017.02.033

- II. Hagborg, J., Berglund, K., & Fahlke, C. (2018). Evidence for a relationship between child maltreatment and absenteeism among high-school students in Sweden. *Child Abuse and Neglect*, *75*, 41–44. DOI: 10.1016/j.chiabu.2017.08.027

- III. Hagborg, J., Thorvaldsson, V., & Fahlke, C. (2019). Child maltreatment and substance use related negative consequences: Longitudinal trajectories from early to mid-adolescence. *Addictive Behaviours* (accepted for publication).

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Introduction

The period of early adolescence, ranging from age 11 to 14 years, is one of both opportunities and challenges. Physical, cognitive, social, and emotional domains develop dramatically, whereas the surrounding environment, at both the micro and macro levels, presents new norms, demands, and cultural values to which the young person needs to adapt (Berndt, 1982; Galambos, Barker, & Schwartz, 2008). Adolescents living in a harsh environment, or with past or ongoing experiences of maltreatment, run an increased risk of failing in one or many of the crucial developmental tasks of this period (Trickett, Negriff, Ji, & Peckins, 2011). Child maltreatment includes being subjected to physical and/or emotional abuse and/or neglect, being sexually abused, and/or witnessing domestic violence.

There is extensive knowledge of the prevalence of the physical and sexual abuse of children (Jernbro & Janson, 2016) in Sweden, whereas studies of other forms of maltreatment, such as emotional abuse and/or neglect, are scarcer (Jernbro & Janson, 2016; Jernbro, Tindberg, Lucas, & Janson, 2012). It is also common for most studies of child maltreatment to focus exclusively on mental health as an outcome, and few include broad measures of negative outcomes, such as academic functioning, peer relationships, and substance use. Furthermore, most studies of the prevalence of child maltreatment focus on older adolescents. To address this lack, the overall aim of this doctoral thesis was to investigate how experiences of childhood maltreatment affected three outcomes developmentally salient in adolescent development: mental health, academic functioning, and substance use.

Outline of the doctoral thesis

The first section of this thesis outlines the developmental period of early adolescence and the impact of maltreatment on children's mental health during this period. A review of definitions, prevalence, and methodological issues related to child maltreatment follows. Next, the organizing theoretical framework used in this thesis, i.e., developmental psychopathology, is presented. Previous research on mental health, academic functioning, and substance use in relation to child maltreatment is then presented and discussed. Finally, the results of the three studies included in the present thesis are discussed in the context of developmental psychopathology.

Early adolescence

During early adolescence, the brain undergoes rapid development. Neural networks are radically reorganized and the number of brain cells can double within a year (Feldman & Elliott, 1990; Spear, 2000a, 2000b). The sex organs develop and gender norms become more accentuated, leading young adolescents to be more keenly aware of their gender than in late childhood. Simultaneously, self-concept and identity are reorganized, friendships become more intimate, long-lasting, and intense, the school environment requires greater autonomy, and adolescents need to balance and negotiate their dependence on and yearning for independence from their caregivers (Berndt, 1982; Galambos et al., 2003; Schwartz, 2008). With these tremendous stressors in mind, it is unsurprising that early adolescents become vulnerable to the potential negative influences of peers and the surrounding community, with an increase in externalizing (behavioral) and internalizing (emotional) symptoms (Galambos & Ehrenberg, 1997; Maggs, Almeida, & Galambos, 1995). Early adolescence is also a sensitive period for the children's parents, who must learn to facilitate appropriate levels of autonomy in their children, reduce their control, and remain supportive during a demanding transition (Galambos & Ehrenberg, 1997).

General mental health trends among adolescents in Sweden

In the last decade, concerns have been raised in Sweden about adolescents' mental health and school functioning (Berlin, Modin, Gustafsson, Hjern, & Bergström, 2012; Robertsson, Begler, & Sandahl, 2016). Public surveys have reported a consistent increase in self-reported internalizing and psychosomatic symptoms since the 1980s, especially among adolescent girls (Salmi, Berlin, Björkenstam, & Ringbäck Weitoft, 2013). Most studies report no gender differences in overall mental health, but both in Sweden and internationally, girls report more internalizing and psychosomatic symptoms and boys report more externalizing symptoms (Berlin et al., 2012; Bor, Dean, Najman, & Hayatbakhsh, 2014). Most studies have shown that these differences are small or non-existent in early adolescence, but usually increase in mid and late adolescence. It is also important to note that there are mixed results concerning the increase of externalizing symptoms among adolescents (Bor et al., 2014).

The reported gender differences in mental health are often ascribed to different *expressions* of mental health problems than to actual differences in quality of life and global mental health. In Sweden, for example, twice as many adolescent girls as boys report high internalizing and psychosomatic

symptoms, whereas twice as many adolescent boys as girls commit suicide every year (Jiang, Hadlaczky, & Wasserman, 2013). Interestingly, the perceived impact of mental health on school functioning seems mainly related to gender-atypical symptoms (i.e., girls with high externalizing symptoms and boys with high internalizing symptoms; Berlin et al., 2012; Robertsson et al., 2016).

Child maltreatment and adolescent development

Many of the competencies and factors in the successful resolution of stage-salient developmental tasks in early adolescence have been found to be negatively affected by child maltreatment. For example, early maltreatment has been shown to have a negative impact on affect regulation, attachment relationship formation, and self-system development (Cicchetti & Rogosch, 2002; Trickett et al., 2011). This may lead to impaired abilities to become more self-directed and independent and to manage close relationships outside the immediate family. Maltreated adolescents therefore tend to have more problems in peer relationships, romantic relationships, and academic functioning than do their non-maltreated peers. Delinquency and substance use have also been found to be more common among maltreated adolescents (Trickett, 2011).

The debate on how to define child maltreatment

Although advances have been made in operationalizing child maltreatment in the last decade, debate concerning definitions continues. There are several reasons for the lingering disagreements. In Sweden and internationally, several systems such as healthcare, social services, and justice have different objectives and different legal and organizational conditions, leading to different needs concerning the operationalization of child maltreatment. For example, a medical model focused on overt signs of maltreatment might be suitable in a healthcare setting but risks missing more subtle forms of maltreatment such as emotional neglect. Other issues under debate include whether child maltreatment should be defined by the actions of the perpetrator, the effects on the child, or a combination of the two, and what constitutes appropriate or inappropriate parenting practices (Barnett, Manly, & Cicchetti, 1993; Ferrari, 1999; McGee & Wolfe, 1991). Definitions of child maltreatment are also influenced by the political climates and value systems in which they are formulated. Representatives of patriarchal, socially conservative belief systems that emphasize caregivers' absolute authority and rights over all

family decisions typically advocate a strict and narrow definition of child maltreatment. In contrast, liberal or left-wing representatives, who advocate a stronger state with a more powerful mandate to influence family life, are typically more supportive of broader definitions of child maltreatment (Goldstein, Freud, & Solnit, 1973). These two different political approaches affect to what extent children are considered to be affected by child maltreatment and therefore the amount of resources allocated to interventions.

Despite the controversy and inherent problems in operationalizing child maltreatment, progress has been made and some definitions and classifications have been tentatively agreed on (Cicchetti & Toth, 2005). First, child maltreatment is usually divided into two large subcategories: acts of omission (i.e., emotional and physical neglect) and acts of commission (i.e., physical, emotional, and sexual abuse) (Barnett et al., 1993). The World Health Organization (WHO) defines child maltreatment as “all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child’s health, survival, development or dignity in the context of relationship of responsibility, trust or power” (WHO, 2016). WHO further distinguishes four types of child maltreatment: physical abuse, sexual abuse, emotional or psychological abuse, and neglect (Butchart, Harvey, Mian, & Fūrniss, 2006).

Description of the four main types of child maltreatment

WHO’s schema of child maltreatment is by far the most common taxonomy of child maltreatment (Barnett et al., 1993; Cicchetti & Toth, 2005). In this section, the four types of maltreatment defined by WHO will be described.

Emotional maltreatment (abuse and neglect)

Child emotional maltreatment consists of acts of commission such as constant name-calling (*emotional abuse*) and acts of omission such as withholding affection (*emotional neglect*). Interchangeable use of these two terms has complicated an already complicated phenomenon. According to the American Professional Society on the Abuse of Children (APSAC, 1995, p. 2), emotional maltreatment is “a repeated pattern of caregiver behavior or extreme incident(s) that convey to children that they are worthless, flawed, unloved, unwanted, endangered, or only of value in meeting another’s needs.” Six types of emotional maltreatment are recognized: (1) rejection (e.g., constant

criticism and belittling), (2) isolating (e.g., keeping family and friends from the child), (3) ignoring (e.g., non-response to the child's bids for attention and functioning), (4) terrorizing (e.g., threats of abandonment or harm), (5) corruption (e.g., involving the child in criminal or perverse activities), and (6) exploitation (e.g., assigning the child to be a caregiver for a parent or other children and expecting the child to attend to family finances). Others have conceptualized child emotional maltreatment through the continuum of emotional distress experienced by the child, ranging from despair and fear to humiliation and dehumanization (Kent & Waller, 1998; O'Hagan, 1993). Other forms of maltreatment, i.e., sexual and physical abuse and physical neglect, are considered to have emotional maltreatment components. Thus, emotional maltreatment may be either a standalone form of abuse/neglect or a frequent co-occurrence (Hart & Glaser, 2011; Wekerle et al., 2009).

Studies of the prevalence of emotional maltreatment lag far behind those of sexual and physical abuse, both internationally and in Sweden. A meta-analysis by Stoltenborgh, Bakermans-Kranenburg, Alink, and van Ijzendoorn (2012) found only 13 studies reporting the prevalence of emotional neglect, whereas another review found over 200 studies reporting on child sexual abuse (Stoltenborgh, van Ijzendoorn, Euser, & Bakermans-Kranenburg, 2011). Prevalence rates vary widely, and results are often tainted by definitional and methodological problems due to the elusive nature of emotional maltreatment. For example, Glaser (2011) includes experiencing domestic violence as a subcategory of emotional abuse, whereas APSAC (1995) omits this category and treats it as a separate construct.

The prevalence of emotional abuse varies between countries. In the USA, Finkelhor, Ormrod, Turner, and Hamby (2005) found prevalence rates of 10–11%, whereas Gilbert et al. (2009) found rates of 4–9% in Western European countries and up to 33% in Eastern European countries. Stoltenborgh et al. (2012) estimated the global prevalence of self-reported child emotional neglect to be 18% and physical neglect to be 16%. In a recent Swedish study including 5000 adolescents aged 16–18 years, 5% reported emotional neglect and 16% reported emotional abuse (Jernbro & Janson, 2016). Aho, Gren-Landell, and Svedin (2016) found similar prevalence rates in a representative sample of nearly 6000 students. In that study, 6% of girls and 3% of boys reported emotional neglect, whereas 22% of girls and 9% of boys reported emotional abuse. In another Swedish study of a sample of young adults (aged 20–24 years), Cater, Andershed, and Andershed (2014) found a lifetime prevalence of neglect of 8% for boys and 13% for girls; furthermore, 39% of boys and 51% of girls reported emotional abuse (defined as verbal abuse).

Child physical maltreatment (abuse and neglect)

The Swedish Ministry of Health and Social Affairs states that “Physical abuse means that an adult causes injury, sickness, pain, or puts the child in a position of powerlessness” (Socialdepartementet, 2001). This is a broader definition concerning the consequences for the child than the more commonly cited “Physical abuse is an assault from an adult on the child’s body that causes or risks to cause injury” (Bernstein & Fink, 1998). In 1979, Sweden was the first country in the world to ban the corporal punishment of children. Since then, recurrent surveys have investigated the prevalence of physical abuse in Sweden (Jernbro & Janson, 2016). The findings of these surveys indicate a steep decline in child physical abuse after the 1979 legislation. In the 1960s most parents thought it was their duty to physically punish children for unwanted behaviors; however, in 2000, 95% of Swedish parents thought that any physical violence toward children was “awful” (Jernbro & Janson, 2011). Debates about the definition of physical abuse have mainly concerned the abusers’ intentions and whether the physical injury to the child should be an important factor in deciding whether the child has been physically abused.

In Sweden, following the steep decline in abuse from 1980 to 2000, prevalence rates seem to have stabilized, with about 15% of youth experiencing physical abuse at some point in their life and 3–7% experiencing recurring and severe physical abuse from caregivers (Annerbäck, Wingren, Svedin, & Gustafsson, 2010; Janson, Jernbro, & Långberg, 2011; Jernbro & Janson, 2016). Compared with other countries, these prevalence rates from Sweden are low. Studies from the USA (Hussey, Chang, & Kotch, 2006), the United Kingdom (May-Chahal & Cawson, 2005), and Eastern European countries (Gilbert et al., 2009) have found prevalence rates of 25–30%. Physical neglect is defined as the failure to provide appropriate food, clothing, shelter, supervision, or a safe environment for the child (Child Welfare Information Gateway, 2012). Worldwide, physical neglect is considered the most frequent type of neglect (Sedlak et al., 2010), and a meta-analysis of the worldwide prevalence of physical neglect found a mean incidence of 16.3% (Stoltenborgh, Bakermans-Kranenburg, & van Ijzendoorn, 2013). This meta-analysis of the global prevalence of emotional and physical neglect found only 16 studies measuring physical neglect and no studies from low-resource countries (Stoltenborgh et al., 2013).

Children experiencing domestic violence

According to the National Centre for Knowledge on Men’s Violence Against Women (NCK), the definition of children as witnesses to domestic violence

has shifted from *witnessing* to *experiencing* the violence (NCK, 2015). The purpose of this shift in definition is to focus more on the child's perspective and to include non-visual experiences such as *hearing* the violence (Øverlien, 2010).

In Sweden, the prevalence rates for experiencing domestic violence are about 10–15% (Annerbäck et al., 2010; Jernbro & Janson, 2016; Nilsson, Gustafsson, Larsson, & Svedin, 2010). For repeated exposure to domestic violence, lower rates around 5% have been found (Janson et al., 2011; Socialdepartementet, 2001). Internationally, rates ranging from 8% to 25% have been observed (Gilbert et al., 2009; Miller, Cater, Howell, & Graham-Bermann, 2014).

Child sexual abuse

As with the other forms of abuse, the definition of child sexual abuse has been a point of debate. One of the most cited definitions is that of Schechter and Roberge (1976), who defined sexual abuse as “the involvement of dependent, developmentally immature children and adolescents in sexual activities they do not truly comprehend to which they are unable to give informed consent, or that violate the social taboos of family roles”.

Butchart et al. (2006, p. 10) defined child sexual abuse as “the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared, or else that violates the laws or social taboos of society. Children can be sexually abused by both adults and other children who are - by virtue of their age or stage of development - in a position of responsibility, trust, or power over the victim.”

Meta-analyses based on self-reported data have shown a worldwide prevalence of some form of child sexual abuse in the range of 15–25% for girls and 5–17% for boys (Barth, Bermetz, Heim, Trelle, & Tonia, 2013; Stoltenborgh et al., 2011). In a literature review of the prevalence of child sexual abuse in the Nordic countries, Kloppen et al. (2016) found that 3–23% of boys and 11–36% of girls reported broadly defined sexual abuse. For contact abuse, the prevalence rates were 1–12% for boys and 6–30% for girls. Child sexual abuse is not as linked to socioeconomic status or educational level as is physical abuse (Collin-Vézina, Daigneault, & Hébert, 2013). This might explain why prevalence rates for child sexual abuse are more similar between the Nordic countries and the rest of the world than for physical abuse and experiencing domestic violence. Child sexual abuse has been found to be more common among females (18%) than males (7.6%; Stoltenborgh et al., 2011). The rates of child sexual abuse have been found to be similar among females

in different countries but to vary more widely among males (Mossige, Ainsaar, & Svedin, 2007). In Sweden, Priebe and Svedin (2009) found prevalence rates of penetrative sexual abuse of 13.5% for girls and 5.5% for boys. In a more recent study, Jernbro and Janson (2016) found prevalence rates of 14.2% for girls and 2% for boys. Although the rates are quite similar in these studies, prevalence rates of 5–50% have also been found (Oddone Paolucci, Genuis, & Violato, 2001). The vast differences in study results can be attributed to different methods of data gathering (Putnam, 2003; Wyatt & Peters, 1986). For example, these differences could be due to different definitions of child sexual abuse, the inclusion of peer abuse, differences in the ages and genders of the children and perpetrators, differences in the severity and duration of the abuse, differences in the relationships between child and perpetrator, as well as real differences between cultures and countries.

Cumulative trauma

There are two conceptually relevant paradigms concerning research that focus specifically on cumulative trauma: *adverse childhood experiences* and *polyvictimization* (Anda et al., 2005; Finkelhor, Ormrod & Turner, 2007). The Adverse Childhood Experiences (ACEs) Study is a large-scale, epidemiological and longitudinal study that link physical and mental health problems in adulthood with traumatic experiences that occur in childhood and adulthood. The ACE Study included 17,337 adults and assessed 8 adverse childhood experiences (ACEs) including abuse, witnessing domestic violence, and serious household dysfunction. The ACEs study was one of the first to simultaneously assess multiple categories of maltreatment and to explore the cumulative impact of these experiences (Anda & Brown, 2010). In the ACEs studies, substantial evidence for the specifically detrimental effect of experiencing multiple as opposed to one type of trauma was found. For example, individuals who experienced 5 or more ACEs were five times more likely to have a history of depression and were 10 times as likely to report suicide attempt. Furthermore, experiencing multiple ACEs were associated with a strong, graded relationship to the prevalence and risk of panic reactions, anxiety, and hallucinations as well as somatic health disturbances and substance use (Anda et al., 2005). Another important finding in the ACEs Study was that adverse experiences were highly intercorrelated. Of those who reported one category of ACE a median of 87% reported at least one additional category (Dong et al., 2004).

Polyvictimization refers to the fact that victimization tend to cluster among certain adults and children (Finkelhor, Ormrod & Turner, 2007). The concept

of polyvictimization was introduced by David Finkelhor and colleagues when presenting results from a large, nationally representative survey conducted with caregivers of children ages 2 to 9 years old and adolescents ages 10 to 17 years old (Finkelhor, Ormrod, Turner, & Hamby, 2005). In this study, the Juvenile Victimization Questionnaire (JVQ) was used to measure victimization. In the JVQ, 34 different types of victimization are measured. Finkelhor and colleagues drew on findings from earlier studies suggesting that interpersonal events such as child maltreatment or physical violence had a greater impact on mental health compared to natural disasters or accidents (Finkelhor, Ormrod & Turner, 2009). Hence, in contrast to the ACEs study, only interpersonal events such as physical or sexual assault was defined as victimization. Finkelhor and colleagues stated several reasons as of why it was important to focus on these “polyvictimized” children. First, if researchers do not survey full victimization profiles, the contribution of one single type of victimization to mental health problems may be exaggerated. Furthermore, the specific risk associated with experiencing multiple types of victimization might be overlooked. Last, if a study only measure single types of victimization, specific and extra vulnerable subgroups of chronically or multiply victimized children will not be identified. Polyvictimization is similar to the ACEs study in that it emphasizes the cumulative impact of potentially traumatizing events. However, Finkelhor and colleagues add a focus on *why* certain individuals are victimized over and over again.

Methodological considerations

Some methodological considerations concerning research on child maltreatment need to be highlighted. As mentioned earlier, different definitions of child maltreatment are used in research, and the prevalence rate of child maltreatment varies between studies as well as between countries. Furthermore, there are different ways of gathering data about child maltreatment. These methods typically involve self-reports from caregivers or children, observations of caregiver behavior, and/or analysis of records from social services and/or medical journals. Naturally, these different approaches yield very different prevalence rates (Shaffer, Huston, & Egeland, 2008). Analyses of official records tend to capture only the most severe cases of child maltreatment and risk, missing more elusive and hidden types of abuse (Briere, 1992). Self-reports, however, can be influenced by subjective interpretations of questionnaire items and/or different degrees of willingness to report acts of

child maltreatment (Weeks & Widom, 1998; Widom, Raphael, & DuMont, 2004).

Finally, observational strategies can miss behaviors outside the space and time of the observation (Cicchetti & Toth, 2005). The different methods used probably also result in different levels of outcome severity. For example, studies using the strictest form of measurement (i.e., official records) will likely identify only the most severe cases of child maltreatment, whereas studies using a questionnaire with broadly defined items concerning experiences of child maltreatment may capture more types and instances of abuse. For an uninformed reader, the differences in outcomes will be remarkable. Ideally, researchers should use a mixture of all these methods and apply different levels of maltreatment severity to get as valid an evaluation of child maltreatment as possible.

The developmental psychopathology perspective

In this doctoral thesis, the framework of developmental psychopathology is used as an organizing principle for synthesizing earlier research into proposed models of how experiences of maltreatment may lead to later maladaptive outcomes. Developmental psychopathology is a unifying framework for integrating knowledge from multiple disciplines and perspectives. It has been defined as “the study of the origins and course of individual patterns of behavioral maladaptation, whatever the age of onset, whatever the causes, whatever the transformations in behavioral manifestations, and however complex the course of the developmental pattern may be” (Sroufe & Rutter, 1984, p. 18). Developmental psychopathology is a macro-paradigm and is not characterized by any unitary theoretical approach. Instead, a developmental psychopathology perspective posits several important principles (Cicchetti, 2006)

(1) One can learn more about the normal functioning of an organism by studying its pathology and vice versa;

(2) Focus on the boundary between normal and abnormal development;

(3) An organizational, hierarchical perspective of development is useful to view the resolution of a number of stage-salient tasks that enable adaptation in subsequent developmental stages. Even though certain tasks become less salient over time, failure to resolve a particular task will be integrated and may continue to influence development;

(4) Risk and protective factors are present at all levels of the ecology within and outside the child. These risk factors have a temporal quality;

(5) Multiple and diverse pathways in processes and development may lead to the same outcome (equifinality) and similar risk factors may result in different outcomes (multifinality);

(6) The cumulative, cascading consequences of the many interactions and bidirectional transactions in developmental systems result in spreading effects across multiple levels, among domains at the same level, and across different systems or generations; and

(7) Child development is best understood as an interactive process where factors in all levels of the ecology surrounding the child mutually influence each other.

These interactive processes are manifested in the ecological transactional models described below. These models will be discussed in relation to actual aspects of child maltreatment such as its etiology and consequences.

Ecological transactional models of development and child maltreatment

Until the late 1970s, studies in developmental psychology mainly focused on individual differences observed in experimental settings (Ceci, 2006). However, in 1979, Bronfenbrenner published *The Ecology of Human Development* (Bronfenbrenner, 1979). In this groundbreaking book, Bronfenbrenner presented his widely cited bio-ecological model of human development in which he defined complex “layers” of environment, each of which the developing child interacts with and each of which affects the child’s development. The interactions between the child’s biological maturation, immediate family/community environment, and societal landscape fuel and steer the child’s development. Changes or conflict in any one layer will also ripple throughout other layers (Bronfenbrenner, 1979).

Bronfenbrenner identified five layers of ecological systems. Closest to the person is the *microsystem* that comprises the child’s immediate interpersonal relationships with people with whom he or she directly interacts (e.g., caregivers and family members). The *mesosystem* is a structure of the relationships *between* two or more microsystems. For example, how a child learns to read might be equally influenced by the relationship between teachers

and caregivers as by the method of teaching. The *exosystem* comprises the elements that influence the child indirectly, for example, parents' work schedules or unemployment. The outermost layer in the child's environment is the *macrosystem*. The macrosystem represents the cultural values, laws, and customs of the society in which the individual develops. Changes in the macrosystem influence development through their interactions with other layers. One example could be the Swedish ban on corporal punishment in 1979, which caused a dramatic drop in the prevalence of the physical abuse of children, illustrating how a change in the macrosystem can directly influence the children's closest interpersonal environment. Bronfenbrenner later developed the model by adding the *chronosystem*, referring to how the person and his or her environments change over time. For example, in the first year after parental divorce, the divorce might strongly influence a child's behavior; following this year, family relationships might stabilize and return to normal and the divorce might not exert such a strong influence on the child.

The Ecology of Human Development and the bio-ecological model had an enormous impact on the study of human development over the lifespan (Ceci, 2006). The study of child abuse and neglect, its etiology and sequelae, was no exception. In 1980, the first ecological models for explicitly investigating the *etiology* of child abuse and neglect were formulated (Belsky, 1980; Cicchetti & Rizzley, 1981). A decade later, Cicchetti and Lynch (1993) elaborated on these models and adapted them to formulate a model focusing on the *outcomes* of child maltreatment. Because these models have so strongly helped form and shape the developmental psychopathology perspective and the study of child maltreatment, they will be briefly presented here.

Etiology of child maltreatment

Several known factors that increase the risk of child maltreatment include temperamentally challenging children, parental psychopathology, parental childhood victimization, single parenthood, and poverty. However, drawing on ecological models, we now know that no single variable can account for the complex processes that result in maltreatment. Instead, Belsky (1980) and Cicchetti and Rizzley (1981) proposed interactive etiological models in which a combination of familial, individual, and societal factors contributes to child maltreatment. In Cicchetti and Rizzley's model, risk factors are divided into *potentiating factors*, which increase the risk of child maltreatment, and *compensatory factors*, which decrease the likelihood of child maltreatment. They also propose a temporal distinction for both potentiating and compensatory factors by dividing them into *transient* (i.e., fluctuating or temporary) and *enduring* (i.e., more permanent or characteristic) factors. For

example, an *enduring protective factor* could be a parent's history of high-quality attachment to his or her own caregivers that buffers other risk factors and decreases the risk of maltreatment. In contrast, a *transient buffer* could be a shorter-term condition such as a sudden improvement in finances that relieves stress in the family system. The same principle is also applied to risk factors. An *enduring vulnerability* includes long-lasting factors that increase risk of maltreatment, such as a child's mental disability. A *transient challenger* is a short-term condition that increases risk of maltreatment, such as a parental loss of employment or a child's progress to a more challenging developmental period.

Belsky (1980) proposed another ecological model of the etiology of child maltreatment. This model is similar to Cicchetti and Rizzley's, but more clearly emphasizes the broader environment and treats child maltreatment more as a social psychology phenomenon. Belsky's model draws heavily on Bronfenbrenner's (1979) ecological model of human development. Belsky formulated four levels of analysis to understand the etiology of child maltreatment: (1) ontogenic development (i.e., risk factors within the individual associated with being a perpetrator of child maltreatment); (2) the microsystem (i.e., contributing factors within the family increasing the likelihood of child maltreatment); (3) the exosystem (i.e., risk factors associated with the community in which the family lives that contribute to child maltreatment); and (4) the macrosystem (i.e., cultural and societal beliefs and value systems facilitating child maltreatment).

Ecological transactional models of child maltreatment outcomes

To understand and organize the diverse findings about child maltreatment and its subsequent outcomes, a developmental psychopathology perspective together with the ecological models described earlier are used in this thesis.

Building and expanding on the ecological, transactional models of Bronfenbrenner and Belsky, Cicchetti and Lynch (1993) proposed a new ecological transactional model that addressed not only the *etiology* but also the outcomes of child maltreatment. In this model, Cicchetti and Lynch used the terms *potentiating factors* (higher risk) and *compensatory factors* (buffering effects) from Cicchetti and Rizzley's earlier model. These two factors are seen as determining both the probability of child maltreatment and its influence on the child's subsequent developmental path to adaptation or maladaptation. These compensatory or potentiating factors are present at all levels of the ecology and mutually influence one another. Hence, an increased level of the risk factors together with child maltreatment suggests a deviation from a

“good-enough” or expected nurturing environment for the developing child. In the organizational model of development, the failure of a specific developmental task will be integrated into the next level of development. In this way, earlier functioning and failures are carried through every stage of development.

Developmental outcomes of child maltreatment in adolescence

In a review of research on the developmentally salient outcomes of child maltreatment during adolescence, Trickett et al. (2011) found extensive evidence for the impact of child maltreatment on adolescent development. However, the authors also stated that knowledge of this impact is generic because the effects of abuse timing and the differentiated impacts of different subtypes of abuse remain largely unknown. This is important because a developmental psychopathology perspective stresses the importance of analyzing both the timing and subtypes of abuse in relation to the outcomes of maltreatment (Cicchetti & Rogosch, 2002; Trickett et al., 2011). Many developmental outcomes have been found to be negatively affected by child maltreatment, such as peer relationships, romantic relationships, academic functioning, sexual behavior, delinquency, and substance use (Cicchetti & Rogosch, 2002; Trickett et al., 2011). For this thesis and the aims of the included studies, the research presented below focuses on studies of child maltreatment in relation to mental health (internalizing and externalizing problems), academic functioning, and substance use together with their related negative outcomes.

Child maltreatment and mental health

The elevated risk of a maltreated child developing internalizing and externalizing problems is well documented (Jaffee, 2017). Among externalizing problems, attention deficit/hyperactivity disorder, oppositional defiant disorder, conduct disorder, delinquency, and antisocial behavior have been found to be overrepresented in maltreated adolescents compared with their non-maltreated peers (Cohen, Brown, & Smailes, 2001; Famularo, Kinscherff, & Fenton, 1992; Jonson-Reid et al., 2010; Lansford et al., 2007). Among internalizing problems, depression, anxiety, post-traumatic stress disorder, and somatization have been found to be more prevalent in maltreated adolescents than in their non-maltreated peers (Cohen et al., 2001; Crusto et al., 2010; Jernbro, Svensson, Tindberg, & Janson, 2012; Toth & Cicchetti,

1996). Childhood maltreatment has also been linked to personality disorders, substance abuse, and suicidal and self-injurious behavior (Jaffee, 2017).

The quality of early relationships with caregivers has been found to play a major role in the development of psychopathology among maltreated adolescents (Obsuth, Hennighausen, Brumariu, & Lyons-Ruth, 2014). This is in line with the hierarchical view of development posited by the organizational model (Cicchetti & Rogosch, 2002). Forming a secure attachment relationship with a caregiver is the first stage-salient task of infancy. According to attachment theory, a good-enough caregiver modulates the child's emotions by calming and helping the child to restore a tolerable emotional state following emotional turmoil and frustration. From the child's perspective, a secure attachment means that the child can use the caregiver's responsiveness to organize his or her emotional experience and regulate back to "felt safety" (Bowlby, 1969, 1973; Sroufe & Waters, 1977).

The environment surrounding a child in a maltreating family is often frightening, disruptive, confusing, and unpredictable. Such an environment represents a deviation from the good-enough environment required for the successful resolution of the developmental task of forming a secure attachment. A fearful and chaotic relational environment in the family might instigate a disorganized attachment pattern characterized by fearful, conflicted, and disoriented behaviors that have been linked to many subsequent psychopathologies and maladaptations (Rosenstein & Horowitz, 1996; Wilkins, 2012). For a child growing up in an inconsistent and unpredictable caregiving environment, negative emotions tend to disrupt rather than restore relationships (Sroufe & Waters, 1977). This might deprive a maltreated adolescent of much-needed emotional support, because people with this disruptive emotional pattern tend to withdraw from stable and close relationships. This could in part explain the higher proportions of maltreated adolescents who report poor peer relationships.

Another key developmental task involved in emotion regulation, which has also been linked to both externalizing and internalizing psychopathology, is emotion recognition (Eisenberg et al., 2001; Hill, Degnan, Calkins, & Keane, 2006; Suveg & Zeman, 2004). The capacity to correctly recognize one's own and others' emotions facilitates social interactions and emotion regulation. Accordingly, adolescents with impaired emotion recognition experience more peer rejection and lower peer support than do peers with an adequate capacity for emotion recognition (Miller et al., 2005). Results of earlier studies indicate that parts of these abilities are learned through supportive and emotionally responsive interactions with caregivers (Brownell, Svetlova, Anderson, Nichols, & Drummond, 2013). Concerning maltreating caregivers, research has found that they use less validation and more invalidation of their children's emotions than do non-maltreating caregivers (Shipman et al., 2007), and

neglectful caregivers have been found to be less emotionally expressive and less engaged with their children (Bousha & Twentyman, 1984). Furthermore, neglectful parents provide relatively little exchange of affective information with their children (Pollak, Cicchetti, Hornung, & Reed, 2000).

Physically abusive caregivers have been found to produce less prototypical facial and vocal expressions of emotion than do non-abusive caregivers, and maltreating caregivers tend to be less likely to use reasoning and other educative types of discipline (Trickett, 1998). This might deprive the child of the necessary emotionally safe place for practicing and acquiring optimal language and cognitive skills, and lead to a lower ability to self-regulate and recognize emotions. Abusive caregivers have also been found to be less accurate in emotion recognition tests than are non-abusive caregivers (Wagner et al., 2015). Accordingly, maltreated children and adolescents are less accurate in discriminating between emotional expressions (Pollak et al., 2000).

Another proposed mechanism by which maltreatment increases the risk of psychopathology is attention bias toward threat. Results of several studies indicate that hypervigilance to threat might stem from early experiences of physical abuse (Cicchetti & Curtis, 2005; Gibb, Schofield, & Coles, 2009; Pollak, 2003; Pollak, Messner, Kistler, & Cohn, 2009). For example, studies have shown that maltreated children are selectively attentive to angry faces but not to sad or happy faces (Gibb et al., 2009; Pollak & Tolley-Schell, 2003). Maltreated children also need less perceptual information than do their non-maltreated peers to detect angry facial expressions and they have more difficulty disengaging from anger cues (Curtis & Cicchetti, 2011; Pollak et al., 2009). Attention bias to threat has been proposed to partly explain the heightened levels of anxiety in maltreated children (Shackman, Shackman, & Pollak, 2007) and has been linked to anxiety and internalizing psychopathology in adults (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van Ijzendoorn, 2007).

Child maltreatment and academic functioning

Academic functioning has been shown to be a potent protective factor against the development of mental health problems in children exposed to maltreatment and trauma (Zingraff, Leiter, Johnsen, & Myers, 1994). However, many investigations have identified a relationship between child maltreatment and subsequent academic failure (Romano, Babchishin, Marquis, & Fréchette, 2015; Shonk & Cicchetti, 2001; Trickett & McBride-Chang, 1995; Veltman & Browne, 2001). Effects of maltreated children's academic failure on their adult functioning, such as unemployment and economic hardship, have also been found (Mersky & Topitzes, 2010). Markers of

maltreated children's academic failure that have been investigated are involvement in special education interventions, poor performance on standardized functioning measures, frequent school absences, higher grade retention, and lower grade point averages. However, several reviews note that most studies focus on univariate associations rather than underlying processes and mediators that could explain these associations (Shonk & Cicchetti, 2001). Furthermore, poor academic functioning and child maltreatment share many contextual risk factors. For example, poverty, low levels of parental education, larger family size, residential mobility, and neighborhood poverty levels have all been found to increase the risks of both child maltreatment and academic failure (Mörk, Sjögren, & Svaleryd, 2014; Trickett, 1998). Hence, a key question for researchers is whether child maltreatment has a unique effect on academic functioning or whether this relationship is fully or partially explained by sociodemographic risk factors (Veltman & Browne, 2001; Romano et al., 2015). The few studies that have examined this question have yielded mixed results. Boden, Horwood, and Fergusson (2007) found that the impact of child maltreatment on academic functioning became non-significant when sociodemographic risk factors were controlled for. However, Fantuzzo, Perlman, and Dobbins (2011) and Maclean, Taylor, and O'Donnell (2016) found that child maltreatment remained a significant predictor of academic failure even after controlling for sociodemographic risk factors.

To enhance knowledge of underlying processes that could explain the relationship between child maltreatment and academic failure, Shonk and Cicchetti (2001) used a hierarchical, organizational perspective on development. The authors suggested that the negative impact of child maltreatment, especially in earlier stages of development, would be exacerbated in school due to the heightened requirement for certain skills such as social competencies, academic engagement, ego-resiliency, and ego-control. Shonk and Cicchetti (2001) found empirical support for this suggestion, finding that maltreated children had significantly lower academic engagement, social competence, and ego-resiliency than did their non-maltreated peers. Furthermore, academic engagement mediated the link between maltreatment and academic adjustment (Shonk & Cicchetti, 2001). From these results, Slade and Wissow (2007) developed a heuristic model that links child maltreatment with later academic functioning more directly. In this model, Slade and Wissow acknowledge that: (1) child maltreatment affects both mental health and academic functioning; (2) there is a bidirectional relationship between mental health and academic functioning; and (3) mental health might mediate the relationship between child maltreatment and academic functioning.

Although few studies have analyzed moderating/mediating variables that could explain the link between child maltreatment and academic functioning,

several possible mediators have been proposed. Kurtz, Gaudin, Howing, and Wodarski (1993) found that parental substance abuse and parental depression mediated the relationship between child maltreatment and poor academic functioning. Eckenrode, Rowe, Laird, and Brathwaite (1995) found that maltreated children were much more likely than others to have moved and switched schools. This, in turn, mediated the relationship between child maltreatment and academic performance. However, why maltreated children moved more often and how that impacted their academic functioning was not clear (Eckenrode et al., 1995). Zingraff et al. (1994) investigated the relationships between child maltreatment, academic functioning, and externalizing problems in a sample of 546 maltreated children and found that academic functioning buffered externalizing problems. This result strengthens the notion of Slade and Wissow (2007) concerning the bidirectional relationship between mental health and academic functioning in maltreated children. In a study of adolescent girls who had been sexually abused, Trickett et al. (1994) found that cognitive ability and perceived competence mediated the relationship between sexual abuse and overall academic functioning.

The type, onset, and duration of maltreatment have also been shown to influence the extent to which maltreated children experience academic difficulties. Early-onset and chronic maltreatment have been found to exacerbate the negative influence of maltreatment on academic performance (Keiley, Howe, Dodge, Bates, & Petti, 2001; Leiter & Johnsen, 1994). Neglect seems to be the most pervasive type of maltreatment in cases of cognitive delay, an impairment undoubtedly linked to academic functioning (Petrenko, Friend, Garrido, Taussig, & Culhane, 2012). Because neglect often begins early in life and is often chronic, the findings of Petrenko et al. (2012) concerning the deleterious role of the early onset and chronicity of maltreatment are in line with the findings of Keily, Howe, Dodge, Bates, and Pettitt (2011) and Leiter and Jonsen (1994).

School absenteeism, or truancy, is one of the most potent predictors of academic failure (Attwood & Croll, 2015). The reasons for unexcused absence from school are several. Researchers suggest both individual and contextual factors such as mental health problems, high-risk life situations, being bullied in school, learning disabilities, living in a single-parent household, negative relationships with teachers, and a school environment that does not meet student needs (Havik, Bru, & Ertesvåg, 2015; Karlberg & Sundel, 2004; Strand, 2014; Witkow & Fuligni, 2011). Indeed, an overrepresentation of these factors is often found in populations of maltreated children. It is therefore unsurprising that several studies have found that maltreated children are more often absent from school than are their peers (Eckenrode, 1993; Fantuzzo et al., 2011; Maclean et al., 2016). However, as in the case of the links between child maltreatment and overall academic functioning described above, to my

knowledge no study has investigated mediating variables that could explain the trajectories leading from child maltreatment to school absenteeism.

Child maltreatment and substance use

Substance use disorders (SUDs), including alcohol use disorders, are increasingly conceptualized as developmental phenomena robustly associated with child maltreatment (Afifi, Henriksen, Asmundson, & Sareen, 2012; Banducci, Hoffman, Lejuez, & Koenen, 2014; Fenton et al., 2013; Potthast, Neuner, & Catani, 2014). For example, results of a study of a severely alcohol-dependent adult population in Sweden indicated that nearly two thirds (69%) of the respondents reported at least one type of severe maltreatment and almost all (94.5%) reported experiencing some degree of maltreatment (Lundgren, Gerdner, & Lundqvist, 2002). In an epidemiological study, Lown et al. (2011) found that histories of childhood sexual and physical abuse were associated with greater odds of lifetime alcohol consequences (odds ratios 3.5 and 2.1, respectively) and of having a current diagnosis of alcohol dependence (odds ratios 7.2 and 5.0, respectively). In a twin study, Kendler et al. (2000) found that after controlling for parental psychopathology and family environment, sexual abuse contributed to almost a three times greater likelihood of being diagnosed with alcohol dependence. However, the ability to study the relationship between alcohol and/or substance use and child maltreatment over different developmental periods has been limited by the cross-sectional nature of most previous studies. In one of the few prospective studies of child maltreatment and alcohol consumption, Ferguson et al. (2008) found that 16–18-year-olds who reported being subjected to sexual abuse were three times more likely to develop SUDs in adulthood.

In a study investigating substance use among over 100,000 youth in 6th through 12th grades, Harrison, Fulkerson, and Beebe (1997) found that self-reported experiences of sexual or physical abuse increased the risk of ever having used illicit drugs by two to four times compared with non-maltreated peers. Experiences of multiple forms of maltreatment increased the odd ratios even more. In another large epidemiological study, Fergusson, Boden, and Horwood (2008) found that physical and sexual abuse increased the risks of both substance use and dependence. Thus, there is an abundance of evidence for a link between child maltreatment and alcohol and illicit drug use and later dependence in adulthood. There is, however, a dearth of research that examines the underlying developmental mechanisms explaining this link.

As in the case of academic failure, many of the identified risk factors for substance use, such as low socioeconomic status and living in impoverished areas at the contextual level (Hawkins, Catalano, & Miller, 1992) and

externalizing and internalizing symptoms at the interpersonal level (Rogosch, Oshri, & Cicchetti, 2010), are especially salient in the lives of maltreated youth. However, few studies have aimed to identify variables that mediate the relationship between child maltreatment and problematic alcohol and illicit drug use.

In two longitudinal studies of children comprehensively assessed during a research summer camp, Oshri, Rogosch, Burnette, and Cicchetti (2011) formulated a developmental psychopathology perspective on substance use in adolescence. In this perspective, the study of the cascading effects of early developmental organization that contribute to engagement in substance use later in adolescence was emphasized rather than a focus on current risk factors alone (Oshri et al., 2011; Oshri, Rogosch, & Cicchetti, 2013). In the first of these two studies, a developmental trajectory was found leading from child maltreatment before the age of 7 years via less adaptive personality functioning in 7–9 years to preadolescent externalizing problems and adolescent substance use. In this study, *ego-resiliency* (i.e., the capacity to modify one's modal level of ego-control in adapting flexibly to meet environmental demands) and *ego-control* (i.e., the degree to which individuals express their emotional impulses, ranging from spontaneous and immediate to constrained) were used as two broad dimensions of personality.

In the second study, focusing on child personality organization, Oshri et al. (2013) used latent class analyses to identify three types of personality organization among 10–12-year-olds: under-controlled, overcontrolled, and resilient. Both under-controlled and overcontrolled personality organizations were found to be overrepresented among maltreated children. The under-controlled profile mediated the relationship between the number of experienced maltreatment types, and problematic substance use and externalizing problems in adolescence. In contrast, the overcontrolled personality profile mediated the relationship between child maltreatment and *lower* levels of substance use but higher levels of internalizing symptoms in adolescence. These findings illustrate the diversity of developmental pathways and the probability of risk set in motion by child maltreatment. Specifically, the study exemplifies the notion that a negative affect (internalizing symptoms) model of substance use generally has strong empirical support among adults but more conflicting results concerning adolescents, whereas an externalizing pathway to substance use generally has support within both age groups (Chassin, Sher, Hussong, & Curran, 2013). The externalizing pathway is usually described as starting with a difficult temperament in infancy followed by externalizing symptoms at school age and the early onset of alcohol and substance use in adolescence leading to more anti-social behavior and possibly disorders of dependence (Hussong, Jones, Stein, Baucom, & Boeding, 2011; Tarter et al., 1999; Zucker, 2006). The common underlying factor usually

proposed to fuel an externalizing pathway is behavior undercontrol or poor emotion regulation. Adequate regulation of affect is shaped by a range of socialization experiences during development and has been shown to be one of the main developmental skills negatively affected by child maltreatment (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Heleniak, Jenness, Vander Stoep, McCauley, & McLaughlin, 2016; Oshri, Sutton, Clay-Warner, & Miller, 2015). Moreover, externalizing symptoms and substance use have been found to share a common genetic liability for disinhibited behavior (Iacono, 2008; Kendler, Prescott, Myers, & Neale, 2003).

Hence, in line with the organizational perspective on development, child maltreatment can be seen as influencing the externalizing pathways described above via a negative effect on emotion regulation earlier in development leading to increased risk of psychopathology and possible later problematic substance use. In support of such a model, Oshri et al. (2015) found associations between emotional and sexual abuse in childhood and poor affect regulation and both alcohol and drug use in adolescence.

An internalizing pathway, i.e., the notion of depression and anxiety as an etiological mechanism of problematic substance use, has been less articulated in current research (Masten et al., 2008). However, several researchers have argued that empirical findings suggest an internalizing pathway (Hussong et al., 2011; Masten et al., 2008). These researchers have argued that a few specific methodological and developmental aspects of the internalizing pathway explain the inconsistency within findings concerning anxiety and depression as precursors of substance use. For example, measures of internalizing symptoms are typically less reliable than those targeting externalizing problems (De Los Reyes & Kazdin, 2008). Furthermore, the conceptualization of internalizing problems often contains more disparate sets of dysfunction than does the conceptualization of externalizing problems. For example, separation anxiety has been found to reduce the risk of alcohol use (Kaplow, Curran, Angold, & Costello, 2001), whereas depression in adolescence may increase this risk (Sung, Erkanli, Angold, & Costello, 2004). Accordingly, in some cases, contradictory aspects of internalizing symptoms might make it more difficult to distinguish a clear pattern of the internalizing pathway. In contrast, all aspects of externalizing problems serve to increase the risk of problematic substance use.

Previous research investigating anxiety and depression as precursors of substance use indicate the importance of moderators, suggesting that the internalizing pathway might be more prevalent in certain vulnerable subgroups (i.e., Kassel et al., 2010). For example, stronger associations between negative affect and alcohol use have been found among girls and youth with lower social support (Federman, Costello, Angold, Farmer, & Erkanli, 1997; Hussong, Hicks, Levy, & Curran, 2001).

Moderators associated with child maltreatment and SUDs have been sparsely examined but generally focus on motives for consuming (Smith, Smith, & Grekin, 2014). The strongest support has been found for the tension reduction and self-medication models of substance use (Goldstein, Vilhena Churchill, Stewart, & Wekerle, 2012). Goldstein et al. (2010) examined the role of drinking motives as mediators of the relationship between child maltreatment and problematic alcohol use. Results of that study indicate somewhat different drinking motives for maltreated women and men. Women drank more to regulate negative affect whereas men drank to enhance positive affect. Greyson and Nolen-Hoeksema (2005) proposed an emotion regulation model that included both the enhancement of positive affect and stress-reducing motives as mediators between child maltreatment and alcohol consumption. Grayson and Nolen-Hoeksema found that both of these motives served as partial mediators between sexual abuse in childhood and problematic alcohol consumption in adulthood.

Substance-use–related negative consequences (SURNCs)

Child maltreatment has been robustly associated with binge drinking and the earlier onset of substance use. Moreover, both binge drinking and the early onset of substance use have been found to be predictive of later substance abuse and dependence (Hamburger, Leeb, & Swahn, 2008; Proctor et al., 2017; Shin, Edwards, & Heeren, 2009). A less researched facet of adolescent risky substance use (i.e. use of alcohol and/or illicit drugs) is the negative outcome of using substances, i.e. substance-use–related negative consequences (SURNCs). SURNCs are the proximal consequences of substance consumption that may affect a user, such as getting into fights with friends or family, stealing, neglecting responsibilities, and being unable to cut down on use (Grigsby et al., 2016). Experience of SURNCs in adolescence has also been found to be predictive of substance dependence in early adulthood (Dick, Aliev, Viken, Kaprio, & Rose, 2011).

SURNCs can be viewed not only as potentially harmful consequences of risky substance use but also as a factor that exacerbates substance use and increases the risk of later abuse and dependence. For example, an individual's substance use can strain family relationships, in turn causing more stress and a greater likelihood of risky substance use patterns, such as drinking to reduce internal negative affective states (Cooper, 1994). This means that excess SURNCs in adolescence can lead to a heightened risk of establishing risky substance use behaviors, such as drinking to cope, via the strain of increased stress early in development. This can in turn be a risk factor for later maladaptation, because adolescence is a period when many social and practical

skills needed to meet the demands of adult life develop (Cicchetti & Rogosch, 2002). Furthermore, if an adolescent is deprived of practice of skills needed to negotiate constructive solutions for developmentally salient learning tasks, there is a risk of adult maladaptation even if the adolescent stops using substances when entering adulthood.

Several predictors of SURNCs that earlier research has identified have also been found to be common among adolescents experiencing multiple types of maltreatment. Examples include externalizing and internalizing symptoms, conduct problems, drinking to cope, affect dysregulation, and poor self-regulation (Emery, Simons, Clarke, & Gaher, 2014; Kaiser, Milich, Lynam, & Charnigo, 2012; Knopik, Heath, Bucholz, Madden, & Waldron, 2009; Marmorstein, 2010; Mason et al., 2011). It is therefore possible that maltreated children will report more SURNCs than will their non-maltreated peers. Furthermore, earlier research has found that experiencing multiple types of maltreatment exacerbates the negative effect on mental health, conduct problems, and self-regulation compared with experiencing a single type of maltreatment (Anda et al., 2010; Cicchetti & Toth, 2005; Dube, Anda, Felitti, Edwards, & Croft, 2002).

Main aim

The overall aim of this doctoral thesis was to investigate how experiences of childhood maltreatment affected three developmentally salient areas of functioning in early adolescence. More specifically, **Study I** examined the relationships between self-reported emotional neglect and/or emotional abuse and gender, and psychosomatic symptoms, mental health, and mental well-being in early adolescence. **Study II** investigated the relationship between six subtypes of maltreatment and school absenteeism in early adolescence. **Study III** investigated the longitudinal relationship between being subjected to no maltreatment, one type of maltreatment, or multiple types of maltreatment and experiencing SURNCs in early to mid adolescence.

SUMMARY OF THE STUDIES

Brief description of the research program

Data for the three studies were obtained from the Longitudinal Research on Development in Adolescence (LoRDIA) program. LoRDIA is an ongoing multidisciplinary prospective and longitudinal research program studying developmental pathways leading to alcohol and drug use and mental health problems in a non-clinical population of Swedish adolescents aged 12–18 years. The research program is a collaboration between the School of Health and Welfare at Jönköping University and the University of Gothenburg (GU). Two cohorts are being followed, starting in the 6th and 7th grades from 15 schools in four municipalities with populations of 9000–36,000 in southwest and south–central Sweden. The research program and data collection protocols were approved by the Regional Research Review Board in Gothenburg (No. 362-13; 2013-09-25), with further approval confirmed for wave 2 (2014-05-20), wave 3 (2015-09-02), and wave 4 (2017-07-06).

Methods

Participants

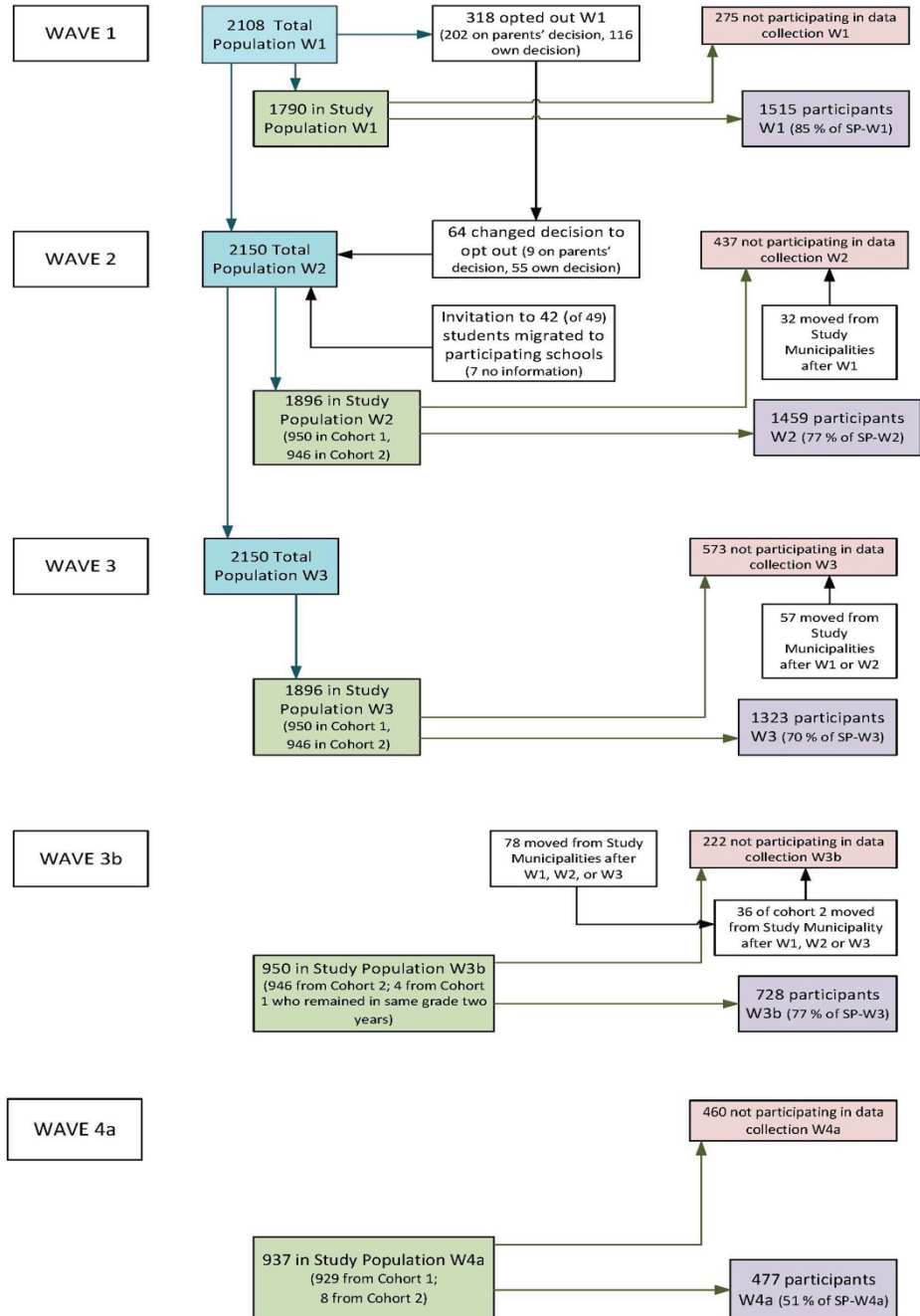
In the first wave of data collection, a total of 2108 students were invited to participate. An attrition rate of 25% resulted in 1515 adolescents completing the questionnaire. The mean age (standard deviation) was the same in both sexes at 12.6 years (0.64). External exclusion at baseline was due to absence from school (9%) or declined consent from a caregiver (10%) or child (6%). In the second and third waves of measurements, 1460 (mean age 13.4 years, *SD* 0.56) and 1316 (mean age 14.3 years, *SD* 0.62) students completed the questionnaire, respectively. In the fourth wave of measurements, only the younger cohort was approached, i.e., 9th graders with a mean age of 15 years (*SD* 0.33); 723 students completed the questionnaires in wave 4, yielding an attrition rate of 23%.

The representativeness of participants in the first wave compared with those who opted out was checked by comparing available register data on demographics (i.e., gender and immigration status, as indicated by studying Swedish as a second language) and school performance (i.e., absenteeism and merit points based on grades). There were no significant differences in gender (88.7% of all boys and 90.4% of all girls who were invited participated, $p = .22$) or immigration status (of all invited students, 90.9% with immigrant status and 86.2% with Swedish ethnicity agreed to participate, $p = .07$).

In **Study I**, data from the first (mean age 12.7 years) and second (mean age 13.4 years) waves of data collection were used. Of the 1520 adolescents enrolled in the research program, 1371 completed the Strengths and Difficulties Questionnaire (SDQ) psychosomatic problems and mental well-being questions in the first wave; 1134 of these also completed the Childhood Trauma Questionnaire (CTQ) in the second wave, yielding an attrition rate of 16.3% between the first two waves of measurements. Chi-square tests showed that the attrition group contained a significantly higher proportion of boys ($p = 0.036$) and of adolescents with divorced parents ($p = 0.021$). Independent samples t -tests showed significantly higher levels of externalizing symptoms ($p = 0.032$) in the attrition group. For all other variables, there were no significant differences between the attrition group and those who completed questionnaires in both the first and second waves of data collection. **Study II** used data from the third wave of data collection (mean age 14.3 years). Of the 1316 students enrolled in the third wave, 1285 completed all of the items included. In **Study III**, which had a longitudinal design, data from the second (mean age 13.4 years), third (mean age 14.3 years), and fourth (mean age 15 years) waves of collection were used. For the purpose of **Study III**, only those students who both completed the childhood trauma questionnaire and reported substance use in at least one of the waves of measurement ($n = 406$) were included in the analyses.

See Figure 1 for full information on participants over the four waves of measurement.

Figure 1. Flowchart of participants over the four waves of measurement.



Procedure

Annual data collection began in 2013 when 2108 adolescents from 15 schools were invited to participate in the program. Two cohorts were followed, starting when students were in the 6th and 7th grades at the time of the first wave of measurements. So far, data have been collected via four annual surveys. The surveys have been conducted in classroom settings using a paper questionnaire administered by trained research assistants. At least one member of the research team monitored the students and was available to answer questions throughout the procedure. It was emphasized that participation was voluntary, collected information would remain confidential, and participants were free to withdraw from the study at any time. To ensure confidentiality, questionnaires were assigned codes instead of student names. Students told the research assistant their names when they submitted their questionnaires. The research assistant then wrote the code assigned to each student on his or her questionnaire and inserted it, folded, into a closed box. The lists of codes were never stored together with the questionnaires, which were scanned by staff at the School of Health and Welfare in Jonkoping. Before the researchers accessed the data, students were assigned new ID numbers, so that it was impossible for a researcher to identify any respondent in the computer files. Before each survey, the social worker or school nurse at each school was contacted and informed about the content of the questionnaire. Students were informed of possibly triggering questions in the questionnaire and were encouraged to contact the social worker or school nurse if they had negative reactions.

Measures included in the three studies

Childhood maltreatment

The Swedish version of the Childhood Trauma Questionnaire—Short Form (CTQ-SF; Bernstein et al., 1994; Gerdner & Allgulander, 2009) was used to measure experiences of childhood maltreatment. The CTQ is a retrospective self-rating scale designed to identify childhood abuse and neglect before the age of 12 years in teenagers and adults (Bernstein et al., 1994). Items on the CTQ are rated on a 5-point, Likert-type scale with response options ranging from (1) never true to (5) very often true. The CTQ has five subscales, i.e., physical abuse ($\alpha = 0.79$), sexual abuse ($\alpha = 0.79$), emotional abuse ($\alpha = 0.69$), physical neglect ($\alpha = 0.79$), and emotional neglect ($\alpha = 0.85$), which have been empirically verified (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein et al., 1994). For **Study II**, an extra item was added to measure

witnessing domestic violence. This item was formulated as: “When I was growing up I witnessed violence between adults in my home.”

Mental health symptoms

Mental health symptoms were measured using the Swedish version of the Strengths and Difficulties Questionnaire (SDQ-S; Goodman, 1999, 2001; Smedje, Broman, Hetta, & von Knorring, 1999). The SDQ-S is a self-rating scale containing 25 items that screens for behavioral and emotional problems, experienced over the last six months, in children and adolescents. The SDQ contains five problem scales (i.e., Emotional Symptoms, Conduct Problems, Hyperactivity-Inattention, Peer Problems, and Total Difficulties) and one prosocial scale (Goodman, 1999, 2001). From the five scales, a three-factor model was created consisting of Internalizing (Emotional Symptoms + Peer Problems), Externalizing (Conduct Problems + Hyperactivity-Inattention), and Total Difficulties (Internalizing + Externalizing) scales. This procedure has been recommended when using the SDQ in a low-risk, general population sample (Goodman, Lamping, & Ploubidis, 2010).

Psychosomatic symptoms

The Psychosomatic Problems scale (PsP; Hagquist, 2008) contains questions about difficulties concentrating, difficulties falling asleep, headaches, stomachaches, feeling tense, lack of appetite, feelings of sadness, and dizziness over the last six months. Response options are: never, rarely, sometimes, often, and always ($\alpha = 0.91$).

Additional measures in each study

Study I

Mental well-being. Mental well-being was measured using an index created by Boson, Berglund, Wennberg, and Fahlke (2016) that has a satisfactory alpha value (0.77). The index consists of two items: (1) “In general, how happy are you with life at the moment?” (scored 1–4: very happy, quite happy, quite unhappy, and very unhappy) and (2) “I think that my life has purpose and meaning” (scored 1–4: completely agree, partly agree, partly disagree, and completely disagree). Scores from these items were merged into a reversed

index ranging from 2 to 8, with 2 indicating the lowest possible mental well-being and 8 indicating the highest possible mental well-being.

Study II

School absenteeism. Students self-reported their absenteeism by answering the question: “Have you been truant from school this term (at least one whole day of unexcused absenteeism)?” Responses were: 0 (no, this has not happened), 1 (1–3 times), 2 (4–10 times), and 3 (more than 10 times). Because the data were gathered one month into the term, and a school day in high school in Sweden lasts a mean of five hours, one full day of “unexcused absence” this term equals five hours or about 5% of school time so far this term. Hence, response option 1 indicates a range of 5–15% unexcused absence, 2 = 20–50%, and 3 = 50% or more. In the current study, response option 1 was defined as moderate absenteeism ($n = 132$) and response options 2 and 3 were defined as excessive absenteeism ($n = 39$).

In addition, a comprehensive set of instruments measuring school factors (e.g., peer climate in classroom and different types of harassment in school) was used in **Study II**. For a full description of these instruments, see Hagborg, Berglund, and Fahlke (2018).

Study III

Alcohol use frequency. The questionnaire in the LoRDIA program contains one item measuring the frequency of alcohol use over the past twelve months: “Have you drunk alcohol (more than just a sip) over the past year?” The response options were: (0) no, (1) once in the past year, (2) several times in the past year, (3) once a month, (4) a few times a month, and (5) once a week.

Substance-use-related negative consequences (SURNCs). A scale containing seven items was used to measure SURNCs in **Study III**: “Have any of the following happened when you drank alcohol or used illicit drugs over the past year?” The answers were: (a) I have not used any drugs or alcohol over the past year, (b) got into a fight, verbally or physically, (c) harmed yourself or someone else, (d) lost money or other valuables, (e) destroyed things or clothes, (f) had problems in relationships with friends or family, and (g) had unwanted sex (that I regretted afterwards). The response options were: (1) no, (2) once, or (3) twice or more. The SURNC index was created so that those children who did not report alcohol/substance use were excluded from analyses. Students who reported alcohol/substance use but no SURNCs were

coded 0, those who reported alcohol/substance use and one SURNC were coded 1, those who reported two SURNCs were coded 2, and so forth, with the highest number of SURNCs being eleven.

Use of illicit substances. In **Study III**, two items were used to measure substance use: (1) “Have you ever used hash, marijuana, spice, or other cannabis drugs?” and (2) “Have you used any other illicit drugs?” The response options were: (1) no, (2) once in the past year, (3) several times in the past year, (4) once a month, (5) a few times a month, and (6) once a week. Out of these two items, an index ranging from 2 to 12 was created for the purpose of this study.

Statistical analyses

In **Study I**, only the emotional abuse and emotional neglect scales of the CTQ were administered. Because there are no population-based norm data for the CTQ-SF concerning early adolescents, the participants were grouped into three emotional neglect and emotional abuse severity groups (i.e., none, moderate, and severe) by percentile, as advised by Bernstein and Fink (1998). To analyze the main and interaction effects of emotional maltreatment (i.e., emotional abuse and neglect) and gender on the outcome variables (i.e., internalizing, externalizing, psychosomatic symptoms, and mental well-being) a 3 (none vs. moderate vs. severe maltreatment) \times 2 (boys vs. girls) ANOVA was used. One-way ANOVAs were also conducted for emotional abuse/emotional neglect in girls and boys separately to explore differences in mean scores on the outcome variables between the three emotional maltreatment severity groups. Effect sizes were calculated using the eta-squared test and interpreted as advised by Cohen (1988, pp. 284–287).

In **Study II**, one-way between-group ANOVAs and chi-square tests for independence were conducted to compare mean scores or frequencies between students reporting *no*, *moderate*, and *excessive absenteeism* for age, maltreatment, gender, perceived family economic status, single household, and being born in Sweden. The six child maltreatment categories were dichotomized. Any respondent reporting scores above the cut-off as described by Bernstein and Fink (1998) for any level of physical abuse, sexual abuse, or witnessing domestic violence was coded as having been exposed. For emotional abuse and emotional/physical neglect, only those adolescents reporting severe levels of maltreatment were coded as exposed. One-way between-group ANOVAs were then conducted to analyze differences in externalizing symptoms, internalizing symptoms, psychosomatic symptoms, relationships with teachers, peer climate in the classroom, school problems,

and sexual, physical, and personal harassment between students reporting no absenteeism, absenteeism without child maltreatment, and absenteeism with child maltreatment. We conducted post hoc comparisons using the Bonferroni test to compare differences in mean scores between the three groups, and the eta-squared test to estimate effect size.

In **Study III**, given the hierarchical data structure with repeated measurements nested within children, and a positively skewed discrete count outcome variable with excessive zero frequency (i.e., as most of the children reported no alcohol/substance use consumption), we fitted two multilevel zero-inflated Poisson regression models. These models are essentially comparable to the more commonly used multilevel linear models, except for a link function in the form of a mixture distribution consisting of a Poisson part, modeling the count frequency, and a logistic part, modeling the excess zeros (for a detailed description of these models, see, e.g., Lee et al., 2006). In Model 1, as fixed effects, we included time (implied by the wave-1 data) as a level-1 covariate, child maltreatment as a level-2 factor (using no maltreatment as a reference group), and the interaction of time and maltreatment as a cross-level interaction. The model specification was identical for both the Poisson and logistic parts of the model. The random effects were modeled as intercept only. In Model 2, we added family economic status, alcohol use frequency, and substance drug use frequency as mean-centered level-1 covariates to both parts of the models. We derived parameters using maximum likelihood estimation as implemented using the *glmTMB* (Brooks et al., 2017) package in R. Missing data were handled through the estimation procedure under the missing-at-random assumption as conventionally defined.

Main findings and conclusions

Study I

The results of this study indicate that emotional maltreatment has a significant negative impact on the mental health and mental well-being of young adolescents. This was found to be true for both genders, for emotional abuse and emotional neglect, and for all outcome variables, except that boys reporting emotional abuse did not report higher degrees of psychosomatic symptoms. It should be noted, however, that the relationships between emotional neglect and the outcome variables yielded larger effect sizes than did those between emotional abuse and the outcome variables. There was also a dose–response relationship between both emotional abuse and emotional neglect and the outcome variables, which might indicate a causal effect of

maltreatment. Interaction effects on outcomes were also found between emotional maltreatment and gender; however, different variables displayed different directions of these interaction effects.

For internalizing symptoms, psychosomatic symptoms, and mental well-being, differences between boys and girls were larger in the severely abused/neglected groups than in the not-abused/neglected groups, with girls reporting more problems than did boys. For externalizing symptoms, differences between girls and boys were smaller in the abused and neglected groups than in the not-abused or neglected groups, in which boys reported more problems than did girls.

There were associations between emotional maltreatment and negative effects on outcome variables for both girls and boys. Thus, when analyzing girls and boys together, no clear pattern of specific types of symptom outcomes was found for emotional abuse or emotional neglect. This is in line with other studies investigating the effects of either emotional abuse or emotional neglect in relation to behavioral and emotional problems (Arslan, 2015; Sturge-Apple, Davies, & Cummings, 2006; Taillieu, Brownridge, Sareen, & Afifi, 2016). However, except for externalizing symptoms, girls reported a larger negative impact of emotional maltreatment on the outcome variables than did boys. Emotional maltreatment severity seems to magnify gender differences in internalizing symptoms, psychosomatic symptoms, and mental well-being, whereas emotional maltreatment severity seems to even out the differences in externalizing symptoms between girls and boys (see Figures 2 and 3).

Figure 2. Illustration of the effects of interaction between level of emotional neglect and gender on psychosomatic symptoms, mental health, and mental well-being (Hagborg, Tidefors, & Fahlke, 2018).

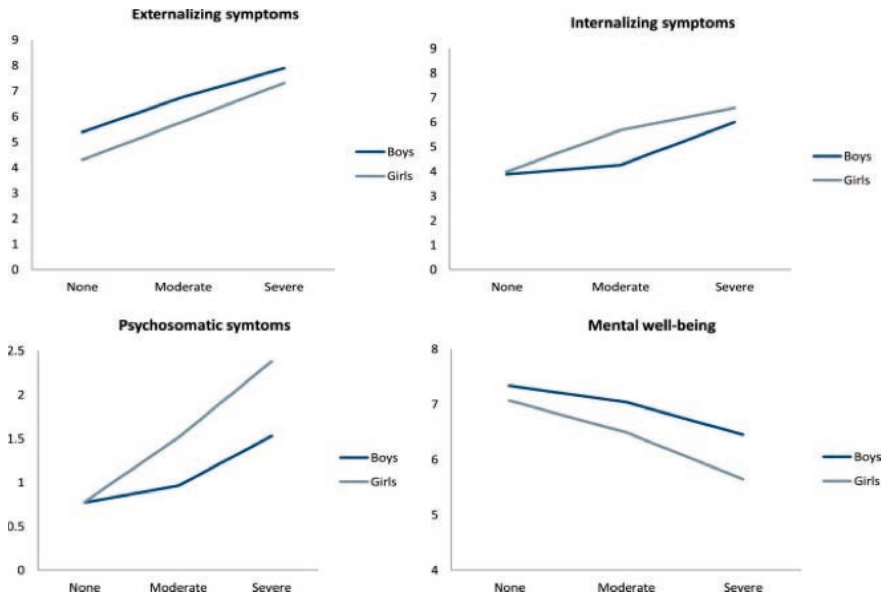
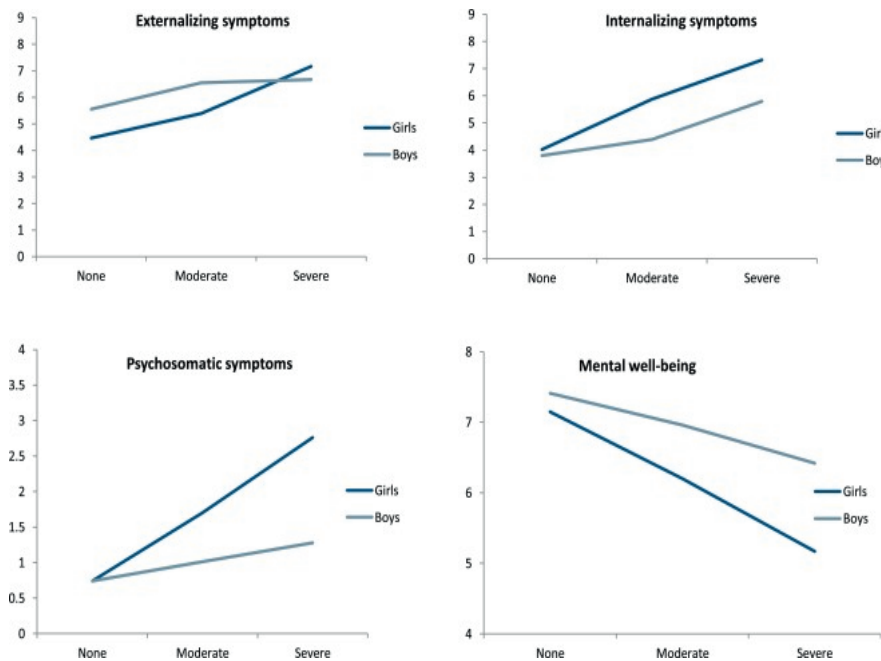


Figure 3. Illustration of effects of interaction between level of emotional abuse and gender on psychosomatic symptoms, mental health, and mental well-being (Hagborg et al., 2018).



Study II

All six types of maltreatment were overrepresented in adolescents reporting school absenteeism. Adolescents reporting moderate and severe absenteeism had significantly higher rates of both single- and poly-victimization than did other students (see **Table 1** for percentages). Maltreated absentees reported higher levels of internalizing, externalizing, and psychosomatic symptoms, more negative relationships with teachers, and higher levels of peer harassment than did absentees who reported no maltreatment.

The results of this study indicate a relationship between school absenteeism and child maltreatment. However, the well-known risk factors that child maltreatment and school absenteeism share, such as single-parent households and low income (Mörk et al., 2014; Trickett, 1998), were not controlled for in this study, so the results must be interpreted with caution. The reports that maltreated absentees display more mental health symptoms, more personal harassment, and more negative relationships with their teachers could indicate that absentees who have experienced child maltreatment are an especially vulnerable group who might need tailored interventions.

Table 1. Child maltreatment in students reporting no, moderate, and excessive school absenteeism (from Hagborg et al., 2018).

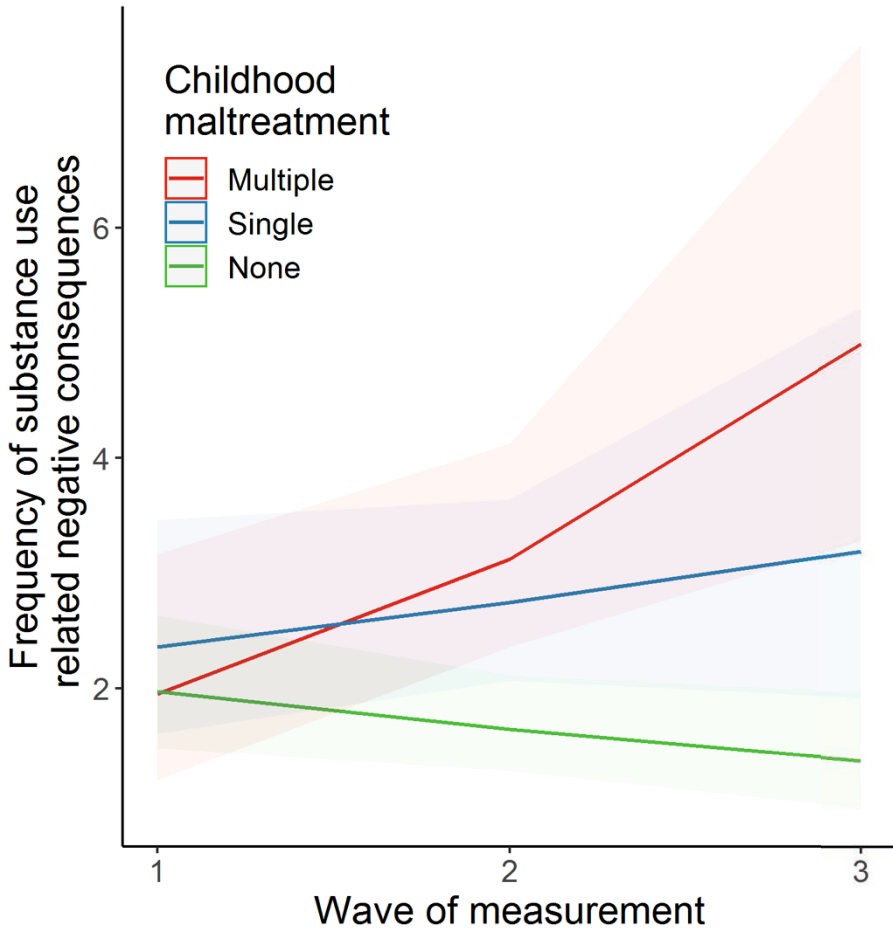
Child maltreatment (% yes)	Total sample (n = 1285)	No absenteeis m (n = 1108)	Moderate absenteeis m (n = 132)	Excessive absenteeis m (n = 39)	χ²	p/phi
Experience domestic violence	7.3	6	11.5	27.5*	30.23	.000/.15
Sexual abuse	3.3	2.6	6.8*	10*	12.31	.002/.10
Physical abuse	13.1	11.6	22.9*	25*	18.3	.000/.12
Emotional neglect	11.3	9.5	19.7*	33.3*	31.83	.000/.16
Emotional abuse	7.7	6.8	11.5	20*	12.5	.002/.10
Physical neglect	7.2	6	11.3	19.5*	15.2	.001/.11
Total number of maltreatment types experienced (% yes)						
0	74.9	77.7	58.6*	48.7*	42.25	.000/.18
1	15.6	14.2	25*	23.1		
2-6	9.6	8.1	16.4*	28.2*		

* $R > 1.96$, indicating a major contributor to the significant result

Study III

The findings of this study suggest that experiencing multiple types of childhood maltreatment is associated with substantially increased risk of SURNCs in adolescence. At the baseline age of 13–14 years, respondents in all groups were approximately equal in terms of SURNCs. However, with each additional year, the students in the maltreated group reported more serious SURNCs than did their non-maltreated peers. Furthermore, adolescents reporting multiple types of maltreatment also reported more frequent substance use. The relationship between maltreatment and SURNCs was only partially explained by the higher frequency of substance use found in the severely maltreated group. Hence, there seems to be a negative relationship between having experienced maltreatment in childhood and suffering alcohol-related negative consequences during adolescence. See Figure 4 for the longitudinal trajectories of SURNCs in the three maltreatment groups.

Figure 4. Expected frequency of SURNCs over time for three groups of children differing in the frequency of reported maltreatment (from Hagborg et al., 2019, accepted for publication).



GENERAL DISCUSSION

The overall aim of this doctoral thesis was to investigate how experiences of childhood maltreatment affected three outcomes salient in adolescent development. **Study I** concerns the relationship between childhood emotional maltreatment and mental health (i.e., externalizing and internalizing symptoms). **Study II** focuses on the relationship between child maltreatment and academic functioning (i.e., school absenteeism). **Study III** explores how experiences of child maltreatment affect substance (i.e., alcohol and illicit drugs) use and SURNCs from early to mid adolescence.

Prevalence of the main subtypes of child maltreatment

Although it was not a main objective of this thesis, it would be interesting to compare the prevalence rates of child maltreatment found here with those found in earlier studies. This is important because previous studies have (1) included older adolescents, (2) used cross-sectional designs, and (3) used other instruments. These are all methodological issues that might affect self-reported prevalence rates of child maltreatment. Therefore, in this section, the results of **studies I–III** are discussed in relation to earlier studies, primarily of the Swedish population, concerning the prevalence of different forms of child maltreatment reported in adolescence.

In **studies II** and **III**, the prevalences of all childhood maltreatment subtypes (i.e., physical, sexual, and emotional abuse, physical and emotional neglect, and experiencing domestic violence before the age of 12 years) were investigated, whereas in **Study I** only emotional maltreatment was investigated. **Table 2** summarizes recent prevalence rates from studies using self-report measures of child maltreatment in normative adolescent populations in Sweden.

Table 2. Summary of recent studies using self-report measures of child maltreatment using normative adolescent populations in Sweden. Data are presented as prevalence rates (%); F = female and M = male.

	Self-report measures of child maltreatment	Emotional neglect (F/M)	Emotional abuse (F/M)	Physical abuse (F/M)	Sexual abuse (F/M)	Physical neglect	Experiencing domestic violence (F/M)
<i>Hagborg et al. (2017), i.e., Study II in the present thesis</i>	Childhood Trauma Questionnaire	11.3	7.7	13.1	3.3	7.2	7.3
<i>Jernbro and Janson (2016)</i>	Conflict Tactics Scales	6.2/5.6	16.7/13.2	14	14/2	1	14
<i>Aho et al. (2016)</i>	Juvenile Victimization Questionnaire	6.6/3.0	22.3/8.9	15.4/9.1	5.7/1.1	-	9.3/4.1
<i>Janson et al. (2011)</i>	Conflict Tactics Scale	-	-	13.8	-	-	-
<i>Nilsson, Gustafsson, and Svedin (2010)</i>	Life Incidence of Traumatic Events Scale	-	-	13	3	-	11.5
<i>Nilsson, Gustafsson, Larsson, and Svedin (2010)</i>	Linköping Youth Lifetime Event Scale	-	-	16	1	-	11.2

<i>Annerbäck et al. (2010)</i>	-	-	-	15	-	-	10.8
	Instrument specific for that study						
<i>Holmberg and Hellberg (2010)</i>	-	-	-	-	8.3/1.2	-	-
	Q90						
<i>Priebe and Svedin (2009)</i>	-	-	-	-	13.5/5.5	-	-
	Instrument specific for that study						
<i>Janson (2007)</i>	-	-	-	13	-	-	5
	Conflict Tactics Scale						
<i>Åslund, Nilsson, Starrin, and Sjöberg (2007)</i>	-	-	-	-	12.5/6.8	-	-
	Instrument specific for that study						

Emotional neglect and abuse

As seen in Table 2, similar prevalence rates of about 5% were reported by Aho et al. (2016) and Janson and Jernbro (2016). This is of interest because the prevalence rate of emotional neglect often varied widely in earlier international studies (e.g., Finkelhor, Ormrod, Turner, and Hamby (2005). In **Study II** (i.e., Hagborg et al., 2017), the prevalence of self-reported emotional neglect was, however, higher (11%). This difference could be explained by methodological factors such as different questionnaire designs. For example, Stoltenborgh et al. (2013) found in a meta-analysis that when fewer items assessing emotional maltreatment were used, lower prevalence rates were also reported. Both Aho et al. (2016) and Janson and Jernbro (2016) used only one item to measure emotional neglect, whereas the CTQ used in **studies I** and **II** contains five items measuring emotional neglect. Furthermore, the adolescents studied by Aho et al. (2016) and Jernbro and Janson (2016) were a mean of three and two years older, respectively, than those studied here. Because emotional neglect has been reported to have an early onset, younger participants might have more recent and accessible memories of emotional neglect before the age of 12 years.

Aho et al. (2016) and Jernbro and Janson (2016) also reported higher prevalence rates of emotional abuse than that shown by the data from **Study II**. This might be because only those adolescents who reported the most severe and repeated emotional abuse were included in **Study II** and, furthermore, they were asked to report emotional abuse experiences only up to the age of 12 years. The other two studies, i.e., by Aho et al. (2016) and Jernbro and Janson (2016), used no specified upper age limit for having experienced emotional abuse.

These divergent emotional abuse results are paralleled by the results for emotional neglect, for which a higher prevalence rate was reported in **Study II** than by Aho et al. (2016) and Jernbro and Janson (2016). An important difference between these two types of emotional maltreatment is that emotional neglect generally has an early onset and is often chronic (Spinazzola et al., 2014). Because younger adolescents typically are more dependent and have more direct contact with their caregivers than do older adolescents (De Goede, Branje, & Meeus, 2009), they might be more attentive and sensitive to lack of emotional warmth and nurturing than are older adolescents. This might partly explain why participants in **Study I** reported higher levels of emotional neglect than did those studied by Aho et al. (2016) and Jernbro and Janson (2016). The harshness and aggressiveness of tone and language between parent and teenager, characteristic of emotional abuse, could be expected to increase during adolescence (Crone, Duijvenvoorde, & Peper, 2016). Hence, a 17-year-

old will likely have experienced more incidents of emotional abuse than will a 13-year-old. This could partly explain the differences in the prevalence rates of emotional abuse found in **Study II** and the earlier studies.

Physical neglect and abuse

Except for **Study II** in the present thesis, only one previous study has investigated physical neglect in Swedish adolescents (Jernbro & Janson, 2016; see Table 2). In this earlier study, items from the Adverse Childhood Experiences study were used to measure physical neglect (Anda, Butchart, Felitti, & Brown, 2010), and it was found that only one percent of respondents reported this type of maltreatment. However, **Study II** found a higher prevalence rate of 7.2%, and a meta-analysis of physical neglect worldwide also reported a higher mean prevalence rate of 6.3% (Stoltenborgh et al., 2013). The authors of the meta-analysis (Stoltenborgh et al., 2013) emphasized that a large variety of measurements, sampling procedures, and definitions of physical neglect are used, and that all these variables can influence prevalence rates. For example, in **Study II** the CTQ physical neglect scale consists of five items versus only one item used by Jernbro and Janson (2016).

Concerning self-reported physical abuse, earlier studies presented prevalence rates (see Table 2) in line with the prevalence rate found in **Study II** (13.1%). It is important to note that the results of all studies concern experiences of *ever* having been physically abused by an adult. Asking only about more serious or chronic physical abuse would likely yield lower prevalence rates.

Child sexual abuse

As shown in Table 2, earlier Swedish studies of experiences of child sexual abuse have reported prevalence rate ranges of 1.1–6.8% for boys and 5.7–14% for girls. In **Study II** in this thesis, 3.3% of adolescents reported sexual abuse. The present analyses were not stratified by gender, however, making it difficult to directly compare their results with those of earlier studies. Nevertheless, the prevalence rate of sexual abuse found in **Study II** is fairly low. This might be because the specified age limit used in **Study II**, i.e., experiences of child maltreatment before the age of 12 years, probably resulted in most reported sexual abuse being perpetrated within the home or by someone close to the child. Some of the earlier studies (e.g., Priebe & Svedin, 2009) also included questions about peer victimization, which of course could result in higher prevalence rates.

Experiencing domestic violence

Earlier studies have identified that 5–14% of Swedish adolescents report having experienced domestic violence (see Table 2). The lowest prevalence rate (5%) was reported by Janson (2007), and might be explained by their measuring only more pervasive and recurring experiences of domestic violence. In **Study II**, 7.3% of participants reported experiencing domestic violence. This result at the lower end of reported prevalence rates may be due to the younger age of the participants. In the earlier studies described in Table 2, participants ranged from 15 to 19 years of age and could therefore have experienced more domestic violence. Furthermore, in the current study, only one item was used to measure experiences of domestic violence, whereas the earlier studies used several items. As mentioned earlier, Stoltenborgh et al. (2013) have shown that use of fewer items for assessing maltreatment can result in a lower prevalence rate. This may be one explanation for the lower prevalence rate found in **Study II** than in earlier studies, as presented in Table 2.

Child maltreatment, mental health, and gender differences

The results of **studies I** and **II** indicate associations between child maltreatment and a variety of mental health problems. These results are in line with those of previous studies examining mental health following child maltreatment (Jaffee, 2017; Taillieu et al., 2016).

In **Study I**, both girls and boys reported that emotional neglect and abuse had significant negative impacts on the outcome variables. This result strengthens earlier findings (e.g., Hart & Glaser, 2011) that emotional maltreatment (i.e., abuse and neglect) is a serious risk factor for subsequent negative outcomes. Furthermore, this effect seems even more pronounced among girls, i.e., **Study I** showed that girls, overall, reported a more serious impact of emotional maltreatment than did boys.

It should be noted that few studies include analyses of gender differences in mental health (especially internalizing, externalizing, and psychosomatic problems) following child maltreatment. In addition, the results are somewhat mixed in the few published studies of the subject (Crittenden, Claussen, & Sugarman, 1994; Spinnazola et al., 2014). Concerning internalizing and externalizing symptoms, girls typically report more internalizing symptoms whereas boys report more externalizing symptoms after child maltreatment (Crittenden et al., 1994; Spinnazola et al., 2014). In **Study I**, the findings were

partly in line with previous research: girls reported more internalizing symptoms, whereas there was no gender difference in externalizing symptoms.

From the perspective of transactional ecological models of developmental psychopathology (Cicchetti, 2006), individual risk and protective factors and the surrounding ecology could have contributed to the gender differences observed in **Study I**. This could be explained by variables at the *individual* (e.g., pubertal timing), *microsystem* (e.g., experiences of sexual abuse), and *macrosystem* (e.g., gender norms) levels.

Concerning the individual level, girls generally enter puberty earlier than do boys. Early pubertal timing has been linked to internalizing symptoms, especially among girls (Galvao et al., 2014; Kaltiala-Heino, Marttunen, Rantanen, & Rimpelä, 2003), and previous studies have linked child maltreatment to early pubertal timing (Negriff, Saxbe, & Trickett, 2015). It is thus possible that the numbers of girl and boys who have just entered puberty could partly explain the differences in internalizing symptoms observed in **Study I**. It has been suggested that heightened vulnerability to internalizing symptoms for girls with an early onset of puberty is linked to stress or challenging life situations (Goodyer, Herbert, Tamplin, & Altham, 2000). If so, such differences should be most evident in the “high-risk” group of girls, for example, girls with experience of child maltreatment. This notion is indeed supported by previous studies (Cicchetti, 2006). Early pubertal timing is an excellent example of how risk factors from different levels of the ecology interact to increase the risk of psychopathology. For example, Hamlat et al. (2015) found that early pubertal timing both increased the risk of and sensitized adolescent girls to peer victimization. Both these factors, together with body image, predicted subsequent internalizing symptomatology. Because the findings of **Study II** indicate a higher level of peer victimization among maltreated adolescents than their non-maltreated peers, there might be a link between child maltreatment, pubertal timing, peer victimization, and internalizing symptoms.

Sexual abuse was not measured in **Study I**. Regarding the microsystem, and using sexual abuse as an example, it has been proposed that higher levels of reported internalizing symptoms among girls can be explained by the fact that girls are more likely to be victims of sexual abuse. It is possible that the girls in **Study I** who reported emotional maltreatment were also more often victims of sexual abuse than were the boys, and consequently reported higher levels of symptoms than did the boys. Due to ethical considerations, sexual abuse was not measured in **Study I**; this is unfortunate, as sexual abuse results could have strengthened this hypothesis.

Another possible explanation for the gender differences in symptom patterns following maltreatment rests on the macrosystem. For example, gender role expectations may be more supportive or tolerant of certain

symptoms in girls and of other symptoms in boys. Social expectations about gender suggest that men and boys are viewed as active and aggressive, whereas women and girls are viewed as passive and emotional (e.g., Doey, Coplan, & Kingsbury, 2014). This means that externalizing symptoms and behaviors could be more accepted in boys, whereas internalizing and depressive behaviors could be more accepted in girls. Earlier studies have also found that boys and men more often tend to use alcohol and/or illicit drugs as coping strategies following maltreatment and other traumatic events than do girls and women (Tolin & Foa, 2006).

Child maltreatment and academic functioning

All six subtypes of child maltreatment (i.e., sexual, physical, and emotional abuse, emotional and physical neglect, and experiencing domestic violence) were overrepresented in the group that reported school absenteeism (**Study II**). Although there are few studies examining the relationship between child maltreatment and school absenteeism, these results were expected. For example, both school absentees and maltreated children are high-risk groups that share many correlates such as psychosomatic symptoms, substance use, depression, anxiety disorders, low self-esteem, and antisocial problems (Egger, Costello, & Angold, 2003; Ek & Eriksson, 2013; Thornton, Darmody, & McCoy, 2013), so it is unsurprising that these groups overlap. Child maltreatment and school absenteeism also share risk factors such as poverty, low parental education, larger family size, residential mobility, and neighborhood poverty levels, which in turn have been found to increase the risk of child maltreatment as well as academic failure (Mörk et al., 2014; Trickett & Schellenbach, 1998).

In **Study II**, maltreated absentees differed from the non-maltreated absentees in three distinct areas: relationships with teachers, peer victimization, and mental health. From the developmental psychopathology perspective (Cicchetti, 2006), these factors could be seen as salient developmental tasks, all known to be negatively affected by child maltreatment. Furthermore, these factors can also be assumed to have bidirectional relationships with school absenteeism. Hence, these variables are promising candidates for factors moderating the relationship between child maltreatment and school absenteeism. Moderator analyses including these variables could yield important information concerning developmental pathways from child maltreatment to school absenteeism.

The finding of **Study II** that maltreated absentees reported significantly more mental health problems than did non-maltreated absentees supported Slade and Wissow's (2007) model linking child maltreatment to academic

functioning. In their model, child maltreatment affects mental health as well as academic functioning, and there is a bidirectional relationship between mental health and academic functioning. Furthermore, mental health might mediate the relationship between child maltreatment and academic functioning. Given the bidirectional relationship between absenteeism and mental health, the maltreated adolescents who also are school absentees could be a particularly vulnerable group because absenteeism poses a risk of exacerbating pre-existing mental health problems and vice versa.

Lastly, in **Study II**, maltreated absentees reported significantly more peer victimization than non-maltreated absentees. This strengthens the notion that maltreated children not only run a heightened risk of multiple maltreatment experiences but also of subsequent victimization by peers (Holt, Kantor, & Finkelhor, 2009; Hossler, Raddatz, & Windzio, 2007; Smith, 2017). Previous studies have found victimization in school to be a major predictor of school absenteeism (e.g., Karlberg & Sundell, 2004). Theoretically, peer victimization could be a factor that mediates the relationship between child maltreatment and school absenteeism.

To sum up, the relationships between child maltreatment and subsequent outcomes such as mental health, peer victimization and school absenteeism found in **Study II** illustrate both the concepts of cascading effects following maltreatment and multifinality, i.e., one risk factor resulting in many different outcomes.

Child maltreatment and substance use

In **Study III**, results indicated that, compared with non-maltreated peers, maltreated adolescents reported more illicit drug use and more SURNCs as they transitioned from early to mid adolescence. There was a developmental trend in how these differences evolved. At the age of 13–14 years, both maltreated and non-maltreated adolescents reported approximately equal numbers of SURNCs. However, with each additional year, the students in the multiple-maltreated group (i.e., subjected to two or more types of maltreatment) reported substantially more serious SURNCs than did their non-maltreated peers. In the youngest age groups, maltreated adolescents reported more alcohol and substance use than did their non-maltreated respondents. In itself this finding is unsurprising because child maltreatment has been robustly associated with early initiation of substance use in earlier studies (e.g., Shin, Edwards, & Heeren, 2009). It is of interest, however, that the onset of increased SURNCs among multiple-maltreated adolescents was delayed until the age of 14–15 years. Although it is uncertain which respondents in **Study III** will later develop SUDs as adults, the tendency to continue to use substances despite the

negative consequences has been robustly documented as a serious risk factor (Dick, Aliev, Viken, Kaprio, & Rose, 2011). Therefore, measuring SURNCs might be one promising way to identify risk trajectories when measured close in time to substance use debut. SURNCs might be especially interesting to measure in maltreated adolescents and could be one factor that contributes to the fact that maltreated individuals run a higher risk of developing SUDs.

A well-known risk factor associated with SURNCs is mental health problems. In general populations (i.e., not maltreated), the relationship between mental health problems and experiencing SURNCs has been well established (Martens et al., 2008). In particular, adolescents who drink alcohol to cope with negative affect have been found to risk more SURNCs (e.g., Carey and Correia, 1997).

Motives for substance use, such as drinking to cope, have been found to predict substance use problems directly, even after accounting for consumption (e.g., Kuntsche, Knibbe, Gmel, & Engels, 2005). When examining this relationship more closely, Cox, Hosier, Crossley, Kendall, and Roberts (2006) found that when both *enhancement* and *coping* motives were examined together, only coping motives significantly predicted substance use problems. Both **studies I** and **II** showed increased levels of internalizing as well as externalizing problems among maltreated adolescents. It is possible that these adolescents try to manage these problems by means of, for example, excessive alcohol intake, i.e., drinking to cope with these negative affects. This hypothesis might partly explain the relationship between maltreatment and SURNCs found in **Study III**.

Limitations

Some limitations need to be considered when interpreting the results of the three studies included in this thesis. First, the data relied on self-reports in **studies I–III**. If multiple sources (e.g., parental reports or records from social services) had been used, this might have had an impact on the found prevalence of both child maltreatment and the outcome variables. On the other hand, self-reported maltreatment experiences have been found to be more predictive of self-reported mental health problems than are observational data (Shaffer et al., 2008). Furthermore, self-reporting seems to be the best way to assess school absenteeism due to inconsistent reporting practices in schools (Henry, 2007).

Second, **studies I** and **II** are cross-sectional studies, meaning that we do not know the direction of the relationships found. For example, it is possible that depressed adolescents are biased toward a more negative interpretation of their upbringing, resulting in the over-reporting of child maltreatment. It is also possible that high levels of school absenteeism could negatively affect

relationships with teachers, making this an outcome of absenteeism rather than a risk factor.

Third, although the CTQ is a widely used instrument for measuring child maltreatment, it has not been used frequently in younger populations, so few comparable studies are available. Moreover, the continuous scales of the CTQ may not be optimal for measuring prevalence (Aho et al., 2016). An instrument with dichotomous response options, a type more frequently used with early adolescents, might have been more suitable for measuring the prevalence of child maltreatment in this sample. On the other hand, the continuous scales of the CTQ allowed us to analyze not only the cumulative effect of several subtypes of maltreatment but also the severity of each maltreatment subtype.

Finally, because the LoRDIA program uses a longitudinal design, the respondents are not entirely anonymous. This might have made it more difficult for some respondents to report accurately on sensitive issues such as child maltreatment. However, as described in the “Methods” section, we took several measures to make students feel safe when completing the questionnaire. As the child maltreatment prevalence rates found in **Study II** are similar to those found in earlier cross-sectional studies, the longitudinal design might not have had a significantly negative impact on reporting sensitive information such as child maltreatment.

Ethical considerations

Three ethical principles have been proposed for longitudinal research involving children and adolescents (Kotch, 2000). The first is *justice*, meaning the respondents must be treated fairly and with respect. Some have proposed that all non-therapeutic research involving children from which the participating children cannot be expected to gain any personal benefit is exploitation (Kotch, 2000). However, without such research, valuable knowledge that indirectly helps this vulnerable group would be lost and little development and progress would be made in the field.

To ensure fair treatment of the adolescents participating in the LoRDIA program, thorough actions were taken to ensure student confidentiality and integrity when completing the questionnaire: teachers were instructed not to answer students’ questions about the questionnaire; students were placed as far from one another as possible in the classroom; and the questionnaire was coded so that no names were written on it. Trained research assistants (all with prior experience of working with children) were available to answer questions throughout the procedure. Furthermore, the school psychologist, social worker, or nurse in each participating school was notified before data collection about sensitive questions in the questionnaire; students were given clear instructions

on how to contact them and were encouraged to do so if they had any negative reactions to the questionnaire.

The second ethical principle concerns *autonomy*. Respect for people requires that participants in research give their informed consent. To address this issue, students who participated in the LoRDIA program were given a detailed introduction to how the data would be used, and information was given about the coding procedures described in the “Methods” section. Students were also promised full confidentiality. In the introduction, given by a member of the research team, the questionnaire and its content were described in such a way that students would be aware of the nature of the questions. Following this description, it was clearly stressed that participation was voluntary and that one could withdraw from participation at any time. If a student chose to withdraw, this student’s questionnaire would be removed from the study immediately.

The last ethical principle is *beneficence*. The longitudinal design of LoRDIA and the use of validated measures of child maltreatment may allow us to inform school and mental health services about suitable prevention and treatment strategies. With this design, it is also possible to analyze and describe how the negative consequences of maltreatment develop and change over time. For example, there might be no relationship between child maltreatment and school absenteeism in 7th grade but a strong relationship in 9th grade. Cross-sectional studies conducted only in the 7th grade could therefore risk inaccurately concluding that there is no relationship between maltreatment and school absenteeism. The longitudinal design therefore allows us to detect a wider variety of negative outcomes following maltreatment than a cross-sectional study would. This knowledge is important and could inform decision makers of the magnitude of resources that need to be allocated to give maltreated adolescents a fair chance of optimal development. However, it is unlikely that the participating students will benefit personally. Their participation was motivated by altruism—and perhaps by the opportunity not to work on ordinary school assignments for one hour. The students were informed of the purpose of the study and the great majority wanted to contribute.

Implications

Future research

The findings of the three studies included in this doctoral thesis suggest new research questions that could be empirically tested in future studies. Factors that could help to explain, for example, the difference in the severity of

negative outcomes between girls and boys following maltreatment should be further investigated. Several possibly moderating variables such as self-confidence, attachment to caregivers, body image, pubertal timing, adherence to gender norms, and peer relationships could probably explain why girls report more severe negative consequences following maltreatment than do boys, as seen in **Study I**.

The role of poly-victimization in the difference in outcome severity between girls and boys needs to be further examined. The fact that many types of maltreatment tend to co-occur is a robust finding in the literature on child maltreatment (e.g., Anda et al., 2002). Because only emotional maltreatment was examined in **Study I**, this matter needs to be further investigated in relation to gender differences in outcomes when data on all types of maltreatment are available.

Furthermore, the results of some earlier research (Tolin & Foa, 2006) indicate that boys and men versus girls and women tend to report different types of negative outcomes following maltreatment and trauma, suggesting that a wider variety of outcome variables should be investigated in relation to gender differences. For example, delinquency has earlier been found to be overrepresented among maltreated boys versus maltreated girls (Tolin & Foa, 2006). Hence, to get a fuller picture of gender-specific outcomes following maltreatment, delinquency among maltreated adolescent girls and boys should also be examined.

The results of **Study II** raise some important questions in relation to educational outcomes following maltreatment. First, no gender differences were found in levels of absenteeism, but as the relationship between child maltreatment, gender, and absenteeism was not examined specifically, we do not know whether this relationship differs between girls and boys. Analyses of the interaction effects of maltreatment and gender on school absenteeism could therefore yield important knowledge. Second, future research should examine mental health problems and peer victimization as mediating factors between child maltreatment and absenteeism. Knowledge of such mediation could inform and improve interventions targeting school absenteeism.

Last, most children at risk of maltreatment do not receive help from social services (e.g., Coccozza, 2007); instead, interventions are usually limited to resources available within schools and healthcare services. Therefore, research examining how schools could effectively support maltreated children should be undertaken. One important aspect of ensuring support for maltreated children and adolescents is the willingness of school staff to report suspected maltreatment to social services. Earlier studies have identified four common barriers to such reporting described by professionals: (a) lack of knowledge of child maltreatment, (b) negative effects of reporting on the children/families, (c) distrust of Child protective services and (d) negative ramifications for the

professionals (Alvarez et al., 2004). Interventions targeting these barriers should be implemented and evaluated.

The results of **Study III** indicate that maltreated adolescents report more SURNCs than do their peers. As this is, to our knowledge, the first study that specifically examines this relationship, these results need replication. Furthermore, the role of both externalizing and internalizing problems in moderating the relationship between child maltreatment and SURNCs should be investigated. This could yield important information concerning the externalizing and internalizing pathways leading from child maltreatment to SUDs described earlier in this thesis. Finally, to establish whether alcohol-related negative consequences during early adolescence are a predictor of subsequent SUDs, follow up studies targeting the cohorts included in **Study III** in late adolescence and emerging adulthood should be conducted. Efforts should also be made to examine to what extent adolescents seeking treatment for substance use in Sweden have experiences of child maltreatment.

Implications for Practice

In the three studies included in this thesis, adolescents who reported maltreatment also reported more mental health problems, poorer mental well-being, higher levels of school absenteeism, more peer victimization, a higher frequency of substance use, and more SURNCs than did their non-maltreated peers. Accordingly, these findings have important implications for staff of schools, healthcare institutions, and social services. First, preventive strategies must be addressed. In line with the transactional ecological models of Cicchetti and Rizzley (1981) and Belsky (1980), which propose that the etiology of maltreatment is rarely explained by a single risk factor, broad supportive interventions for families are recommended. Such interventions could include home visitation and early support programs for new parents identified as at risk of maltreating. However, there is a scarcity of programs targeting families at risk of abuse and neglect that have been thoroughly evaluated in the Swedish context (SBU, 2018). The Swedish Agency for Health Technology Assessment and Assessment of Social Services (Statens beredning för medicinsk och social utvärdering, SBU) has reviewed the empirical evidence regarding the effectiveness and cost-effectiveness of primary care interventions for families in which children are exposed to child abuse and neglect. Their report states that social and child psychiatric services use numerous interventions for families in which children are exposed to abuse and neglect. However, only two interventions were shown to significantly decrease child abuse and neglect: project support and parent–child interaction therapy (SBU, 2018). These interventions should therefore be promoted and made available for

families at risk. Furthermore, efforts should be made to evaluate other promising programs.

The Swedish government recently initiated a project in which more regular home visitation is offered in socioeconomically disadvantaged areas for families with newborns (Ministry of Health and Social Affairs, 2019). Although these home-visitation programs are not maltreatment focused, general components of these programs such as social support and problem-solving strategies have been found to decrease the risk of maltreatment (Kaye, Faber, Davenport, & Perkins, 2018). However, there are mixed results concerning the effectiveness of home-visitation programs in preventing child maltreatment, so it would be useful to include measures of child maltreatment when evaluating their effectiveness.

Another way to reach out and offer support to adolescents affected by child maltreatment is by integrating knowledge of maltreatment and trauma in regular services (e.g., school, healthcare, and social services). This way of working is often called trauma-informed care. The National Child Traumatic Stress Network defines trauma-informed care as follows:

A trauma-informed child and family service system is one in which all parties involved recognize and respond to the impact of traumatic stress on those who have contact with the system including children, caregivers, and service providers. Programs and agencies within such a system infuse and sustain trauma awareness, knowledge, and skills into their organizational cultures, practices, and policies. They act in collaboration with all those who are involved with the child, using the best available science, to maximize physical and psychological safety, facilitate the recovery of the child and family, and support their ability to thrive. (NCTSN, 2019)

Trauma-informed care has been implemented in schools with promising results in terms of both reduced trauma symptoms among children and greater staff confidence in addressing trauma (e.g., Dorado, Martinez, McArthur, & Leibovitz, 2016).

In the USA, neglect is the most common reason for social services to intervene in families (U.S. Department of Health & Human Services, 2016). In Sweden, no national statistics are available on this matter. Although it was difficult to assess the relative impact of emotional maltreatment in **Study I** because of possible unreported co-existing forms of maltreatment, heightened awareness of emotional maltreatment in mental health and social services should be encouraged. Otherwise, screening and treatment plans risk focusing exclusively on sexual and physical abuse. As described earlier, neglect is an elusive concept that is difficult to define. For practitioners in social services and healthcare, a deep understanding of developmental psychology and

developmental psychopathology is needed to detect neglect and describe its consequences, articulated as a higher risk of a broad range of negative developmental consequences. Without such a framework, there is a risk that neglect, if viewed as a single incident or isolated concept, will not be treated as a risk factor as potent as sexual or physical abuse.

Furthermore, the results of **Study II** indicate that the school system needs to add a trauma-informed perspective to many areas of practice. Because experiences of maltreatment are linked to both peer victimization and school absenteeism, professionals such as teachers, school psychologists, and social workers all need to assess these difficulties in a way that identifies maltreated adolescents. This is important for several reasons. First, of course, is that ongoing maltreatment must be stopped. For example, in **Study II**, nearly a third of adolescents reporting excessive absenteeism also reported experiencing domestic violence, severe emotional neglect, and physical abuse. Furthermore, nearly one third of absentees reported experiencing two or more types of maltreatment. These results clearly show the necessity of screening for maltreatment experiences when working on interventions targeting school absenteeism.

Second, there might be specific ways in which maltreatment and trauma interfere with school functioning. In line with the developmental psychopathology perspective, the outcomes studied in this thesis could have multiple causes. In line with the concept of multifinality, peer victimization, school absenteeism, and mental health problems could be caused by risk factors from all levels of the ecology surrounding the child as well as by biological and psychological risk factors within the child. Naturally, the primary causes and mechanisms underlying a certain problematic behavior will guide the focus of the intervention used. Maltreated adolescents therefore need to be identified in order to tailor interventions to benefit them individually. For example, students with post-traumatic stress disorder, a common diagnosis among maltreated children, have been found to struggle with intrusive images when working on tasks that demand high levels of concentration (Broberg, Dyregrov, & Lilled, 2005). If maltreatment is unknown to professionals, adolescents' behavioral struggles risk being misunderstood as, for example, motivational problems. This could result in interventions failing to create a good-enough learning environment for maltreated adolescents. Because academic functioning is a powerful buffer against mental health and peer problems for maltreated adolescents, a trauma-informed workforce in schools is vital for these adolescents' eventual adaptation. **Study III** showed that maltreated adolescents consumed more alcohol and other substances, and reported more negative consequences of such consumption, than did their non-maltreated peers. These behaviors put them at heightened risk of both immediate and subsequent substance use problems.

Given that maltreatment and trauma are so common among adolescents seeking treatment for substance use, most professionals will come in contact with this group. Substance abuse professionals should therefore receive training in addressing trauma when treating adolescents struggling with problematic substance use. Because earlier research has found that drinking to cope is common among maltreated adolescents, a professional should pay attention to such an adolescent's trauma history and its relationship with his or her current emotional difficulties. Furthermore, service systems targeting substance abuse and mental health problems have traditionally been fragmented. This may lead to few teenagers with both traumatic stress and substance abuse problems receiving integrated care. It is an old myth that one must treat trauma and substance use separately; rather, the ideal treatment approach is to address both conditions simultaneously (e.g., Giaconia, Reinherz, Paradis, & Stashwick, 2003). More training programs (e.g., Seeking Safety) that integrate both substance use and trauma treatments should therefore be made available for professionals in both mental health and substance use therapy.

Conclusion

The results of the three studies included in this doctoral thesis indicate clear associations between child maltreatment and a wide range of negative outcomes. Mental health problems, psychosomatic symptoms, unexcused absence from school, alcohol and illegal substance use, and SURNCs were all overrepresented in the groups of adolescents reporting maltreatment. Furthermore, the present results are in line with those of earlier studies showing that experiencing multiple versus single types of maltreatment exacerbates negative outcomes (Felitti et al., 1998). In **Study I**, girls reported more severe problems with internalizing and psychosomatic symptoms following maltreatment experiences than did boys. The results of **Study II** indicate a relationship between child maltreatment and school absenteeism. Experiences of maltreatment were more common among absentees (50% vs. 23% of the total sample), and maltreated absentees reported more mental health problems and peer victimization than did non-maltreated absentees.

In **Study III**, the results indicate that adolescents who reported maltreatment experiences also reported more alcohol and illicit drug use. In addition, they also experienced more negative consequences resulting from alcohol and illicit drug consumption.

To sum up, this doctoral thesis highlights that maltreated adolescents run a higher risk of maladaptation in many areas of development. A trauma-informed perspective should therefore be incorporated in the praxis not only of

mental health services but throughout the spectrum of healthcare, social service, and educational settings.

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